

**LOCTITE®**

**Structural Adhesives**

# Aerospace Product Selector Guide



**Henkel**

# Structural Adhesives

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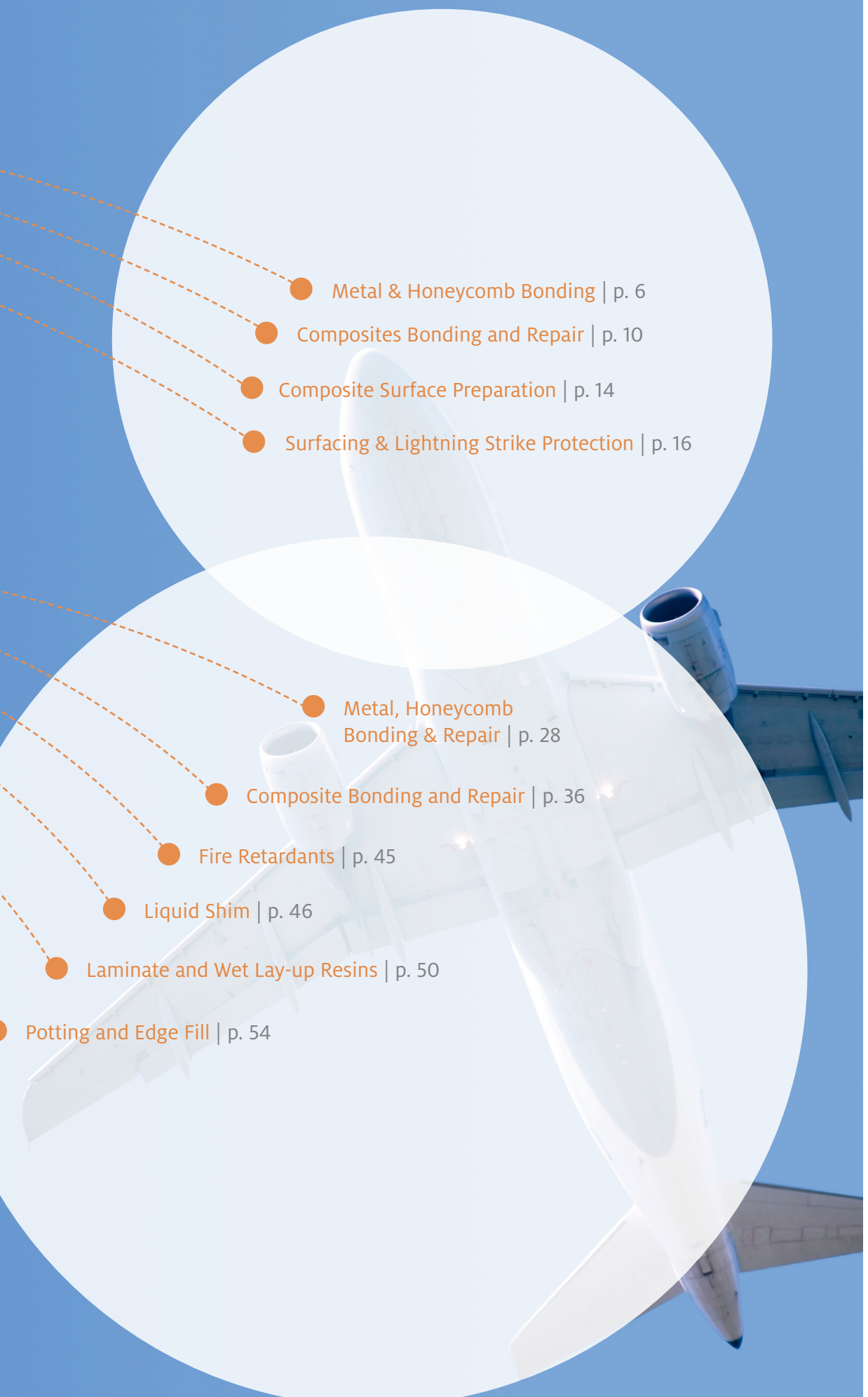
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## With over four decades of experience: **LOCTITE film adhesives**

### Film adhesives: the basics

Film adhesives are pre-catalyzed adhesives offered in sheet form for metal, composite bonding, and honeycomb applications. Film adhesives are offered in defined areal weights in roll or sheet form.

### Advanced level: LOCTITE film adhesives

Our broad portfolio of film adhesives includes advanced technologies to address today and tomorrow's most demanding applications. Being a long-term partner for aircraft manufacturers globally, Henkel provides sustainable film adhesive solutions that enhance performance and safety of aircraft as well as the manufacturer's production efficiency.

#### Why choose LOCTITE film adhesives?

- › Enables large part manufacture
- › Better toughness
- › Durable bonding
- › Bond line thickness control
- › Handling and reliability
- › Long shop life

## LOCTITE film adhesives: Facts at a glance

### LOCTITE film adhesives key features

- › Pre-catalyzed, no mixing or measuring needed
- › Mix of epoxy resin and curing agent cast into a film.
- › Typical thickness ranges from 5 mils to 15 mils (0.1 – 0.4 mm)
- › Enables up to 15 days to assemble aircraft parts
- › Controlled flow, ability to reticulate
- › Usually supplied with a scrim for bond line control, toughness and handling
- › Allows precise placement of adhesive on part
- › Allows precise amount of adhesive to be placed on part
- › Bonds various substrates

### Key factors to consider when choosing the right LOCTITE film adhesive:

- › Environmental and temperature resistance
- › Cure time and temperature
- › Fracture toughness
- › Lightning strike protection

Qualified to major aerospace specifications:  
**LOCTITE metal & honeycomb bonding products**

Fully developed metal & honeycomb solutions

How to identify a technically advanced metal & honeycomb bonding solution? Just ask if it offers very low weight, high fatigue resistance, maximum durability and significant production costs savings. If it does, this is a LOCTITE solution.

In the honeycomb and metal assembly segment, Henkel offers metal bonding films for original construction and repair qualified to all major aerospace specifications. LOCTITE films are one component, heat curing thin film adhesives. Materials are specifically designed for maximum durability, high strength and toughness with temperature resistance designed for their operating environment

The LOCTITE portfolio of metal bonding films is broad and addresses many needs of customer applications. LOCTITE has products covering service temperatures from 250 °F / 121 °C to 550 °F / 288 °C and will bond to chemically treated metallic substrates.

Why choose LOCTITE metal & honeycomb solutions?

- › Improved toughness
- › Excellent resistance to high temperatures
- › Good tack and drape
- › Good reticulation
- › Excellent adhesion to aluminum and composite substrates

LOCTITE metal & honeycomb bonding:  
**Facts at a glance**

LOCTITE metal and honeycomb film key features

- › Pre-catalyzed, no mixing or measuring
  - › Typical thicknesses range from 5 mils to 15 mils (0.1 – 0.4 mm)
  - › More durable bonds
- › Controlled flow
  - › Ability to reticulate
  - › Long out time

Key factors to consider when choosing the right LOCTITE product for metal & honeycomb bonding

- › Substrate preparation
  - › Operating temperature requirements
  - › Operating environment
- › Part size and shape
  - › Bond joint design
  - › Strength requirements (peel or shear)

**Metal & Honeycomb Bonding**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                               |                                       |                                     |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------|-------------------------------------|
| Application           | Metal & Honeycomb Bonding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | •                                                             | •                                     | •                                   |
| Characteristics       | 250 °F / 121 °C Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | •                                                             | •                                     |                                     |
|                       | 300 °F / 149 °C Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                                       |                                     |
|                       | 350 °F / 177 °C Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                                       | •                                   |
|                       | 550 °F / 288 °C Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                                       |                                     |
|                       | Cure Temperature (°F / °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 250 °F / 121 °C                                               | 250 °F / 121 °C                       | 350 °F / 177 °C                     |
|                       | Cure Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 90 Minutes                                                    | 90 Minutes                            | 60 Minutes                          |
|                       | Storage Temperature (°F / °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0 °F / -18 °C                                                 | 0 °F / -18 °C                         | 0 °F / -18 °C                       |
|                       | Out-time (Days @ 77 °F / 25 °C) – FILM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 20 Days                                                       | 20 Days                               | 15 Days                             |
|                       | Out-time (Days @ 90 °F / 32 °C) – FILM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10 Days                                                       | 10 Days                               | 10 Days                             |
| Mechanical Properties | Bell Peel 77 °F (lb / in) 25 °C (N / 25 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 54 lbs / in 240 N / 25 mm                                     | –                                     | 13 lb / in 58 N / 25 mm             |
|                       | T Peel 77 °F (lb / in) 25 °C (N / 25 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 37 lbs / in 165 N / 25 mm                                     | 35 lbs / in 156 N / 25 mm             | –                                   |
|                       | TENSILE LAP SHEAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -67 °F (psi) / -55 °C (MPa)                                   | 5,500 psi / 37.9 MPa                  | 3,900 psi / 27.0 MPa                |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 77 °F (psi) / 25 °C (MPa)                                     | 6,000 psi / 41.3 MPa                  | 4,800 psi / 33.1 MPa                |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 180 °F (psi) / 82 °C (MPa)                                    | 4,000 psi / 27.6 MPa                  | –                                   |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Elevated Temperature (psi / MPa)                              | 250 °F / 121 °C: 2,000 psi / 13.8 MPa | 350 °F / 177 °C: 2,800 psi / 19 MPa |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Honeycomb Climbing Drum Peel @ 77 °F (in-lb/in) / 25° (m-N/m) | 60 in.lb / 3 in 80 m.N / m            | 12 in.lb / 3 in 50 m.N / m          |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Flatwise Tension @ 77 °F / 25 °C (psi / MPa)                  | 1,400 psi / 9.6 MPa                   | 1,000 psi / 6.9 MPa                 |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                               |                                       |                                     |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 248 °F / 120 °C                                               | 240 °F / 116 °C                       | 392 °F / 200 °C                     |
|                       | Tg Wet (°F / °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 210 °F / 99 °C                                                | 200 °F / 93 °C                        | 300 °F / 150 °C                     |
|                       | Tensile Strength (dogbone) @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7,500 psi / 51.7 MPa                                          | 7,500 psi / 51.7 MPa                  | –                                   |
|                       | Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 345 ksi / 2,377 MPa                                           | 346 ksi / 2,377 MPa                   | –                                   |
|                       | Elongation @ 77 °F / 25 °C (% at break)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 7.5 %                                                         | 7.5 %                                 | –                                   |
|                       | Compressive Strength @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11,500 psi / 79.3 MPa                                         | 11,500 psi / 79.3 MPa                 | –                                   |
|                       | Compressive Modulus @ 77 °F (ksi) / 25 °C (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 310 ksi / 2,136 MPa                                           | 310 ksi / 2,136 MPa                   | –                                   |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                               |                                       |                                     |
| Product               | New Product Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | LOCTITE EA 9628 AERO                                          | LOCTITE EA 9628H AERO                 | LOCTITE EA 9658 AERO                |
|                       | Known As                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Hysol® EA 9628™                                               | Hysol® EA 9628H™                      | Hysol® EA 9658™                     |
| Availability          | Packaging                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Roll                                                          | Roll                                  | Roll                                |
| Description           | <div><div>LOCTITE EA 9628 AERO<ul style="list-style-type: none"><li>• Good Toughness</li><li>• 250 °F/ 121 °C Cure</li><li>• Bonds Many Materials</li><li>• Excellent Durability</li></ul></div><div>LOCTITE EA 9628H AERO<ul style="list-style-type: none"><li>• Excellent Durability</li><li>• 250 °F/ 121 °C Cure</li><li>• Applications Include Helicopter Blade Bonding</li><li>• Good Toughness</li><li>• Product is preferred for helicopter blade construction because of the product flow characteristics and its ability to be cured in an out of autoclave process</li></ul></div><div>LOCTITE EA 9658 AERO<ul style="list-style-type: none"><li>• Increased toughness with high temperature performance</li><li>• Designed for composite, metal or honeycomb</li><li>• State of the art flow control to minimize hole blockage and excess flash/flow</li><li>• Thermally stable</li><li>• Offered with a companion low VOC water based corrosion inhibiting primer, LOCTITE EA 9258.1 AERO</li></ul></div></div> |                                                               |                                       |                                     |

# Metal & Honeycomb Bonding

Notes

|                                                        |                                                               |                                                                                                                                                                            |                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                          |                                       |                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                           |                                      |
|--------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Application                                            | Metal & Honeycomb Bonding                                     | •                                                                                                                                                                          | •                                                                                                                                                                                                                          | •                                                                                                                                                                                                                                                                                                                                                                                                        |                                       | •                                                                                                                                                                                                                                                                                                                                                              | •                                                                                                                                                                                                                                                                                                                                         |                                      |
| Characteristics                                        | 250 °F / 121 °C Service                                       |                                                                                                                                                                            | •                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                          |                                       | •                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                           |                                      |
|                                                        | 300 °F / 149 °C Service                                       |                                                                                                                                                                            |                                                                                                                                                                                                                            | •                                                                                                                                                                                                                                                                                                                                                                                                        |                                       |                                                                                                                                                                                                                                                                                                                                                                | •                                                                                                                                                                                                                                                                                                                                         |                                      |
|                                                        | 350 °F / 177 °C Service                                       |                                                                                                                                                                            |                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                          |                                       |                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                           |                                      |
|                                                        | 550 °F / 288 °C Service                                       | •                                                                                                                                                                          |                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                          |                                       |                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                           |                                      |
|                                                        | Cure Temperature (°F / °C)                                    | 350 °F / 177 °C + 475 °F / 121 °C                                                                                                                                          | 250 °F / 121 °C                                                                                                                                                                                                            | 250 °F / 121 °C or 350 °F / 177 °C                                                                                                                                                                                                                                                                                                                                                                       |                                       | 225 – 275 °F / 107 – 129 °C                                                                                                                                                                                                                                                                                                                                    | 250 °F / 121 °C or 350 °F / 177 °C                                                                                                                                                                                                                                                                                                        |                                      |
|                                                        | Cure Time                                                     | 60 Minutes / 120 Minutes                                                                                                                                                   | 60 Minutes                                                                                                                                                                                                                 | 60 – 120 Minutes                                                                                                                                                                                                                                                                                                                                                                                         |                                       | 60 – 90 Minutes                                                                                                                                                                                                                                                                                                                                                | 60 – 120 Minutes                                                                                                                                                                                                                                                                                                                          |                                      |
|                                                        | Storage Temperature (°F / °C)                                 | 0 °F / -18 °C                                                                                                                                                              | 0 °F / -18 °C                                                                                                                                                                                                              | 0 °F / -18 °C                                                                                                                                                                                                                                                                                                                                                                                            |                                       | 0 °F / -18 °C                                                                                                                                                                                                                                                                                                                                                  | 0 °F / -18 °C                                                                                                                                                                                                                                                                                                                             |                                      |
|                                                        | Out-time (Days @ 77 °F / 25 °C) – FILM                        | 30 Days                                                                                                                                                                    | 14 Days                                                                                                                                                                                                                    | 90 Days                                                                                                                                                                                                                                                                                                                                                                                                  |                                       | 60 Days                                                                                                                                                                                                                                                                                                                                                        | 30 Days                                                                                                                                                                                                                                                                                                                                   |                                      |
|                                                        | Out-time (Days @ 90 °F / 32 °C) – FILM                        | 15 Days                                                                                                                                                                    | 10 Days                                                                                                                                                                                                                    | 45 Days                                                                                                                                                                                                                                                                                                                                                                                                  |                                       | 30 Days                                                                                                                                                                                                                                                                                                                                                        | 30 Days                                                                                                                                                                                                                                                                                                                                   |                                      |
| Mechanical Properties                                  | Bell Peel 77 °F (lb / in) 25 °C (N / 25 mm)                   | –                                                                                                                                                                          | 87 lbs / in 387 N / 25 mm                                                                                                                                                                                                  | 20 lbs / in 89.6 N / 25 mm                                                                                                                                                                                                                                                                                                                                                                               |                                       | 75 lbs / in 334 N / 25 mm                                                                                                                                                                                                                                                                                                                                      | 20 lbs / in 89 N / 25 mm                                                                                                                                                                                                                                                                                                                  |                                      |
|                                                        | T Peel 77 °F (lb / in) 25 °C (N / 25 mm)                      | –                                                                                                                                                                          | –                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                                                                                                                                                        |                                       | –                                                                                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                                                         |                                      |
|                                                        | TENSILE LAP SHEAR                                             | -67 °F (psi) / -55 °C (MPa)                                                                                                                                                | 2,000 psi / 13.8 MPa                                                                                                                                                                                                       | 6,350 psi / 43.8 Mpa                                                                                                                                                                                                                                                                                                                                                                                     | 4,400 psi / 30.3 MPa                  |                                                                                                                                                                                                                                                                                                                                                                | 7,000 psi / 48.3 MPa                                                                                                                                                                                                                                                                                                                      | 3,600 psi / 26.2 Mpa                 |
|                                                        |                                                               | 77 °F (psi) / 25 °C (MPa)                                                                                                                                                  | 2,000 psi / 13.8 MPa                                                                                                                                                                                                       | 6,100 psi / 42.0 MPa                                                                                                                                                                                                                                                                                                                                                                                     | 5,000 psi / 34.5 Mpa                  |                                                                                                                                                                                                                                                                                                                                                                | 6,000 psi / 41.3 MPa                                                                                                                                                                                                                                                                                                                      | 4,500 psi / 31.0 MPa                 |
|                                                        |                                                               | 180 °F (psi) / 82 °C (MPa)                                                                                                                                                 | –                                                                                                                                                                                                                          | 3,900 psi / 26.9 MPa                                                                                                                                                                                                                                                                                                                                                                                     | 4,500 psi / 31.0 MPa                  |                                                                                                                                                                                                                                                                                                                                                                | 4,507 psi / 31.1 Mpa                                                                                                                                                                                                                                                                                                                      | –                                    |
|                                                        |                                                               | Elevated Temperature (psi / MPa)                                                                                                                                           | 350 °F / 177 °C: 2,400 psi / 16.5 MPa                                                                                                                                                                                      | 250 °F / 121 °C: 2,100 psi / 14.5 MPa                                                                                                                                                                                                                                                                                                                                                                    | 300 °F / 149 °C: 3,400 psi / 23.4 Mpa |                                                                                                                                                                                                                                                                                                                                                                | 250 °F / 121 °C: 2,000 psi / 12.8 MPa                                                                                                                                                                                                                                                                                                     | 270 °F / 132 °C: 1,300 psi / 9.0 MPa |
|                                                        | Honeycomb Climbing Drum Peel @ 77 °F (in-lb/in) / 25° (m-N/m) | –                                                                                                                                                                          | 18 in.lb / in 80 N.m / m                                                                                                                                                                                                   | 18 in.lb / 3 in 82 m.N / m                                                                                                                                                                                                                                                                                                                                                                               |                                       | 78 lbs / in 116 m.N / m                                                                                                                                                                                                                                                                                                                                        | 27 in.lb / 3in 40 m.N / m                                                                                                                                                                                                                                                                                                                 |                                      |
|                                                        | Flatwise Tension @ 77 °F / 25 °C (psi / MPa)                  | –                                                                                                                                                                          | 925 psi /6.4 MPa                                                                                                                                                                                                           | 1,200 psi / 8.3 MPa                                                                                                                                                                                                                                                                                                                                                                                      |                                       | 1298 psi / 9.0 MPa                                                                                                                                                                                                                                                                                                                                             | 1,070 psi / 7.4 MPa                                                                                                                                                                                                                                                                                                                       |                                      |
|                                                        | Bulk Properties                                               | Tg Dry (°F / °C)                                                                                                                                                           | 568 °F / 298 °C                                                                                                                                                                                                            | 240 °F / 115 °C                                                                                                                                                                                                                                                                                                                                                                                          | 302 °F / 150 °C                       |                                                                                                                                                                                                                                                                                                                                                                | 253 °F / 123 °C                                                                                                                                                                                                                                                                                                                           | 293 °F / 145 °C                      |
| Tg Wet (°F / °C)                                       |                                                               | 410 °F / 210 °C                                                                                                                                                            | 200 °F / 95 °C                                                                                                                                                                                                             | 203 °F / 95 °C                                                                                                                                                                                                                                                                                                                                                                                           |                                       | 200 °F / 93 °C                                                                                                                                                                                                                                                                                                                                                 | 190 °F / 88 °C                                                                                                                                                                                                                                                                                                                            |                                      |
| Tensile Strength (dogbone) @ 77 °F (psi) / 25 °C (MPa) |                                                               | –                                                                                                                                                                          | –                                                                                                                                                                                                                          | 11,000 psi / 76 MPa                                                                                                                                                                                                                                                                                                                                                                                      |                                       | 6,839 psi / 47.3 MPa                                                                                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                                                                                                                                         |                                      |
| Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)            |                                                               | –                                                                                                                                                                          | –                                                                                                                                                                                                                          | 450 ksi / 3,100 MPa                                                                                                                                                                                                                                                                                                                                                                                      |                                       | 277.3 ksi / 1,912 MPa                                                                                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                                                                                         |                                      |
| Elongation @ 77 °F / 25 °C (% at break)                |                                                               | –                                                                                                                                                                          | –                                                                                                                                                                                                                          | 3.00 – 4.00 %                                                                                                                                                                                                                                                                                                                                                                                            |                                       | 16.00 %                                                                                                                                                                                                                                                                                                                                                        | –                                                                                                                                                                                                                                                                                                                                         |                                      |
| Compressive Strength @ 77 °F (psi) / 25 °C (MPa)       |                                                               | –                                                                                                                                                                          | –                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                                                                                                                                                        |                                       | –                                                                                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                                                         |                                      |
| Compressive Modulus @ 77 °F (ksi) / 25 °C (MPa)        |                                                               | –                                                                                                                                                                          | –                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                                                                                                                                                        |                                       | –                                                                                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                                                         |                                      |
| Product                                                | New Product Name                                              | LOCTITE EA 9673 AERO                                                                                                                                                       | LOCTITE EA 9690 AERO                                                                                                                                                                                                       | LOCTITE EA 9695 AERO                                                                                                                                                                                                                                                                                                                                                                                     |                                       | LOCTITE EA 9696 AERO                                                                                                                                                                                                                                                                                                                                           | LOCTITE EA 7000 AERO                                                                                                                                                                                                                                                                                                                      |                                      |
|                                                        | Known As                                                      | Hysol® EA 9673™ (BMI)                                                                                                                                                      | Hysol® EA 9690™                                                                                                                                                                                                            | Hysol® EA 9695™                                                                                                                                                                                                                                                                                                                                                                                          |                                       | Hysol® EA 9696™                                                                                                                                                                                                                                                                                                                                                | Hysol® PL 7000™ NEW!                                                                                                                                                                                                                                                                                                                      |                                      |
| Availability                                           | Packaging                                                     | Roll                                                                                                                                                                       | Roll                                                                                                                                                                                                                       | Roll                                                                                                                                                                                                                                                                                                                                                                                                     |                                       | Roll                                                                                                                                                                                                                                                                                                                                                           | Roll                                                                                                                                                                                                                                                                                                                                      |                                      |
| Description                                            |                                                               | LOCTITE EA 9673 AERO <ul style="list-style-type: none"><li>• Service to 550 °F / 288 °C</li><li>• No Volatiles During Cure</li><li>• Bismalimide based chemistry</li></ul> | LOCTITE EA 9690 AERO <ul style="list-style-type: none"><li>• Low Flow</li><li>• Exceptional Peel Strength</li><li>• Available with Knit or Non-Woven Mat</li><li>• Excellent Performance with Low Pressure Cures</li></ul> | LOCTITE EA 9695 AERO <ul style="list-style-type: none"><li>• X-ray Opaque</li><li>• Excellent Environmental Resistance</li><li>• Reticulatable</li><li>• Good Pre and Post Bond Moisture Resistance</li><li>• Low Flow</li><li>• Allows 250 °F / 121 °C or 350 °F / 177 °C Cure</li><li>• Co-Cure with Composites</li><li>• Long Out time Facilitates Shop Floor Usage and Repair Applications</li></ul> |                                       | LOCTITE EA 9696 AERO <ul style="list-style-type: none"><li>• Excellent Environmental Resistance</li><li>• High Toughness Maintaining Service Temperature</li><li>• Balanced Flow</li><li>• Allows from 225 °F to 265 °F / 107 °C to 129 °C Cure</li><li>• Long Out-time Facilitates Shop Floor Usage and Repair Applications</li><li>• Reticulatable</li></ul> | LOCTITE EA 7000 AERO <ul style="list-style-type: none"><li>• Dual temperature cure capabilities</li><li>• Epoxy film adhesive for composite bonding applications</li><li>• Excellent performance properties in composite bonding</li><li>• Excellent results on composite surfaces</li><li>• Excellent fracture toughness (G1c)</li></ul> |                                      |

When structural integrity matters:  
**LOCTITE composite bonding  
and repair film adhesives**

**Concerning critical aircraft components, some questions might come up**

In order to preserve the structural integrity of critical aircraft components, manufacturers need the right adhesives to bond composite sub-components with excellent chemical resistance and extraordinary mechanical performance.

**Henkel gives a strong answer: LOCTITE composite bonding adhesives**

LOCTITE products for composite bonding fulfill all these requirements and allow engineers to create efficient structures. No fasteners are needed. They offer lower adherent thickness, let you take advantage of stiffness properties of composites and provide a separation of dissimilar materials.

**Why choose LOCTITE composite bonding adhesives?**

- › Good environmental resistance
- › Improved toughness
- › Bond line thickness control
- › Good tack and drape
- › Excellent adhesion to composite substrates

LOCTITE composite bonding adhesives:  
**Facts at a glance**

**LOCTITE composite bonding adhesives key features:**

- › High temperature service
  - › Compatibility with aerospace prepreg systems
  - › Good wetting of composite surfaces
  - › High mechanical performance
- › Toughness tailorable to requirements
  - › Variations in form: thickness or weight
  - › Excellent chemical resistance

**Key factors to consider when choosing the right LOCTITE composite bonding adhesive**

- › Service temperature
  - › Shelf life / out-time
  - › Cure temperature
- › Glass transition temperature (Tg)
  - › Toughness

**Composite Bonding**

| Application           | Composite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | •                                                             | •                                     | •                                   |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------|-------------------------------------|
| Characteristics       | 250 °F / 121 °C Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | •                                                             | •                                     |                                     |
|                       | 300 °F / 149 °C Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                                       |                                     |
|                       | 350 °F / 177 °C Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                                       | •                                   |
|                       | 550 °F / 288 °C Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                               |                                       |                                     |
|                       | Cure Temperature (°F / °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 250 °F / 121 °C                                               | 250 °F / 121 °C                       | 350 °F / 177 °C                     |
|                       | Cure Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 90 Minutes                                                    | 90 Minutes                            | 60 Minutes                          |
|                       | Storage Temperature (°F / °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0 °F / -18 °C                                                 | 0 °F / -18 °C                         | 0 °F / -18 °C                       |
|                       | Out-time (Days @ 77 °F / 25 °C) – FILM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 20 Days                                                       | 20 Days                               | 15 Days                             |
|                       | Out-time (Days @ 90 °F / 32 °C) – FILM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10 Days                                                       | 10 Days                               | 10 Days                             |
| Mechanical Properties | Bell Peel 77 °F (lb / in) 25 °C (N / 25 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 54 lbs / in 240 N / 25 mm                                     | –                                     | 13 lb / in 58 N / 25 mm             |
|                       | T Peel 77 °F (lb / in) 25 °C (N / 25 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 37 lbs / in 165 N / 25 mm                                     | 35 lbs / in 156 N / 25 mm             | –                                   |
|                       | TENSILE LAP SHEAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -67 °F (psi) / -55 °C (MPa)                                   | 5,500 psi / 37.9 MPa                  | 3,900 psi / 27.0 MPa                |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 77 °F (psi) / 25 °C (MPa)                                     | 6,000 psi / 41.3 MPa                  | 4,800 psi / 33.1 MPa                |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 180 °F (psi) / 82 °C (MPa)                                    | 4,000 psi / 27.6 MPa                  | –                                   |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Elevated Temperature (psi / MPa)                              | 250 °F / 121 °C: 2,000 psi / 13.8 MPa | 350 °F / 177 °C: 2,800 psi / 19 MPa |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Honeycomb Climbing Drum Peel @ 77 °F (in-lb/in) / 25° (m-N/m) | 60 in.lb / 3 in 80 m.N / m            | 12 in.lb / 3 in 50 m.N / m          |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Flatwise Tension @ 77 °F / 25 °C (psi / MPa)                  | 1,400 psi / 9.6 MPa                   | 1,000 psi / 6.9 MPa                 |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                               |                                       |                                     |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 248 °F / 120 °C                                               | 240 °F / 116 °C                       | 392 °F / 200 °C                     |
|                       | Tg Wet (°F / °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 210 °F / 99 °C                                                | 200 °F / 93 °C                        | 300 °F / 150 °C                     |
|                       | Tensile Strength (dogbone) @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7,500 psi / 51.7 MPa                                          | 7,500 psi / 51.7 MPa                  | –                                   |
|                       | Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 345 ksi / 2,377 MPa                                           | 346 ksi / 2,377 MPa                   | –                                   |
|                       | Elongation @ 77 °F / 25 °C (% at break)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 7.5 %                                                         | 7.5 %                                 | –                                   |
|                       | Compressive Strength @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11,500 psi / 79.3 MPa                                         | 11,500 psi / 79.3 MPa                 | –                                   |
|                       | Compressive Modulus @ 77 °F (ksi) / 25 °C (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 310 ksi / 2,136 MPa                                           | 310 ksi / 2,136 MPa                   | –                                   |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                               |                                       |                                     |
| Product               | New Product Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | LOCTITE EA 9628 AERO                                          | LOCTITE EA 9628H AERO                 | LOCTITE EA 9658 AERO                |
|                       | Known As                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Hysol® EA 9628™                                               | Hysol® EA 9628H™                      | Hysol® EA 9658™                     |
| Availability          | Packaging                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Roll                                                          | Roll                                  | Roll                                |
| Description           | <div><div>LOCTITE EA 9628 AERO<ul style="list-style-type: none"><li>• Good Toughness</li><li>• 250 °F/ 121 °C Cure</li><li>• Bonds Many Materials</li><li>• Excellent Durability</li></ul></div><div>LOCTITE EA 9628H AERO<ul style="list-style-type: none"><li>• Excellent Durability</li><li>• 250 °F/ 121 °C Cure</li><li>• Applications Include Helicopter Blade Bonding</li><li>• Good Toughness</li><li>• Product is preferred for helicopter blade construction because of the product flow characteristics and its ability to be cured in an out of autoclave process</li></ul></div><div>LOCTITE EA 9658 AERO<ul style="list-style-type: none"><li>• Increased toughness with high temperature performance</li><li>• Designed for composite, metal or honeycomb</li><li>• State of the art flow control to minimize hole blockage and excess flash/flow</li><li>• Thermally stable</li><li>• Offered with a companion low VOC water based corrosion inhibiting primer, LOCTITE EA 9258.1 AERO</li></ul></div></div> |                                                               |                                       |                                     |

Composite Bonding

Notes

|                       |                                                                     |                                                                                                                           |                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                |                                         |
|-----------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Application           | Composite                                                           | •                                                                                                                         | •                                                                                                                                                                    | •                                                                                                                                                                                                                                                                                                                              |                                          | •                                                                                                                                                                                                                                                                                               | •                                                                                                                                                                                                                                                                              |                                         |
| Characteristics       | 250 °F / 121 °C Service                                             |                                                                                                                           | •                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                |                                          | •                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                |                                         |
|                       | 300 °F / 149 °C Service                                             |                                                                                                                           |                                                                                                                                                                      | •                                                                                                                                                                                                                                                                                                                              |                                          |                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                              |                                         |
|                       | 350 °F / 177 °C Service                                             |                                                                                                                           |                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                |                                         |
|                       | 550 °F / 288 °C Service                                             | •                                                                                                                         |                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                |                                         |
|                       | Cure Temperature (°F / °C)                                          | 350 °F / 177 °C +<br>475 °F / 121 °C                                                                                      | 250 °F / 121 °C                                                                                                                                                      | 250 °F / 121 °C or<br>350 °F / 177 °C                                                                                                                                                                                                                                                                                          |                                          | 225 – 275 °F /<br>107 – 129 °C                                                                                                                                                                                                                                                                  | 250 °F / 121 °C or<br>350 °F / 177 °C                                                                                                                                                                                                                                          |                                         |
|                       | Cure Time                                                           | 60 Minutes / 120 Minutes                                                                                                  | 60 Minutes                                                                                                                                                           | 60 – 120 Minutes                                                                                                                                                                                                                                                                                                               |                                          | 60 – 90 Minutes                                                                                                                                                                                                                                                                                 | 60 – 120 Minutes                                                                                                                                                                                                                                                               |                                         |
|                       | Storage Temperature<br>(°F / °C)                                    | 0 °F / -18 °C                                                                                                             | 0 °F / -18 °C                                                                                                                                                        | 0 °F / -18 °C                                                                                                                                                                                                                                                                                                                  |                                          | 0 °F / -18 °C                                                                                                                                                                                                                                                                                   | 0 °F / -18 °C                                                                                                                                                                                                                                                                  |                                         |
|                       | Out-time (Days @<br>77 °F / 25 °C) – FILM                           | 30 Days                                                                                                                   | 14 Days                                                                                                                                                              | 90 Days                                                                                                                                                                                                                                                                                                                        |                                          | 60 Days                                                                                                                                                                                                                                                                                         | 30 Days                                                                                                                                                                                                                                                                        |                                         |
|                       | Out-time (Days @<br>90 °F / 32 °C) – FILM                           | 15 Days                                                                                                                   | 10 Days                                                                                                                                                              | 45 Days                                                                                                                                                                                                                                                                                                                        |                                          | 30 Days                                                                                                                                                                                                                                                                                         | 30 Days                                                                                                                                                                                                                                                                        |                                         |
| Mechanical Properties | Bell Peel 77 °F (lb / in)<br>25 °C (N / 25 mm)                      | –                                                                                                                         | 87 lbs / in<br>387 N / 25 mm                                                                                                                                         | 20 lbs / in<br>89.6 N / 25 mm                                                                                                                                                                                                                                                                                                  |                                          | 75 lbs / in<br>334 N / 25 mm                                                                                                                                                                                                                                                                    | 20 lbs / in<br>89 N / 25 mm                                                                                                                                                                                                                                                    |                                         |
|                       | T Peel 77 °F (lb / in)<br>25 °C (N / 25 mm)                         | –                                                                                                                         | –                                                                                                                                                                    | –                                                                                                                                                                                                                                                                                                                              |                                          | –                                                                                                                                                                                                                                                                                               | –                                                                                                                                                                                                                                                                              |                                         |
|                       | TENSILE LAP SHEAR                                                   | -67 °F (psi) /<br>-55 °C (MPa)                                                                                            | 2,000 psi /<br>13.8 MPa                                                                                                                                              | 6,350 psi /<br>43.8 MPa                                                                                                                                                                                                                                                                                                        | 4,400 psi /<br>30.3 MPa                  |                                                                                                                                                                                                                                                                                                 | 7,000 psi /<br>48.3 MPa                                                                                                                                                                                                                                                        | 3,600 psi /<br>26.2 Mpa                 |
|                       |                                                                     | 77 °F (psi) /<br>25 °C (MPa)                                                                                              | 2,000 psi /<br>13.8 MPa                                                                                                                                              | 6,100 psi /<br>42.0 MPa                                                                                                                                                                                                                                                                                                        | 5,000 psi /<br>34.5 Mpa                  |                                                                                                                                                                                                                                                                                                 | 6,000 psi /<br>41.3 MPa                                                                                                                                                                                                                                                        | 4,500 psi /<br>31.0 MPa                 |
|                       |                                                                     | 180 °F (psi) /<br>82 °C (MPa)                                                                                             | –                                                                                                                                                                    | 3,900 psi /<br>26.9 MPa                                                                                                                                                                                                                                                                                                        | 4,500 psi /<br>31.0 MPa                  |                                                                                                                                                                                                                                                                                                 | 4,507 psi /<br>31.1 Mpa                                                                                                                                                                                                                                                        | –                                       |
|                       |                                                                     | Elevated Temperature<br>(psi / MPa)                                                                                       | 350 °F / 177 °C:<br>2,400 psi / 16.5 MPa                                                                                                                             | 250 °F / 121 °C:<br>2,100 psi / 14.5 MPa                                                                                                                                                                                                                                                                                       | 300 °F / 149 °C:<br>3,400 psi / 23.4 Mpa |                                                                                                                                                                                                                                                                                                 | 250 °F / 121 °C:<br>2,000 psi / 12.8 MPa                                                                                                                                                                                                                                       | 270 °F / 132 °C:<br>1,300 psi / 9.0 MPa |
|                       | Honeycomb Climbing Drum<br>Peel @ 77 °F (in-lb/in) /<br>25° (m-N/m) | –                                                                                                                         | 18 in.lb / in<br>80 N.m / m                                                                                                                                          | 18 in.lb / 3 in<br>82 m.N / m                                                                                                                                                                                                                                                                                                  |                                          | 78 lbs / in<br>116 m.N / m                                                                                                                                                                                                                                                                      | 27 in.lb / 3in<br>40 m.N / m                                                                                                                                                                                                                                                   |                                         |
|                       | Flatwise Tension<br>@ 77 °F / 25 °C (psi / MPa)                     | –                                                                                                                         | 925 psi /6.4 MPa                                                                                                                                                     | 1,200 psi / 8.3 MPa                                                                                                                                                                                                                                                                                                            |                                          | 1298 psi / 9.0 MPa                                                                                                                                                                                                                                                                              | 1,070 psi / 7.4 MPa                                                                                                                                                                                                                                                            |                                         |
| Bulk Properties       | Tg Dry (°F / °C)                                                    | 568 °F / 298 °C                                                                                                           | 240 °F / 115 °C                                                                                                                                                      | 302 °F / 150 °C                                                                                                                                                                                                                                                                                                                |                                          | 253 °F / 123 °C                                                                                                                                                                                                                                                                                 | 293 °F / 145 °C                                                                                                                                                                                                                                                                |                                         |
|                       | Tg Wet (°F / °C)                                                    | 410 °F / 210 °C                                                                                                           | 200 °F / 95 °C                                                                                                                                                       | 203 °F / 95 °C                                                                                                                                                                                                                                                                                                                 |                                          | 200 °F / 93 °C                                                                                                                                                                                                                                                                                  | 190 °F / 88 °C                                                                                                                                                                                                                                                                 |                                         |
|                       | Tensile Strength (dogbone)<br>@ 77 °F (psi) / 25 °C (MPa)           | –                                                                                                                         | –                                                                                                                                                                    | 11,000 psi / 76 MPa                                                                                                                                                                                                                                                                                                            |                                          | 6,839 psi / 47.3 MPa                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              |                                         |
|                       | Tensile Modulus<br>@ 77 °F (ksi) / 25 °C (MPa)                      | –                                                                                                                         | –                                                                                                                                                                    | 450 ksi / 3,100 MPa                                                                                                                                                                                                                                                                                                            |                                          | 277.3 ksi / 1,912 MPa                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                                                                              |                                         |
|                       | Elongation<br>@ 77 °F / 25 °C (% at break)                          | –                                                                                                                         | –                                                                                                                                                                    | 3.00 – 4.00 %                                                                                                                                                                                                                                                                                                                  |                                          | 16.00 %                                                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                                                                                              |                                         |
|                       | Compressive Strength<br>@ 77 °F (psi) / 25 °C (MPa)                 | –                                                                                                                         | –                                                                                                                                                                    | –                                                                                                                                                                                                                                                                                                                              |                                          | –                                                                                                                                                                                                                                                                                               | –                                                                                                                                                                                                                                                                              |                                         |
|                       | Compressive Modulus<br>@ 77 °F (ksi) / 25 °C (MPa)                  | –                                                                                                                         | –                                                                                                                                                                    | –                                                                                                                                                                                                                                                                                                                              |                                          | –                                                                                                                                                                                                                                                                                               | –                                                                                                                                                                                                                                                                              |                                         |
| Product               | New Product Name                                                    | LOCTITE<br>EA 9673<br>AERO                                                                                                | LOCTITE<br>EA 9690<br>AERO                                                                                                                                           | LOCTITE<br>EA 9695<br>AERO                                                                                                                                                                                                                                                                                                     |                                          | LOCTITE<br>EA 9696<br>AERO                                                                                                                                                                                                                                                                      | LOCTITE<br>EA 7000<br>AERO                                                                                                                                                                                                                                                     |                                         |
|                       | Known As                                                            | Hysol®<br>EA 9673™ (BMI)                                                                                                  | Hysol®<br>EA 9690™                                                                                                                                                   | Hysol®<br>EA 9695™                                                                                                                                                                                                                                                                                                             |                                          | Hysol®<br>EA 9696™                                                                                                                                                                                                                                                                              | Hysol®<br>PL 7000™ NEW!                                                                                                                                                                                                                                                        |                                         |
| Availability          | Packaging                                                           | Roll                                                                                                                      | Roll                                                                                                                                                                 | Roll                                                                                                                                                                                                                                                                                                                           |                                          | Roll                                                                                                                                                                                                                                                                                            | Roll                                                                                                                                                                                                                                                                           |                                         |
| Description           |                                                                     | LOCTITE<br>EA 9673<br>AERO<br>• Service to 550 °F / 288 °C<br>• No Volatiles During Cure<br>• Bismalimide based chemistry | LOCTITE<br>EA 9690<br>AERO<br>• Low Flow<br>• Exceptional Peel Strength<br>• Available with Knit or Non-Woven Mat<br>• Excellent Performance with Low Pressure Cures | LOCTITE<br>EA 9695<br>AERO<br>• X-ray Opaque<br>• Excellent Environmental Resistance<br>• Reticulatable<br>• Good Pre and Post Bond Moisture Resistance<br>• Low Flow<br>• Allows 250 °F / 121 °C or 350 °F / 177 °C Cure<br>• Co-Cure with Composites<br>• Long Out time Facilitates Shop Floor Usage and Repair Applications |                                          | LOCTITE<br>EA 9696<br>AERO<br>• Excellent Environmental Resistance<br>• High Toughness Maintaining Ser-vice Temperature<br>• Balanced Flow<br>• Allows from 225 °F to 265 °F / 107 °C to 129 °C Cure<br>• Long Out-time Facilitates Shop Floor Usage and Repair Applications<br>• Reticulatable | LOCTITE<br>EA 7000<br>AERO<br>• Dual temperature cure capabilities<br>• Epoxy film adhesive for composite bonding applications<br>• Excellent performance properties in composite bonding<br>• Excellent results on composite surfaces<br>• Excellent fracture toughness (G1c) |                                         |

## Clean and cost efficient surface preparation:

## With LOCTITE peel plies

## Peel ply: The ideal preparation method for treating surfaces evenly

There are two primary methods for adhesive bond preparation of the surface of a pre-cured carbon fiber composite: Surface abrasion, and the use of release ply fabric, i.e. peel ply. Of the two, peel ply is the most commonly recommended process because it creates a more uniform surface preparation than hand or machine abrasion.

## LOCTITE peel plies: The ideal method to save time and costs

Henkel's peel ply enables process efficiency by minimizing surface preparation. LOCTITE peel ply provides part longevity and reduces maintenance costs. It ensures a consistent bonding surface, with a high quality bond with tough state-of-the-art composites.

## Why choose LOCTITE peel plies?

- › Ease of removal
- › Minimal residual polyester fibers on substrate after removal
- › Thin residual resin layer
- › Controlled failure / release path
- › Optimized interfacial strength
- › Promotes cohesive failure modes within the bondline
- › Generate more durable bonding surface than dry fabric

## LOCTITE peel plies: Facts at a glance

## LOCTITE peel plies key features

- › Compatible with third generation composites
- › No sanding or solvent wiping required of bonding surface
- › Minimal force required to remove peel ply layer
- › Protective layer
- › Good shop life

### Key factors to consider when choosing the right LOCTITE peel ply

- › Polyester vs. nylon peel ply
- › Cure temperature
- › Compatibility with composite prepreg resin
- › Dry or wet peel ply

## Composite Surface Preparation

|                 |                                                                                                                                                                                                                                                                                                                                                                |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application     | Peel Ply                                                                                                                                                                                                                                                                                                                                                       | •                              | •                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Characteristics | 250 °F / 121 °C Service                                                                                                                                                                                                                                                                                                                                        | •                              |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                 | 300 °F / 149 °C Service                                                                                                                                                                                                                                                                                                                                        |                                | •                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                 | Cure Temperature<br>(°F / °C)                                                                                                                                                                                                                                                                                                                                  | 250 °F / 121 °C                | 350 °F / 177 °C                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                 | Cure Time                                                                                                                                                                                                                                                                                                                                                      | 90 – 120 Minutes               | 90 – 120 Minutes                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                 | Storage Temperature<br>(°F / °C)                                                                                                                                                                                                                                                                                                                               | 0 °F / -18 °C                  | 0 °F / -18 °C                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                 | Out-time<br>(Days @ 77 °F / 25 °C)<br>– FILM                                                                                                                                                                                                                                                                                                                   | 14 Days                        | 14 Days                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                 | Out-time<br>(Days @ 90 °F / 32 °C)<br>– FILM                                                                                                                                                                                                                                                                                                                   | 10 Days                        | 10 Days                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Bulk Properties | Tg Dry (°F / °C)                                                                                                                                                                                                                                                                                                                                               | 270 °F / 132 °C                | 228 °F / 109 °C                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                 | Tg Wet (°F / °C)                                                                                                                                                                                                                                                                                                                                               | 217 °F / 103 °C                | –                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Product         | New Product Name                                                                                                                                                                                                                                                                                                                                               | LOCTITE<br>EA 9896 WPP<br>AERO | LOCTITE<br>EA 9895 WPP<br>AERO                                                                                                                                                                                                                                                                                                                                                                                                          |
|                 | Known As                                                                                                                                                                                                                                                                                                                                                       | Hysol®<br>EA 9896 WPP™ NEW!    | Hysol®<br>EA 9895 WPP™                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Availability    | Packaging                                                                                                                                                                                                                                                                                                                                                      | Roll                           | Roll                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Description     | LOCTITE<br>EA 9896 WPP<br>AERO <ul style="list-style-type: none"><li>• Durable bond</li><li>• Minimal residual nylon fibers left on substrate after removal</li><li>• Minimal risk of interfacial failure in bonded structures</li><li>• No sanding or solvent wiping required for bonding</li><li>• Minimal force required to remove peel ply layer</li></ul> |                                | LOCTITE<br>EA 9895 WPP<br>AERO <ul style="list-style-type: none"><li>• Provides: More durable bond than dry peel ply fabrics</li><li>• Minimal residual polyester fibers left on substrate after removal</li><li>• Promotes cohesive failure mode</li><li>• Compatible with third generation composites</li><li>• No sanding or solvent wiping required for bonding</li><li>• Minimal force required to remove peel ply layer</li></ul> |

## Notes

### Boosting surface quality:

## LOCTITE surfacing films for lightning strike protection

## How to benefit from the right surfacing film solution

Surfacing films are designed to improve the surface quality of honeycomb stiffened composite parts. They also provide a barrier for dissimilar materials, decrease surface preparation time and provide protection of structural fibers. But this is not all: laminated films composed of a surfacing film and a conductive metal foil protect the composite structure from damage caused by lightning strikes.

## Protect your aircraft from lightning strike damage

What are the requirements for optimum lightning strike protection of aircraft composite parts? A maximum electrical conductivity is essential. A lightweight solution is important too. And process efficiency should be maximized – including easy repair after lightning strike.

## How to gain even more benefits: LOCTITE surfacing films & lightning strike protection

With our LOCTITE portfolio, you can be sure to get the technically most advanced solution. Economically, they offer up to 30 % weight savings compared to existing surfacing films – and they lower the composite part finishing costs. Technically, they provide durable, high quality paintable surfaces and a maximum of product & shop flexibility.

## Why choose LOCTITE surfacing films & lightning strike protection?

- › Minimize core crush
- › Maximum protection against lightning strikes
- › Reduce core mark-through
- › Protect the composites
- › Excellent retention of hardness after fluid soak
- › Increased UV and paint stripper resistance
- › Out-of-autoclave capable
- › No microcracking
- › High quality paintable surfaces
- › Resistance to high thermal fatigue situations

## LOCTITE surfacing films & lightning strike protections: Facts at a glance

**LOCTITE surfacing films key features:**

- › High surface quality: Low flow
- › Good paint adhesion without sanding
- › Available in lightning strike configurations
- › Reduce surface imperfections
- › Minimize pre-paint preparation

**LOCTITE lightning strike protection key features:**

- › Easier handling than stand-alone expanded foil during lay-up, sand and fill operations
- › Process labor reduction
- › Inventory reduction from two raw materials to one
- › Easy repair after lightning strike

## Surfacing Film & Lightning Strike

| Characteristics | 350 °F / 177 °C Service                | •                                  | •                               | •                               | •                                  | •                                  | •                                  |
|-----------------|----------------------------------------|------------------------------------|---------------------------------|---------------------------------|------------------------------------|------------------------------------|------------------------------------|
|                 | Cure Temperature (°F / °C)             | 250 °F / 121 °C or 350 °F / 177 °C | 251 °F / 121 °C 350 °F / 177 °C | 252 °F / 121 °C 350 °F / 177 °C | 252 °F / 121 °C or 350 °F / 177 °C | 250 °F / 121 °C or 350 °F / 177 °C | 251 °F / 121 °C or 350 °F / 177 °C |
|                 | Cure Time                              | 60 Minutes                         | 60 Minutes                      | 60 Minutes                      | 60 – 120 Minutes                   | 60 – 120 Minutes                   | 60 – 120 Minutes                   |
|                 | Storage Temperature (°F / °C)          | 0 °F -18 °C                        | 0 °F -18 °C                     | 0 °F -18 °C                     | 0 °F -18 °C                        | 0 °F -18 °C                        | 0 °F -18 °C                        |
|                 | Out-time (Days @ 77 °F / 25 °C) – FILM | 90 Days                            | 90 Days                         | 90 Days                         | 45 Days                            | 45 Days                            | 45 Days                            |
|                 | Out-time (Days @ 90 °F / 32 °C) – FILM | 21 Days                            | 21 Days                         | 21 Days                         | 10 Days                            | 10 Days                            | 10 Days                            |

|                       |                   |                                     |                       |                       |   |   |   |   |
|-----------------------|-------------------|-------------------------------------|-----------------------|-----------------------|---|---|---|---|
| Mechanical Properties | TENSILE LAP SHEAR | -67 °F (psi) /<br>-55 °C (MPa)      | -                     | -                     | - | - | - | - |
|                       |                   | 77 °F (psi) /<br>25 °C (MPa)        | 2,990 psi<br>20.6 MPa | 2,990 psi<br>20.6 MPa | - | - | - | - |
|                       |                   | 180 °F (psi) /<br>82 °C (MPa)       | -                     | -                     | - | - | - | - |
|                       |                   | Elevated Temperature<br>(psi / MPa) | -                     | -                     | - | - | - | - |

|                 |                  |                  |                  |                  |                  |                  |                  |
|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Bulk Properties | Tg Dry (°F / °C) | 273 °F<br>134 °C | 274 °F<br>134 °C | 275 °F<br>134 °C | 254 °F<br>122 °C | 252 °F<br>122 °C | 253 °F<br>122 °C |
|                 | Tg Wet (°F / °C) | 228 °F<br>109 °C | 229 °F<br>109 °C | 230 °F<br>109 °C | 223 °F<br>105 °C | 221 °F<br>105 °C | 222 °F<br>105 °C |

| Product | New Product Name | LOCTITE<br>EA 9837.1<br>AERO | LOCTITE<br>EA 9837.1 BLK<br>AERO | LOCTITE<br>EA 9837.1 LS<br>AERO | LOCTITE<br>EA 9845<br>AERO | LOCTITE<br>EA 9845 LC<br>AERO | LOCTITE<br>EA 9845 LA<br>AERO |
|---------|------------------|------------------------------|----------------------------------|---------------------------------|----------------------------|-------------------------------|-------------------------------|
|         | Known As         | SynSkin®<br>HC 9837.1™       | SynSkin®<br>HC 9837.1™ BLK       | SynSkin®<br>HC 9837.1™ LSC      | Hysol®<br>EA 9845 SF™      | Hysol®<br>EA 9845 LSC™        | Hysol®<br>EA 9845 LSA™        |

|              |           |      |             |             |      |   |   |
|--------------|-----------|------|-------------|-------------|------|---|---|
| Availability | Packaging | Roll | Roll, Sheet | Roll, Sheet | Roll | - | - |
|--------------|-----------|------|-------------|-------------|------|---|---|

| Description | LOCTITE<br>EA 9837.1<br>AERO                                                                                                                                                                                            | LOCTITE<br>EA 9837.1 BLK<br>AERO                                                                                                                                                                                         | LOCTITE<br>EA 9837.1 LS<br>AERO                                                                     | LOCTITE<br>EA 9845<br>AERO                                                                                                                                                                  | LOCTITE<br>EA 9845 LC<br>AERO                                                                                | LOCTITE<br>EA 9845 LA<br>AERO                                                                                  |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
|             | is an epoxy based film with good tack properties, comparable with lightning strike foils, minimizes core crush and porosity. It offers high quality paintable surface. Available in One-Side-Tacky (OST) Configuration. | is an epoxy based film with good tack properties, compatible with lightening strike foils, minimizes core crush and porosity. It offers high quality paintable surface. Available in One-Side-Tacky (OST) Configuration. | is an epoxy based composite film containing copper screen designed to lightening strike protection. | is an epoxy-based composite surfacing film designed to improve the surface quality of honeycomb stiffened composite parts. The product is manufactured with a non-woven fabric for support. | is an epoxy-based composite surfacing film containing copper screen designed to lightning strike protection. | is an epoxy-based composite surfacing film containing aluminum screen designed to lightning strike protection. |

## Notes

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Light weight, high stiffness and optimum load transfer:

## LOCTITE syntactic materials for structural sandwich panel, core filling, splicing and abrasion resistance

### Want to have optimum stiffness, load transfer and easier formability?

With LOCTITE structural syntactic materials, Henkel provides the right choice for structural and low density sandwich panels. Applications include low density panel stiffening, minimum gauge stiffened panels, and sandwich panel edge build-up. They offer maximum structural performance, high impact resistance, high panel strength – and, of course, an optimum stiffness to weight. The products are non-expanding films supplied in a range of thicknesses.

### LOCTITE core splice and expanding materials meet your needs

Our high performance core splices are used to obtain a uniform load transfer from one section of core to another before being bonded on the assembly line. They enable filling the gap up to the skin surface. This process also serves as a method of preventing moisture ingress in honeycomb-stiffened parts through the core splice joint.

As foaming films, LOCTITE materials expand during heat cure up to 2 – 3 times their original size. They offer excellent slump resistance and exothermic properties, being ideal for thick splices, deep core filling or co-cure conditions – and are easier to insert into core gaps, improving productivity.

### Materials for improved abrasion resistance

Henkel's abradable materials ensure that today's aircraft engines can operate at maximum efficiency. They provide a rub strip for jet engine compressor blades combining high erosion resistance with low abrasion at low density. Materials are available for OEM installation and for repair and maintenance to ensure the fleet is always operational.

### Why choose LOCTITE syntactics, core fill and abradable materials?

- › Improved mechanical strength, toughness and energy absorption
- › Uniform expansion
- › Enable load transfer
- › Enable thick and complex sandwich structures
- › No mark-off due to bonding or honeycomb
- › Attach and bond to core walls
- › Sag resistant
- › Qualified by major OEMs
- › Panel thickness can be contoured, local build-ups can be included
- › Abrasion & erosion resistance
- › Expanding, low density
- › User-friendly processing

## LOCTITE Syntactic, Core Fill and Abradable: Facts at a glance

### Syntactic Materials: Key factors to consider when choosing the right LOCTITE structural syntactic materials

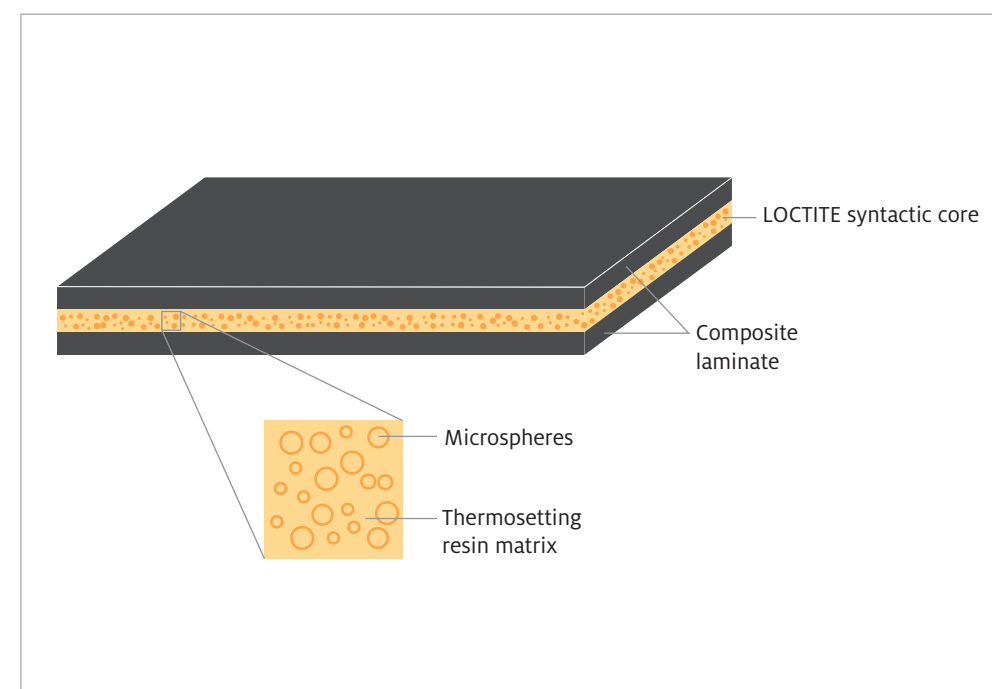
- › Service temperature
- › Compression strength
- › Application
- › Process temperature
- › Core thickness required
- › Expanding or non-expanding

### Expanding materials: Key factors to consider when choosing the right LOCTITE core fill and core splice materials

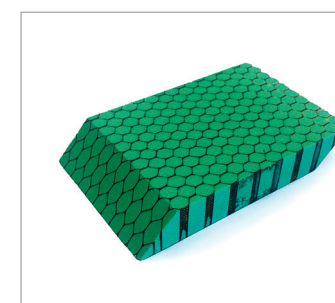
- › Cure Temperature
- › Cure Time
- › Service Temperature
- › Density
- › Mechanical properties
- › Process conditions

### Abradable materials: Key facts to consider when choosing the right LOCTITE abradable materials

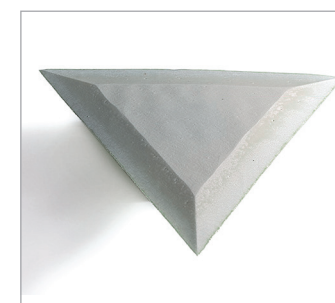
- › Abrasion resistance required
- › Service temperature
- › Toughness
- › Density
- › Process conditions
- › Repair



LOCTITE syntactic core sandwich construction



LOCTITE expanding syntactic film



LOCTITE syntactic core machined shape

Structural Syntactic Materials: Non Expanding

|                         |                                                                                                                                                                                        |                                                                                                                                                                                        |                                                                                                                                                                                                            |                         |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Application             | Syntactic Film Non-Expanding                                                                                                                                                           | •                                                                                                                                                                                      | •                                                                                                                                                                                                          | •                       |
|                         | Syntactic Film Expanding                                                                                                                                                               |                                                                                                                                                                                        |                                                                                                                                                                                                            |                         |
|                         | 180 °F / 82 °C Service                                                                                                                                                                 |                                                                                                                                                                                        |                                                                                                                                                                                                            |                         |
|                         | 250 °F / 121 °C Service                                                                                                                                                                | •                                                                                                                                                                                      |                                                                                                                                                                                                            |                         |
|                         | 300 °F / 149 °C Service                                                                                                                                                                |                                                                                                                                                                                        | •                                                                                                                                                                                                          | •                       |
|                         | 300 °F / 149 °C Service – High Strength                                                                                                                                                |                                                                                                                                                                                        |                                                                                                                                                                                                            | •                       |
| Product Characteristics | Continuous Service Temperature (F° / C°)                                                                                                                                               | Maximum 250 °F / 121 °C                                                                                                                                                                | Maximum 350 °F / 177 °C                                                                                                                                                                                    | Maximum 350 °F / 177 °C |
|                         | Block Compressive (dry) @ 73 °F (psi) / 23 °C (MPa)                                                                                                                                    | 9,000 psi / 62 MPa                                                                                                                                                                     | 8,800 psi / 61 MPa                                                                                                                                                                                         | 21,800 psi / 150 MPa    |
|                         | Tensile Strength @ 73 °F (psi) / 23 °C (MPa)                                                                                                                                           | 4,700 psi / 32 MPa                                                                                                                                                                     | 4,800 psi / 33 MPa                                                                                                                                                                                         | 5,000 psi / 34.5 MPa    |
|                         | Tensile Modulus @ 73 °F (psi) / 23 °C (MPa)                                                                                                                                            | 380 ksi / 2,606 MPa                                                                                                                                                                    | 400 ksi / 2,758 MPa                                                                                                                                                                                        | 580 ksi / 4,000 MPa     |
| Process & Handling      | Cure Temperature (°F / °C)                                                                                                                                                             | 250 °F / 121 °C                                                                                                                                                                        | 350 °F / 177 °C                                                                                                                                                                                            | 350 °F / 177 °C         |
|                         | Cure Time                                                                                                                                                                              | 60 Minutes                                                                                                                                                                             | 60 Minutes                                                                                                                                                                                                 | 120 Minutes             |
|                         | Storage Temperature (°F / °C)                                                                                                                                                          | 0 °F / -18 °C                                                                                                                                                                          | 0 °F / -18 °C                                                                                                                                                                                              | 0 °F / -18 °C           |
|                         | Storage Time                                                                                                                                                                           | > 12 Months                                                                                                                                                                            | > 12 Months                                                                                                                                                                                                | > 12 Months             |
|                         | Out-time (Days @ 77 °F / 25 °C) – FILM                                                                                                                                                 | 15 Days                                                                                                                                                                                | 15 Days                                                                                                                                                                                                    | 15 Days                 |
|                         | Out-time (Days @ 90 °F / 32 °C) – FILM                                                                                                                                                 | 10 Days                                                                                                                                                                                | 10 Days                                                                                                                                                                                                    | 10 Days                 |
| Bulk Properties         | Tensile Strength (dogbone) @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                 | 4,700 psi / 32 MPa                                                                                                                                                                     | 4,800 psi / 33 MPa                                                                                                                                                                                         | 5,000 psi / 34.5 MPa    |
|                         | Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)                                                                                                                                            | 380 ksi / 2,606 MPa                                                                                                                                                                    | 400 ksi / 2,758 MPa                                                                                                                                                                                        | 580 ksi / 4,000 MPa     |
|                         | Block Compressive (dry) @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                    | 9,000 psi / 62 MPa                                                                                                                                                                     | 8,800 psi / 61 MPa                                                                                                                                                                                         | 21,800 psi / 150 MPa    |
| Products                | New Product Name                                                                                                                                                                       | LOCTITE HC 9823.1 AERO                                                                                                                                                                 | LOCTITE HC 9872.1 AERO                                                                                                                                                                                     | LOCTITE HC 9875 AERO    |
|                         | Known As                                                                                                                                                                               | SynCore® 9823.1™                                                                                                                                                                       | SynCore® 9872.1™                                                                                                                                                                                           | SynCore® 9875™          |
| Availability            | Packaging                                                                                                                                                                              | Roll, Sheet                                                                                                                                                                            | Roll, Sheet                                                                                                                                                                                                | Roll                    |
| Description             | LOCTITE HC 9823.1 AERO<br>is a structural syntactic film. Excellent moisture resistance. Lightweight syntactic core material. Modified epoxy. Co-curable with 250 °F / 121 °C prepegs. | LOCTITE HC 9872.1 AERO<br>is a structural syntactic film. Excellent moisture resistance. Lightweight syntactic core material. Modified epoxy. Co-curable with 350 °F / 177 °C prepegs. | LOCTITE HC 9875 AERO<br>is a structural syntactic film. High crush strength. Lightweight syntactic core material. Designed to withstand high compressive loading. Co-curable with 350 °F / 177 °C prepegs. |                         |

Core Fill & Abradable

|                       |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                         |                                                                                                                                                                                        |                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Application           | Abradable Seal                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                         | •                                                                                                                                                                                      |                             |
|                       | Core Splice / Filler                                                                                                                                                                                                                                                                                    | •                                                                                                                                                                                                                                                                                                                                                         | •                                                                                                                                                                                                                                       |                                                                                                                                                                                        | •                           |
| Characteristics       | 250 °F / 121 °C Service                                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                                                                                                         | •                                                                                                                                                                                                                                       | •                                                                                                                                                                                      |                             |
|                       | 300 °F / 149 °C Service                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                         |                                                                                                                                                                                        | •                           |
|                       | 350 °F / 177 °C Service                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                         |                                                                                                                                                                                        |                             |
|                       | 550 °F / 288 °C Service                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                         |                                                                                                                                                                                        |                             |
|                       | Cure Temperature (°F / °C)                                                                                                                                                                                                                                                                              | 250 – 350 °F / 121 – 177 °C                                                                                                                                                                                                                                                                                                                               | 250 – 350 °F / 121 – 177 °C                                                                                                                                                                                                             | 250 °F / 121 °C                                                                                                                                                                        | 250 – 350 °F / 121 – 177 °C |
|                       | Cure Time                                                                                                                                                                                                                                                                                               | 60 Minutes                                                                                                                                                                                                                                                                                                                                                | 60 Minutes                                                                                                                                                                                                                              | 120 Minutes                                                                                                                                                                            | 60 Minutes                  |
|                       | Storage Temperature (°F / °C)                                                                                                                                                                                                                                                                           | 0 °F / -18 °C                                                                                                                                                                                                                                                                                                                                             | 0 °F / -18 °C                                                                                                                                                                                                                           | 0 °F / -18 °C                                                                                                                                                                          | 0 °F / -18 °C               |
|                       | Out-time (Days @ 77 °F / 25 °C) – FILM                                                                                                                                                                                                                                                                  | 15 Days                                                                                                                                                                                                                                                                                                                                                   | 15 Days                                                                                                                                                                                                                                 | 15 Days                                                                                                                                                                                | 10 Days                     |
|                       | Out-time (Days @ 90 °F / 32 °C) – FILM                                                                                                                                                                                                                                                                  | 10 Days                                                                                                                                                                                                                                                                                                                                                   | 10 Days                                                                                                                                                                                                                                 | 10 Days                                                                                                                                                                                | 5 Days                      |
| Mechanical Properties | Tube Shears @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                                                                                                         | 1,300 psi / 9.0 MPa                                                                                                                                                                                                                     | –                                                                                                                                                                                      | 940 psi / 6.5 MPa           |
|                       | Tube Shears @ 250 °F (psi) / 121 °C (MPa)                                                                                                                                                                                                                                                               | –                                                                                                                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                                                       | –                                                                                                                                                                                      | 1,063 psi / 7.3 Mpa         |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                                                                                        | 383 °F / 195 °C                                                                                                                                                                                                                                                                                                                                           | 380 °F / 193 °C                                                                                                                                                                                                                         | –                                                                                                                                                                                      | –                           |
|                       | Tensile Strength (dogbone) @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                  | –                                                                                                                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                                                       | 1,100 psi / 7.6 MPa                                                                                                                                                                    | –                           |
|                       | Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)                                                                                                                                                                                                                                                             | –                                                                                                                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                                                       | 62ksi / 430 MPa                                                                                                                                                                        | –                           |
|                       | Compressive Strength @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                        | 1,500 psi / 10.3 MPa                                                                                                                                                                                                                                                                                                                                      | 5,425 psi / 37.4 MPa                                                                                                                                                                                                                    | 1,440 psi / 10.0 MPa                                                                                                                                                                   | –                           |
|                       | Compressive Modulus @ 77 °F (ksi) / 25 °C (MPa)                                                                                                                                                                                                                                                         | 86 ksi / 585 MPa                                                                                                                                                                                                                                                                                                                                          | 198.2 ksi / 1,366 MPa                                                                                                                                                                                                                   | 85 ksi /585 MPa                                                                                                                                                                        | –                           |
|                       | Flexural Strength @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                                                       | 1,600 psi / 11.0 MPa                                                                                                                                                                   | –                           |
|                       | Block Compressive (dry) @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                     | 500 @ 12 pcf density 3.45 @ 0.19 g / cc                                                                                                                                                                                                                                                                                                                   | 19 pcf: 1,000 psi / 6.9 MPa 26 pcf: 2,500 psi / 17.2 MPa 35 pcf: 6,500 psi / 44.8 Mpa                                                                                                                                                   | –                                                                                                                                                                                      | –                           |
|                       |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                         |                                                                                                                                                                                        |                             |
| Product               | New Product Name                                                                                                                                                                                                                                                                                        | LOCTITE EF 9899 AERO                                                                                                                                                                                                                                                                                                                                      | LOCTITE EF 9899CF AERO                                                                                                                                                                                                                  | LOCTITE EF 9890 AERO                                                                                                                                                                   | LOCTITE EF 557 AERO         |
|                       | Known As                                                                                                                                                                                                                                                                                                | SynSpand® 9899™                                                                                                                                                                                                                                                                                                                                           | SynSpand® 9899CF™**                                                                                                                                                                                                                     | SynSpand® EA 9890™ Abradable Seal                                                                                                                                                      | Hysol® MA 557™              |
| Availability          | Packaging                                                                                                                                                                                                                                                                                               | Roll, Sheet                                                                                                                                                                                                                                                                                                                                               | Roll, Sheet                                                                                                                                                                                                                             | Roll                                                                                                                                                                                   | Roll, Sheet                 |
| Description           | LOCTITE EF 9899 AERO<br>is a 250 °F / 121 °C or 350 °F / 177 °C curing expanding syntactic film. It expands using a unique closed cell process, providing for a completely homogenous cell structure. Its applications include honeycomb core stabilization, edge close out, RTM core, and many others. | LOCTITE EF 9899CF AERO<br>is a medium density low exotherm expanding syntactic film suitable for core filling applications. Its typical cured density range is 18 – 35 pcf (0.29 – 0.56 g/cc). The low exotherm chemistry makes this product ideal for deep core fill. High compressive strength provides the potential for some structural applications. | LOCTITE EF 9890 AERO<br>is an expanding modified epoxy film that cures at 250 °F / 121 °C. Commonly used for abradable seals, which require high abrasion and corrosion resistance. Additional features include areal weight and width. | LOCTITE EF 557 AERO<br>is a modified epoxy foaming adhesive that may be cured at 250 °F / 121 °C or 350 °F / 177 °C. It is designed to seal, splice, or reinforce honeycomb materials. |                             |

## Core Fill & Abradable

## Notes

| Application           | Abradable Seal                                                                                                                                                                                                                                     | •                                                                                                                                                                                                                                                                | •                                                                                                                                                                                                                                                               |                                                                                                                                                                                                       |                                    |                                                                                                                                                                                                                  | •                                                                                                                                                                  | •                                                                                                                                                                                                                                                  | •                                     |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
|                       | Core Splice / Filler                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                     | •                                  |                                                                                                                                                                                                                  |                                                                                                                                                                    |                                                                                                                                                                                                                                                    |                                       |
| Characteristics       | 250 °F / 121 °C Service                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                       |                                    |                                                                                                                                                                                                                  |                                                                                                                                                                    |                                                                                                                                                                                                                                                    |                                       |
|                       | 300 °F / 149 °C Service                                                                                                                                                                                                                            | •                                                                                                                                                                                                                                                                | •                                                                                                                                                                                                                                                               |                                                                                                                                                                                                       |                                    |                                                                                                                                                                                                                  |                                                                                                                                                                    |                                                                                                                                                                                                                                                    |                                       |
|                       | 350 °F / 177 °C Service                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                 | •                                                                                                                                                                                                     | •                                  |                                                                                                                                                                                                                  | •                                                                                                                                                                  | •                                                                                                                                                                                                                                                  |                                       |
|                       | 550 °F / 288 °C Service                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                       |                                    |                                                                                                                                                                                                                  |                                                                                                                                                                    |                                                                                                                                                                                                                                                    | •                                     |
|                       | Cure Temperature (°F / °C)                                                                                                                                                                                                                         | 300 °F / 149 °C                                                                                                                                                                                                                                                  | 300 °F / 149 °C                                                                                                                                                                                                                                                 | 250 °F / 121 °C<br>350 °F / 177 °C                                                                                                                                                                    | 250 °F / 121 °C<br>350 °F / 177 °C |                                                                                                                                                                                                                  | 250 °F / 121 °C<br>350 °F / 177 °C                                                                                                                                 | 250 °F / 121 °C<br>350 °F / 177 °C                                                                                                                                                                                                                 | 350 °F / 177 °C +<br>475 °F / 121 °C" |
|                       | Cure Time                                                                                                                                                                                                                                          | 90 Minutes                                                                                                                                                                                                                                                       | 90 Minutes                                                                                                                                                                                                                                                      | 90 Minutes / 60 Minutes                                                                                                                                                                               | 90 Minutes / 60 Minutes            |                                                                                                                                                                                                                  | 60 Minutes / 60 Minutes                                                                                                                                            | 60 Minutes                                                                                                                                                                                                                                         | 60 Minutes / 120 Minutes              |
|                       | Storage Temperature (°F / °C)                                                                                                                                                                                                                      | 0 °F / -18 °C                                                                                                                                                                                                                                                    | 0 °F / -18 °C                                                                                                                                                                                                                                                   | 0 °F / -18 °C                                                                                                                                                                                         | 0 °F / -18 °C                      |                                                                                                                                                                                                                  | 0 °F / -18 °C                                                                                                                                                      | 0 °F / -18 °C                                                                                                                                                                                                                                      | 0 °F / -18 °C                         |
|                       | Out-time (Days @ 77 °F / 25 °C) – FILM                                                                                                                                                                                                             | 15 Days                                                                                                                                                                                                                                                          | 15 Days                                                                                                                                                                                                                                                         | 10 Days                                                                                                                                                                                               | 30 Days                            |                                                                                                                                                                                                                  | 30 Days                                                                                                                                                            | 20 Days                                                                                                                                                                                                                                            | 30 Days                               |
|                       | Out-time (Days @ 90 °F / 32 °C) – FILM                                                                                                                                                                                                             | 10 Days                                                                                                                                                                                                                                                          | 10 Days                                                                                                                                                                                                                                                         | 10 Days                                                                                                                                                                                               | 10 Days                            |                                                                                                                                                                                                                  | 10 Days                                                                                                                                                            | 10 Days                                                                                                                                                                                                                                            | 10 Days                               |
| Mechanical Properties | Tube Shears @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                               | 850 psi / 5.8 MPa                                                                                                                                                                                     | 1,682 psi / 11.6 MPa               |                                                                                                                                                                                                                  | 1,190 psi / 8.2 MPa                                                                                                                                                | 1,150 psi / 8.0 MPa                                                                                                                                                                                                                                | 1,000 psi / 6.9 MPa                   |
|                       | Tube Shears @ 250 °F(psi) / 121 °C (MPa)                                                                                                                                                                                                           | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                               | 1,000 psi / 6.9 MPa                                                                                                                                                                                   | 1,170 psi / 8.1 Mpa                |                                                                                                                                                                                                                  | 940 psi / 6.5 MPa                                                                                                                                                  | 1,150 psi / 8.0 MPa                                                                                                                                                                                                                                | 1,000 psi / 6.9 MPa                   |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                                   | –                                                                                                                                                                                                                                                                | 200 °F / 93 °C                                                                                                                                                                                                                                                  | –                                                                                                                                                                                                     | 266 °F / 130 °C                    |                                                                                                                                                                                                                  | –                                                                                                                                                                  | 300 °F / 149 °C                                                                                                                                                                                                                                    | 550 °F / 288 °C                       |
|                       | Tensile Strength (dogbone) @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                             | –                                                                                                                                                                                                                                                                | 2,400 psi / 16.5 MPa                                                                                                                                                                                                                                            | –                                                                                                                                                                                                     | –                                  |                                                                                                                                                                                                                  | –                                                                                                                                                                  | –                                                                                                                                                                                                                                                  | –                                     |
|                       | Tensile Modulus @ 77 °F (ksi) / 25 °C (MPa)                                                                                                                                                                                                        | 370 ksi / 2,551 MPa                                                                                                                                                                                                                                              | 180 ksi / 1,241 MPa                                                                                                                                                                                                                                             | –                                                                                                                                                                                                     | –                                  |                                                                                                                                                                                                                  | –                                                                                                                                                                  | –                                                                                                                                                                                                                                                  | –                                     |
|                       | Compressive Strength @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                   | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                               | –                                                                                                                                                                                                     | –                                  |                                                                                                                                                                                                                  | –                                                                                                                                                                  | –                                                                                                                                                                                                                                                  | –                                     |
|                       | Compressive Modulus @ 77 °F (ksi) / 25 °C (MPa)                                                                                                                                                                                                    | 250 ksi / 1,724 MPa                                                                                                                                                                                                                                              | 144 ksi / 993 MPa                                                                                                                                                                                                                                               | –                                                                                                                                                                                                     | –                                  |                                                                                                                                                                                                                  | –                                                                                                                                                                  | –                                                                                                                                                                                                                                                  | –                                     |
|                       | Flexural Strength @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                      | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                               | –                                                                                                                                                                                                     | –                                  |                                                                                                                                                                                                                  | –                                                                                                                                                                  | –                                                                                                                                                                                                                                                  | 827 psi / 5.7 MPa                     |
|                       | Block Compressive (dry) @ 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                | 4615 psi / 31.8 MPa                                                                                                                                                                                                                                              | 2,300 psi / 15.8 MPa                                                                                                                                                                                                                                            | –                                                                                                                                                                                                     | –                                  |                                                                                                                                                                                                                  | –                                                                                                                                                                  | –                                                                                                                                                                                                                                                  | –                                     |
| Product               | New Product Name                                                                                                                                                                                                                                   | LOCTITE EF 9835 AERO                                                                                                                                                                                                                                             | LOCTITE EF 9840 AERO                                                                                                                                                                                                                                            | LOCTITE EF 562SFR AERO                                                                                                                                                                                | LOCTITE EA 460 AERO                |                                                                                                                                                                                                                  | LOCTITE EF 560 AERO                                                                                                                                                | LOCTITE EF 562 AERO                                                                                                                                                                                                                                | LOCTITE EF 9833.1 AERO                |
|                       | Known As                                                                                                                                                                                                                                           | SynSpand® EA 9835™ Abradable Seal                                                                                                                                                                                                                                | SynSpand® EA 9840™ Abradable Seal                                                                                                                                                                                                                               | Hysol® MA 562SFR™                                                                                                                                                                                     | Hysol® PL 460™                     |                                                                                                                                                                                                                  | Hysol® MA 560™                                                                                                                                                     | Hysol® MA 562™                                                                                                                                                                                                                                     | Hysol® EA 9833.1™ (Bmi)               |
| Availability          | Packaging                                                                                                                                                                                                                                          | Roll, Sheet                                                                                                                                                                                                                                                      | Roll                                                                                                                                                                                                                                                            | Sheet                                                                                                                                                                                                 | Dual Cartridge                     |                                                                                                                                                                                                                  | Sheet                                                                                                                                                              | Roll, Sheet                                                                                                                                                                                                                                        | Sheet                                 |
| Description           | LOCTITE EF 9835 AERO is an expanding modified epoxy film that is supplied as a continuous film of controlled areal weight and width. It may be cured at 300 °F / 149 °C. Commonly used for abradable seals, which require high erosion resistance. | LOCTITE EF 9840 AERO is an expanding modified epoxy film that is supplied as a continuous film of controlled areal weight and width. It may be cured at 300 °F /149 °C. Commonly used for abradable seals, which require high abrasion and corrosion resistance. | LOCTITE EF 562SFR AERO is an expanding foam adhesive, which is supplied as a film for core splicing and closeout of honeycomb panels. It offers the advantages of a fire retardant structural adhesive, which may be cured at 250 °F /121 °C or 350 °F /177 °C. | LOCTITE EA 460 AERO is a foaming epoxy adhesive in paste form for easy extrusion through packaged cartridges. The adhesive expands and cures at temperatures from 250 °F / 121 °C to 350 °F / 177 °C. |                                    | LOCTITE EF 560 AERO is a low density, expanding, epoxy film adhesive. It may be cured at 250 °F / 121 °C or 350 °F / 177 °C and is designed for service at temperatures from -67 °F / -55 °C to 350 °F / 177 °C. | LOCTITE EF 562 AERO is a general purpose 250 °F / 121 °C or 350 °F / 177 °C film. It is designed for service temperatures from -67 °F / -55 °C to 350 °F / 177 °C. | LOCTITE EF 9833.1 AERO is a modified bismaleimide foaming core splice adhesive. It is designed for use up to 450 °F / 230 °C. This product handles like a epoxy and may be cured at 350 °F / 177 °C followed by an elevated temperature post cure. |                                       |

A vertical image of a sunset over a body of water. The sky transitions from a pale yellow at the horizon to a soft blue at the top. The water below is a deep blue with gentle, white-capped waves. Overlaid on the image are 20 horizontal white lines, evenly spaced, providing a template for writing.

High-end protection for sensitive surfaces:  
**LOCTITE primers**

Once a surface has been etched, it needs protection

One of the main reasons for priming is to prevent corrosion of the part. The etched metal surface is “active” and ready to be bonded. The oxide layer from the cleaning and etching process is sensitive to decay. Priming protects and preserves the oxide, and allows you to store metal for later use.

LOCTITE primers care and protect perfectly

Created for a broad application range, LOCTITE primers are designed to promote adhesion, provide corrosion protection and improve bond joint long term durability. And of course, they are available in ozone-safe (non-CFC), solvent-based and solvent-free formulations.

Why choose LOCTITE primers?

- › Enhance adhesion
- › Eliminate cobwebbing
- › Excellent resistance to chemicals
- › Corrosion protection

LOCTITE primers:  
**Facts at a glance**

LOCTITE primers key features

- › Spray or brush applications
- › Improves production rates
- › Excellent storage and out time stability
- › Primer reactivation not required for second-stage bonding

Key factors to consider when choosing the right  
LOCTITE primer

- › Temperature resistance
- › Adhesion to different substrates
- › Chemical resistance
- › Product safety of reactive hotmelts

Primers

| Application           | Corrosion Protection / Enhanced Bondability                                                                                                                                                                                                                                                     | Enhanced Bondability                             | Enhanced Bondability                                                                                                                               | Enhanced Bondability / Corrosion Protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics       | 180 °F / 82 °C Service                                                                                                                                                                                                                                                                          | •                                                |                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                       | 350 °F / 177 °C Service                                                                                                                                                                                                                                                                         |                                                  | •                                                                                                                                                  | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                       | Form                                                                                                                                                                                                                                                                                            | 1 Part                                           | 1 Part                                                                                                                                             | 1 Part                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Mechanical Properties | Bell Peel 77 °F (lb / in) / 25 °C (N / 25 mm)                                                                                                                                                                                                                                                   | –                                                | –                                                                                                                                                  | 0.12 mils: 13 lb / in / 58 N / 25 mm<br>0.24 mils: 15 lb / in / 65 N / 25 mm<br>0.39 mils: 14 lb / in / 62 N / 25 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                       | TENSILE LAP SHEAR<br>-67 °F (psi) / -55 °C (MPa)                                                                                                                                                                                                                                                | –                                                | 3,165 psi / 22 MPa                                                                                                                                 | 3,900 psi / 27 MPa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                       | 77 °F (psi) / 25 °C (MPa)                                                                                                                                                                                                                                                                       | 1,000 psi / 6.9 MPa                              | 4,200 psi / 29 MPa                                                                                                                                 | 4,800 psi / 33 MPa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                       | Elevated Temperature (psi / MPa)                                                                                                                                                                                                                                                                | –                                                | 1500psi / 10 MPa @ 250 °F / 121°C                                                                                                                  | 2,800 psi / 19 MPa @ 380 °F / 177 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                       | Honeycomb Climbing Drum Peel @ 77 °F (in-lb / in) / 25 °(m-N / m)                                                                                                                                                                                                                               | –                                                | 80 in-lb / in / 17.6 m-N / m                                                                                                                       | 12 in-lb / in / 50 m-N / m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                       | Flatwise Tension @ 77 °F / 25 °C (psi / MPa)                                                                                                                                                                                                                                                    | –                                                | –                                                                                                                                                  | 1000 psi / 7 MPa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                       | PRIMER COVERAGE<br>Square Foot / Gal @ 0.3 mil dry film thickness / Square Meter / Liter @ 8µm dry film thickness                                                                                                                                                                               | 1,600 SF / Gal / Mil / 39 m² / liter / 0.0254 mm | 600 SF / Gal / Mil / 14.7 m² / liter / 0.0254 mm                                                                                                   | 1,200 SF / Gal / Mil / 29.3 m² / liter / 0.0254 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Handling              | Cure Temperature (°F / °C)                                                                                                                                                                                                                                                                      | 77 °F / 23 °C                                    | 315 °F / 157 °C                                                                                                                                    | 350 °F / 177 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                       | Cure Time                                                                                                                                                                                                                                                                                       | –                                                | 90 Minutes                                                                                                                                         | 45 – 60 Minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                       | Storage Temperature (°F / °C)                                                                                                                                                                                                                                                                   | 77 °F / 25 °C                                    | 40 °F / 5 °C                                                                                                                                       | 40 °F / 5 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                       | Out-time (Days @ 77 °F / 25 °C) – FILM                                                                                                                                                                                                                                                          | 365 Days                                         | 90 Days                                                                                                                                            | 30 Days                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                       | Out-time (Days @ 90 °F / 32 °C) – FILM                                                                                                                                                                                                                                                          | 366 Days                                         | 30 Days                                                                                                                                            | 20 Days                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Product               | New Product Name                                                                                                                                                                                                                                                                                | LOCTITE EA 9203 AERO                             | LOCTITE EA 2000 AERO                                                                                                                               | LOCTITE EA 9258.1 AERO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                       | Known As                                                                                                                                                                                                                                                                                        | Hysol® EA 9203™                                  | Hysol® AL 2000™                                                                                                                                    | Hysol® EA 9258.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Availability          | Packaging                                                                                                                                                                                                                                                                                       | Gallon                                           | Gallon                                                                                                                                             | Gallon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Description           | LOCTITE EA 9203 AERO is an adhesive bonding primer which enhances adhesion on poorly prepared surfaces. Since it is a non-curing primer, it requires only a room temperature drying to be ready for bonding. It is especially well-suited for use with room temperature curing paste adhesives. |                                                  | LOCTITE EA 2000 AERO is a heat curing nitrile / phenolic water based primer. When cured, it furnishes excellent resistance to chemicals and water. | LOCTITE EA 9258.1 AERO is a water-borne chromated adhesive bonding primer for 350 °F / 177 °C service. It is designed to offer at least twice the improvement in peel strength toughness over current 350 °F / 177 °C service film adhesives. It is applied with current aerospace primer spray equipment, and provides low VOCs of 142 g/liter. It may be cured 45 – 60 minutes 350 °F / 177 °C) for optimum performance. The data contained herin were obtained with the companion film adhesive LOCTITE EA 9658 0.10 NWG AERO and LOCTITE EA 9658 AERO 0.060 unsupported. |



## Superior bonding performance: **LOCTITE** paste adhesives

### **Paste adhesives: Keeping it all together**

Paste adhesives are structural adhesives used to bond aluminum, stainless steel, titanium and composites either in rib-stiffened designs or in honeycomb designs.

### **Outperforming portfolio: LOCTITE paste adhesives**

As a leader in toughened paste and film adhesives, Henkel's aerospace group offers a complete line of pre-measured packages for paste adhesives ranging from a pudding cup to a two-part cartridge kit with static mixers.

In other words, Henkel provides exactly the paste adhesive solutions you need: one- and two-part epoxy paste adhesive systems for potting, bonding, fairing and repair.

### **Why choose for LOCTITE paste adhesives?**

- › Improve microcrack resistance
- › Reduce costs
- › Bond numerous substrates
- › Reduce weight in structural assemblies
- › Excellent thin substrates bonding
- › Provide design flexibility

## LOCTITE paste adhesives: **Facts at a glance**

### **LOCTITE paste adhesives key features:**

- › Allow use of two different materials
- › Distribute stresses in joints
- › Flexible to cure temperature
- › Absorb vibration
- › Oil and fuel resistant
- › Co-bond and co-cure

### **Key factors to consider when choosing the right LOCTITE paste adhesive**

- › Size and shape of part to be bonded
- › Production rates and quantities
- › Process related requirements

If you need a metal bond or repair solution with paste adhesives  
**LOCTITE is for you**

**Metal and Honeycomb bonding and repair solutions require maximum flexibility**

When it comes to bonding or repair of metal parts and structures of an aircraft, you will surely be looking for a solution that has high strength, chemical resistance and resists creep under sustained loads. In addition, you need a two component system with a room temperature cure. Too many requirements? Not for us.

**We combine it with efficiency: LOCTITE metal bond and repair**

Henkel offers a high-performance structural adhesive portfolio in ready-to-use packaging configurations for aerospace OEM and MRO customers. LOCTITE products allow you to bond or make repairs to metallic substrates on the production line while improving your employees’ productivity and safety. The down time is minimized, waste and stress on components are reduced. Finally, the efficiency is more than convincing thanks to a less time consuming, less expensive and faster through-put.

**Why choose LOCTITE structural metal bond paste?**

- › Qualified by major OEM's

› Easy to apply

› Ready-to-use packaging solutions

› Superior mechanical strength

› Create durable repairs
- › Excellent resistance to aggressive chemicals to increase part life

› One or two component systems

› Room temperature and elevated cure temperatures options

LOCTITE metal bond and repair paste adhesives:  
**Facts at a glance**

**LOCTITE structural metal bond paste solutions key features**

- › Industry standard for metal bond applications

› Out-of-Autoclave solutions
- › Easy application

› Chemical resistance

**Key factors to consider when choosing the right LOCTITE structural repair product**

- › Metal bond or composite to repair

› Service temperature

› Consistency and viscosity
- › High compression loads resistance

› High temperature resistance

› Flexibility or toughness

**Metal, Honeycomb Bonding & Repair**

|                       |                                                                                                                              |                                      |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics       | 180°F / 82°C Service                                                                                                         | •                                    | •                                                                                                                                                                                                                                          | •                                                                                                                                                                                                                                                                                                                     |
|                       | 300°F / 149°C Service                                                                                                        |                                      |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
|                       | 350°F / 177°C Service                                                                                                        |                                      |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
|                       | 450°F / 232°C Service                                                                                                        |                                      |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
|                       | Improved Hot / Wet Properties                                                                                                |                                      |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
|                       | Toughened                                                                                                                    | •                                    | •                                                                                                                                                                                                                                          | •                                                                                                                                                                                                                                                                                                                     |
|                       | Consistency                                                                                                                  | Moderate Viscosity                   | Thixotropic                                                                                                                                                                                                                                | Low Viscosity                                                                                                                                                                                                                                                                                                         |
|                       | Form                                                                                                                         | 2 Part                               | 2 Part                                                                                                                                                                                                                                     | 2 Part                                                                                                                                                                                                                                                                                                                |
| Mechanical Properties | Peel Strength                                                                                                                | High                                 | Low                                                                                                                                                                                                                                        | Low                                                                                                                                                                                                                                                                                                                   |
|                       | Bell Peel 77°F (lb / in) 25°C (N / 25 mm)                                                                                    | 35 lbs / in 150 N / 25 mm            | 35 lbs / in 150 N / 25 mm                                                                                                                                                                                                                  | 6 lbs / in 25 N / 25 mm                                                                                                                                                                                                                                                                                               |
|                       | TENSILE LAP SHEAR                                                                                                            | -67°F (psi) / -55°C (Mpa)'           | 4,900 psi / 33.8 MPa                                                                                                                                                                                                                       | 3,000 psi / 20.7 MPa                                                                                                                                                                                                                                                                                                  |
|                       |                                                                                                                              | 77°F (psi) / 25°C (Mpa)              | 5,000 psi / 34.5 MPa                                                                                                                                                                                                                       | 4,000 psi / 27.6 MPa                                                                                                                                                                                                                                                                                                  |
|                       |                                                                                                                              | 180°F (psi) / 82°C (Mpa)             | 2,300 psi / 15.9 MPa                                                                                                                                                                                                                       | 1,200 psi / 8.3 MPa                                                                                                                                                                                                                                                                                                   |
|                       |                                                                                                                              | Elevated Temperature (psi / MPa)     | –                                                                                                                                                                                                                                          | 500 psi / 3.4 MPa                                                                                                                                                                                                                                                                                                     |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                             | 180 °F / 82 °C                       | 230 °F / 110 °C                                                                                                                                                                                                                            | 207 °F / 97 °C                                                                                                                                                                                                                                                                                                        |
|                       | Tg Wet (°F / °C)                                                                                                             | –                                    | 190 °F / 88 °C                                                                                                                                                                                                                             | 157 °F / 69 °C                                                                                                                                                                                                                                                                                                        |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)                                                                                   | 5,000 psi / 34.5 MPa                 | 7,100 psi / 49.0 MPa                                                                                                                                                                                                                       | 3,500 psi / 24.1 MPa                                                                                                                                                                                                                                                                                                  |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                    | 330 ksi / 2,274 MPa                  | 42 ksi / 2.90 GPa                                                                                                                                                                                                                          | 375 ksi / 2.58 Gpa                                                                                                                                                                                                                                                                                                    |
|                       | Elongation @ 77°F / 25°C (% at break)                                                                                        | 9,00 %                               | 6,00 %                                                                                                                                                                                                                                     | 9,00 %                                                                                                                                                                                                                                                                                                                |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa)                                                                               | 8,000 psi / 55.1 MPa                 | 9,280 psi / 64.00 MPa                                                                                                                                                                                                                      | 8,800 psi / 60.6 MPa                                                                                                                                                                                                                                                                                                  |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                | 265 ksi / 1,826 MPa                  | 284 ksi / 1,960 MPa                                                                                                                                                                                                                        | 375 ksi / 2.58 GPa                                                                                                                                                                                                                                                                                                    |
| Handling              | Mix RatioWeight (PartA / Part B)                                                                                             | 100 : 19                             | 100 : 50                                                                                                                                                                                                                                   | 100 : 45                                                                                                                                                                                                                                                                                                              |
|                       | CureTemperature (°F / °C)                                                                                                    | > 77 – 200°F / > 25 – 93 °C          | 77 – 200 °F / 25 – 93 °C                                                                                                                                                                                                                   | > 77 – 200 °F / > 25 – 93 °C                                                                                                                                                                                                                                                                                          |
|                       | CureTime                                                                                                                     | 5 – 7 Days / 1 Hour                  | 5 – 7 Days / 1 Hour                                                                                                                                                                                                                        | 5 – 7 Days / 1 Hour                                                                                                                                                                                                                                                                                                   |
|                       | StorageTemperature (°F / °C)                                                                                                 | 77 °F / 25 °C                        | 40 °F / 4 °C                                                                                                                                                                                                                               | 40 °F / 4 °C                                                                                                                                                                                                                                                                                                          |
|                       | Pot Life (minutes / lb) / (minutes / kg)                                                                                     | 25 Minutes / 200 Gram Mass           | 40 Minutes / 450 Gram Mass                                                                                                                                                                                                                 | 30 Minutes / 450 Gram Mass                                                                                                                                                                                                                                                                                            |
| Product               | New Product Name                                                                                                             | LOCTITE EA 9320NA AERO               | LOCTITE EA 9321 AERO                                                                                                                                                                                                                       | LOCTITE EA 9323 AERO                                                                                                                                                                                                                                                                                                  |
|                       | Known As                                                                                                                     | Hysol® EA 9320NA™                    | Hysol® EA 9321™                                                                                                                                                                                                                            | Hysol® EA 9323™                                                                                                                                                                                                                                                                                                       |
| Availability          | Packaging                                                                                                                    | Quart Kit, Gallon Kit, Injection Kit | Clip Pack, Dual Cartridge, Quart Kit                                                                                                                                                                                                       | Barrier Kit, Quart Kit                                                                                                                                                                                                                                                                                                |
| Description           | LOCTITE EA 9320NA AERO is a two-component paste adhesive with good peel strength as well as elevated temperature resistance. |                                      | LOCTITE EA 9321 AERO is a two-component thixotropic paste adhesive, which exhibits toughness and retains strength at elevated temperatures. This product cures at room temperature and yields durable bonds over a wide temperature range. | LOCTITE EA 9323 AERO is a two-component paste adhesive, which is low in viscosity, possesses some toughness and maintains high temperature strength. Its room temperature cure capability makes it ideal for repair of metal and composite structure, including laminating and injection. It has no metallic fillers. |

Metal, Honeycomb Bonding & Repair

|                       |                                                                                                                                                                                                                                                           |                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                         |                                                                                      |                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                                                                                                                                 |                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Characteristics       | 180°F / 82°C Service                                                                                                                                                                                                                                      |                                   | •                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                                                       | •                                                                                    |                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                                                                  | •                                                                                                                                                                                                                                    | •                                                                                                                               | •                         |
|                       | 300°F / 149°C Service                                                                                                                                                                                                                                     |                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                         |                                                                                      |                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                                                                                                                                 |                           |
|                       | 350°F / 177°C Service                                                                                                                                                                                                                                     |                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                         |                                                                                      |                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                                                                                                                                 |                           |
|                       | 450°F / 232°C Service                                                                                                                                                                                                                                     |                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                         |                                                                                      |                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                                                                                                                                 |                           |
|                       | Improved Hot / Wet Properties                                                                                                                                                                                                                             |                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                         | •                                                                                    |                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                                                                  | •                                                                                                                                                                                                                                    | •                                                                                                                               |                           |
|                       | Toughened                                                                                                                                                                                                                                                 |                                   | •                                                                                                                                                                                                 | •                                                                                                                                                                                                                                                                                                       | •                                                                                    |                                                                                                                                                                                                                                                                                                                           | •                                                                                                                                                                                                                                  | •                                                                                                                                                                                                                                    | •                                                                                                                               | •                         |
|                       | Consistency                                                                                                                                                                                                                                               |                                   | Moderate Viscosity                                                                                                                                                                                | Thixotropic                                                                                                                                                                                                                                                                                             | Thixotropic                                                                          |                                                                                                                                                                                                                                                                                                                           | Thixotropic                                                                                                                                                                                                                        | Thixotropic                                                                                                                                                                                                                          | Thixotropic                                                                                                                     | Moderate Viscosity        |
|                       | Form                                                                                                                                                                                                                                                      |                                   | 2 Part                                                                                                                                                                                            | 2 Part                                                                                                                                                                                                                                                                                                  | 2 Part                                                                               |                                                                                                                                                                                                                                                                                                                           | 2 Part                                                                                                                                                                                                                             | 2 Part                                                                                                                                                                                                                               | 2 Part                                                                                                                          | 2 Part                    |
|                       | Peel Strength                                                                                                                                                                                                                                             |                                   | High                                                                                                                                                                                              | High                                                                                                                                                                                                                                                                                                    | High                                                                                 |                                                                                                                                                                                                                                                                                                                           | High                                                                                                                                                                                                                               | High                                                                                                                                                                                                                                 | High                                                                                                                            | High                      |
| Mechanical Properties | Bell Peel 77°F (lb / in) 25°C (N / 25 mm)                                                                                                                                                                                                                 |                                   | 92 lbs / in 409 N / 25 mm                                                                                                                                                                         | 93 lbs / in 414 N / 25 mm                                                                                                                                                                                                                                                                               | 75 lbs / in 335 N / 25 mm                                                            |                                                                                                                                                                                                                                                                                                                           | 60 lbs / in 265 N / 25 mm                                                                                                                                                                                                          | 50 lbs / in 178 N / 25 mm                                                                                                                                                                                                            | 40 lbs / in 220 N / 25 mm                                                                                                       | 44 lbs / in 196 N / 25 mm |
|                       | TENSILE LAP SHEAR                                                                                                                                                                                                                                         | -67°F (psi) / -55°C (Mpa)'        | 5,000 psi / 34.5 MPa                                                                                                                                                                              | 5,700 psi / 39.3 MPa                                                                                                                                                                                                                                                                                    | 4,000 psi / 27.6 MPa                                                                 |                                                                                                                                                                                                                                                                                                                           | 4,000 psi / 27.6 MPa                                                                                                                                                                                                               | 4,650 psi / 32.1 MPa                                                                                                                                                                                                                 | 4,000 psi / 27.6 MPa                                                                                                            | –                         |
|                       |                                                                                                                                                                                                                                                           | 77°F (psi) / 25°C (Mpa)           | 5,000 psi / 34.5 Mpa                                                                                                                                                                              | 4,900 psi / 33.8 MPa                                                                                                                                                                                                                                                                                    | 4,500 psi / 31.0 MPa                                                                 |                                                                                                                                                                                                                                                                                                                           | 5,000 psi / 34.5 MPa                                                                                                                                                                                                               | 5,350 psi / 36.9 Mpa                                                                                                                                                                                                                 | 5,100 psi / 35.0 MPa                                                                                                            | 4,800 psi / 33.1 MPa      |
|                       |                                                                                                                                                                                                                                                           | 180°F (psi) / 82°C (Mpa)          | 1,000 psi / 6.9 MPa                                                                                                                                                                               | 1,100 psi / 7.6 MPa                                                                                                                                                                                                                                                                                     | 2,000 psi / 13.8 MPa                                                                 |                                                                                                                                                                                                                                                                                                                           | 3,000 psi / 20.7 MPa                                                                                                                                                                                                               | 4,200 psi / 29.0 MPa                                                                                                                                                                                                                 | 4,000 psi / 27.5 MPa                                                                                                            | –                         |
|                       |                                                                                                                                                                                                                                                           | Elevated Temperature (psi / MPa)  | –                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                                                       | 1,000 psi / 6.9 MPa                                                                  |                                                                                                                                                                                                                                                                                                                           | 950 psi / 6.5 MPa                                                                                                                                                                                                                  | 2,500 psi / 17.2 MPa                                                                                                                                                                                                                 | 1,750 psi / 12 MPa                                                                                                              | –                         |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                                          |                                   | 135 °F / 57 °C                                                                                                                                                                                    | 129 °F / 54 °C                                                                                                                                                                                                                                                                                          | 134°F / 51°C                                                                         |                                                                                                                                                                                                                                                                                                                           | 151 °F / 66 °C                                                                                                                                                                                                                     | 200 °F / 93 °C                                                                                                                                                                                                                       | 223 °F / 106 °C                                                                                                                 | 208 °F / 98 °C            |
|                       | Tg Wet (°F / °C)                                                                                                                                                                                                                                          |                                   | –                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                                                       | 150 °F / 66 °C                                                                       |                                                                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                                  | 225 °F / 108 °C                                                                                                                                                                                                                      | 192 °F / 89 °C                                                                                                                  | 145 °F / 63 °C            |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                                |                                   | 5,600 psi / 38.6 MPa                                                                                                                                                                              | 6,100 psi / 42.0 MPa                                                                                                                                                                                                                                                                                    | 5300 psi / 36.6 MPa                                                                  |                                                                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                                  | –                                                                                                                                                                                                                                    | –                                                                                                                               | –                         |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                                 |                                   | 384 ksi / 2,646 MPa                                                                                                                                                                               | 390 ksi / 2,687 MPa                                                                                                                                                                                                                                                                                     | 310 ksi / 2,136 MPa                                                                  |                                                                                                                                                                                                                                                                                                                           | 487.2 ksi / 3360 MPa                                                                                                                                                                                                               | –                                                                                                                                                                                                                                    | –                                                                                                                               | –                         |
|                       | Elongation @ 77°F / 25°C (% at break)                                                                                                                                                                                                                     |                                   | 2,40 %                                                                                                                                                                                            | 9,00 %                                                                                                                                                                                                                                                                                                  | 7,70 %                                                                               |                                                                                                                                                                                                                                                                                                                           | 5,00 %                                                                                                                                                                                                                             | –                                                                                                                                                                                                                                    | –                                                                                                                               | –                         |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                            |                                   | 7,700 psi / 53.1 MPa                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                       | 7,700 psi / 53.1 MPa                                                                 |                                                                                                                                                                                                                                                                                                                           | 9,878 psi / 68 MPa                                                                                                                                                                                                                 | 11,300 psi / 78 MPa                                                                                                                                                                                                                  | –                                                                                                                               | –                         |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                             |                                   | 253 ksi / 1,743 MPa                                                                                                                                                                               | –                                                                                                                                                                                                                                                                                                       | –                                                                                    |                                                                                                                                                                                                                                                                                                                           | 368 ksi / 2,538 MPa                                                                                                                                                                                                                | 355 ksi / 2,950 MPa                                                                                                                                                                                                                  | –                                                                                                                               | –                         |
| Handling              | Mix RatioWeight (PartA / Part B)                                                                                                                                                                                                                          |                                   | 100 : 33                                                                                                                                                                                          | 100 : 33                                                                                                                                                                                                                                                                                                | 100 : 44                                                                             |                                                                                                                                                                                                                                                                                                                           | 100 : 43                                                                                                                                                                                                                           | 100 : 55                                                                                                                                                                                                                             | 100 : 45                                                                                                                        | 100 : 35                  |
|                       | CureTemperature (°F / °C)                                                                                                                                                                                                                                 |                                   | 77 – 200 °F / 25 – 93 °C                                                                                                                                                                          | > 77 – 200 °F / > 25 – 93 °C                                                                                                                                                                                                                                                                            | 77 – 180 °F / 25 – 82 °C                                                             |                                                                                                                                                                                                                                                                                                                           | 77 – 180 °F / 25 – 82 °C                                                                                                                                                                                                           | ≥ 160 – 175 °F / 70 – 80 °C                                                                                                                                                                                                          | 180 – 220 °F / 82 – 104 °C                                                                                                      | > 77 °F / 25 °C           |
|                       | CureTime                                                                                                                                                                                                                                                  |                                   | 5 – 7 Days / 1 Hour                                                                                                                                                                               | 5 – 7 Days / 1 Hour                                                                                                                                                                                                                                                                                     | 5 – 7 Days /                                                                         |                                                                                                                                                                                                                                                                                                                           | 150 °F / 66 °C"                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                                                                                                                                 |                           |
|                       | StorageTemperature (°F / °C)                                                                                                                                                                                                                              |                                   | 77 °F / 25 °C                                                                                                                                                                                     | 77 °F / 25 °C                                                                                                                                                                                                                                                                                           | 77 °F / 25 °C                                                                        |                                                                                                                                                                                                                                                                                                                           | 5 – 7 Days / 1 Hour                                                                                                                                                                                                                | 240 Minutes                                                                                                                                                                                                                          | 2 hours / 1 hour                                                                                                                | 5 Days / 1 Hour           |
|                       | Pot Life (minutes / lb) / (minutes / kg)                                                                                                                                                                                                                  |                                   | 60 Minutes / 100 Gram Mass                                                                                                                                                                        | 60 Minutes / 100 Gram Mass                                                                                                                                                                                                                                                                              | 60 Minutes / 100 Gram Mass / 50 Minutes / 200 Gram Mass / 40 Minutes / 450 Gram Mass |                                                                                                                                                                                                                                                                                                                           | 77 °F / 25 °C                                                                                                                                                                                                                      | 40 °F / 4 °C                                                                                                                                                                                                                         | 40 °F / 4 °C                                                                                                                    | 82 °F / 28 °C             |
| Product               | New Product Name                                                                                                                                                                                                                                          |                                   | LOCTITE EA 9330 AERO                                                                                                                                                                              | LOCTITE EA 9330.3 AERO                                                                                                                                                                                                                                                                                  | LOCTITE EA 9359.3 AERO                                                               |                                                                                                                                                                                                                                                                                                                           | LOCTITE EA 9360 AERO                                                                                                                                                                                                               | LOCTITE EA 9380 AERO                                                                                                                                                                                                                 | LOCTITE EA 9380.05 AERO                                                                                                         | LOCTITE EA 9345 AERO      |
|                       | Known As                                                                                                                                                                                                                                                  |                                   | Hysol® EA 9330™                                                                                                                                                                                   | Hysol® EA 9330.3™                                                                                                                                                                                                                                                                                       | Hysol® EA 9359.3™                                                                    |                                                                                                                                                                                                                                                                                                                           | Hysol® EA 9360™                                                                                                                                                                                                                    | Hysol® EA 9380™NEW!                                                                                                                                                                                                                  | Hysol® EA 9380.05                                                                                                               | Hysol® EA 9345™           |
| Availability          | Packaging                                                                                                                                                                                                                                                 | Barrier Kit, Gram Kit, Gallon Kit | Quart Kit, Clip Pack                                                                                                                                                                              | Quart Kit, Dual Cartridge, Gallon Kit                                                                                                                                                                                                                                                                   |                                                                                      | Quart Kit, Dual Cartridge, Gallon Kit                                                                                                                                                                                                                                                                                     | Dual Cartridge, Barrier Kit, Quart Kit                                                                                                                                                                                             | –                                                                                                                                                                                                                                    | Gallon Kit                                                                                                                      |                           |
| Description           | LOCTITE EA 9330 AERO <ul style="list-style-type: none"><li>• Two Component System</li><li>• Tolerant of Bondline Thickness Variations</li><li>• Room Temperature Cure</li><li>• High Peel Strength</li><li>• Excellent Environmental Resistance</li></ul> |                                   | LOCTITE EA 9330.3 AERO <ul style="list-style-type: none"><li>• Two Component System</li><li>• Low Slump</li><li>• Room Temperature Cure</li><li>• Easy Mix</li><li>• High Peel Strength</li></ul> | LOCTITE EA 9359.3 AERO <ul style="list-style-type: none"><li>• Easy Mix</li><li>• Good Environmental Resistance</li><li>• Non Sag</li><li>• High Shear Strength</li><li>• Bondline Thickness Control</li><li>• High Peel Strength</li><li>• Available in 2:1 Dual Cartridge with Static Mixer</li></ul> |                                                                                      | LOCTITE EA 9360 AERO <ul style="list-style-type: none"><li>• Available in dual cartridge packaging</li><li>• High peel strength</li><li>• Excellent static stress durability</li><li>• &gt;225°F (107°C) service</li><li>• Easy mixing two component system</li><li>• Room temperature cure</li><li>• Low Slump</li></ul> | LLOCTITE EA 9380 AERO <ul style="list-style-type: none"><li>• Low temp curing two-part adhesive</li><li>• Meter mixable</li><li>• High strength, toughness and high temp resistance</li><li>• Prebond humidity resistant</li></ul> | LOCTITE EA 9380.05 AERO <ul style="list-style-type: none"><li>• Low temp curing two-part adhesive</li><li>• Meter mixable</li><li>• High strength, toughness and high temp resistance</li><li>• Prebond humidity resistant</li></ul> | LOCTITE EA 9345 AERO <ul style="list-style-type: none"><li>• Long Pot Life</li><li>• Non-Asbestos</li><li>• Toughened</li></ul> |                           |

# Metal, Honeycomb Bonding & Repair

|                       |                                                                                                                                                                                                                                                                          |                                                        |                                                                                                                                                                                                                                                                                                                                             |                                                                                                 |                                                      |                                                                                                                                                                                               |                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                            |                                  |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Characteristics       | 180°F / 82°C Service                                                                                                                                                                                                                                                     |                                                        |                                                                                                                                                                                                                                                                                                                                             | •                                                                                               |                                                      |                                                                                                                                                                                               |                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                            |                                  |
|                       | 300°F / 149°C Service                                                                                                                                                                                                                                                    |                                                        | •                                                                                                                                                                                                                                                                                                                                           | •                                                                                               | •                                                    |                                                                                                                                                                                               | •                                                                                                                                                                                                                          | •                                                                                                                                                                                                                                                                                                                            | •                                                                                                                                                                          |                                  |
|                       | 350°F / 177°C Service                                                                                                                                                                                                                                                    |                                                        |                                                                                                                                                                                                                                                                                                                                             |                                                                                                 |                                                      |                                                                                                                                                                                               |                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                            |                                  |
|                       | 450°F / 232°C Service                                                                                                                                                                                                                                                    |                                                        |                                                                                                                                                                                                                                                                                                                                             |                                                                                                 |                                                      |                                                                                                                                                                                               |                                                                                                                                                                                                                            | •                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |                                  |
|                       | Improved Hot / Wet Properties                                                                                                                                                                                                                                            |                                                        |                                                                                                                                                                                                                                                                                                                                             |                                                                                                 | •                                                    |                                                                                                                                                                                               | •                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                              | •                                                                                                                                                                          |                                  |
|                       | Toughened                                                                                                                                                                                                                                                                |                                                        |                                                                                                                                                                                                                                                                                                                                             |                                                                                                 |                                                      |                                                                                                                                                                                               | •                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                              | •                                                                                                                                                                          |                                  |
|                       | Consistency                                                                                                                                                                                                                                                              |                                                        | Low Viscosity                                                                                                                                                                                                                                                                                                                               | Thixotropic                                                                                     | Low Viscosity                                        |                                                                                                                                                                                               | Thixotropic                                                                                                                                                                                                                | Thixotropic                                                                                                                                                                                                                                                                                                                  | Moderate Viscosity                                                                                                                                                         | Thixotropic                      |
|                       | Form                                                                                                                                                                                                                                                                     |                                                        | 2 Part                                                                                                                                                                                                                                                                                                                                      | 2 Part                                                                                          | 2 Part                                               |                                                                                                                                                                                               | 2 Part                                                                                                                                                                                                                     | 2 Part                                                                                                                                                                                                                                                                                                                       | 2 Part                                                                                                                                                                     | 2 Part                           |
|                       | Peel Strength                                                                                                                                                                                                                                                            |                                                        | Nil                                                                                                                                                                                                                                                                                                                                         | Nil                                                                                             | Nil                                                  |                                                                                                                                                                                               | Low                                                                                                                                                                                                                        | Nil                                                                                                                                                                                                                                                                                                                          | Low                                                                                                                                                                        | Low                              |
| Mechanical Properties | Bell Peel 77°F (lb / in)<br>25°C (N / 25 mm)                                                                                                                                                                                                                             |                                                        | –                                                                                                                                                                                                                                                                                                                                           | –                                                                                               | –                                                    |                                                                                                                                                                                               | 20 lbs / in<br>89 N / 25 mm                                                                                                                                                                                                | 20 lbs / in<br>90 N / 25 mm                                                                                                                                                                                                                                                                                                  | 10 lbs / in<br>45 N / 25 mm                                                                                                                                                | 15 lbs / in<br>67 N / 25 mm      |
|                       | TENSILE LAP SHEAR                                                                                                                                                                                                                                                        | -67°F (psi) /<br>-55°C (Mpa)'                          | 1,780 psi /<br>12.3 MPa                                                                                                                                                                                                                                                                                                                     | 3,100 psi /<br>21.4 MPa                                                                         | 2,200 psi /<br>15.2 MPa                              |                                                                                                                                                                                               | 3,300 psi /<br>22.7 MPa                                                                                                                                                                                                    | 2,700 psi /<br>18.6 MPa                                                                                                                                                                                                                                                                                                      | 3,500 psi /<br>24.1 MPa                                                                                                                                                    | 2,300 psi /<br>15.8 MPa          |
|                       |                                                                                                                                                                                                                                                                          | 77°F (psi) /<br>25°C (Mpa)                             | 2,300 psi /<br>15.8 MPa                                                                                                                                                                                                                                                                                                                     | 3,700 psi /<br>25.5 MPa                                                                         | 2,600 psi /<br>17.9 MPa                              |                                                                                                                                                                                               | 4,200 psi /<br>28.9 MPa                                                                                                                                                                                                    | 4,910 psi /<br>33.9 MPa                                                                                                                                                                                                                                                                                                      | 5,000 psi /<br>34.5 MPa                                                                                                                                                    | 4,300 psi /<br>29.7 MPa          |
|                       |                                                                                                                                                                                                                                                                          | 180°F (psi) /<br>82°C (Mpa)                            | 1,500 psi /<br>10.3 MPa                                                                                                                                                                                                                                                                                                                     | 2,800 psi /<br>19.3 MPa                                                                         | 3,000 psi /<br>20.7 MPa                              |                                                                                                                                                                                               | 3,000 psi /<br>20.7 MPa                                                                                                                                                                                                    | 3,140 psi /<br>21.7 MPa                                                                                                                                                                                                                                                                                                      | 4,000 psi /<br>27.5 MPa                                                                                                                                                    | 3,500 psi /<br>24.1 MPa          |
|                       |                                                                                                                                                                                                                                                                          | Elevated Temperature<br>(psi / MPa)                    | 1,000 psi / 6.9 MPa                                                                                                                                                                                                                                                                                                                         | 1,200 psi / 8.3 MPa                                                                             | 1,700 psi / 11.7 MPa                                 |                                                                                                                                                                                               | 1,200 psi / 8.3 MPa                                                                                                                                                                                                        | 1,640 psi / 11.3 MPa                                                                                                                                                                                                                                                                                                         | 2,500 psi / 17.2 MPa                                                                                                                                                       | 1,200 psi / 8.3 MPa              |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                                                         |                                                        | 156 °F / 69 °C                                                                                                                                                                                                                                                                                                                              | 159 °F / 71 °C                                                                                  | 345 °F / 174 °C                                      |                                                                                                                                                                                               | 172 °F / 78 °C                                                                                                                                                                                                             | 158 °F / 70 °C                                                                                                                                                                                                                                                                                                               | –                                                                                                                                                                          | 163 °F / 73 °C                   |
|                       | Tg Wet (°F / °C)                                                                                                                                                                                                                                                         |                                                        | –                                                                                                                                                                                                                                                                                                                                           | 235 °F / 113 °C                                                                                 | 302 °F / 150 °C                                      |                                                                                                                                                                                               | 154 °F / 68 °C                                                                                                                                                                                                             | 196 °F / 91 °C                                                                                                                                                                                                                                                                                                               | –                                                                                                                                                                          | 246 °F / 119 °C                  |
|                       | Tensile Strength<br>@ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                                            |                                                        | 5,800 psi / 40.0 MPa                                                                                                                                                                                                                                                                                                                        | 5,800 psi / 40.0 MPa                                                                            | 8,200 psi / 56.5 MPa                                 |                                                                                                                                                                                               | 6,675 psi / 46.0 MPa                                                                                                                                                                                                       | –                                                                                                                                                                                                                                                                                                                            | –                                                                                                                                                                          | 8,070 psi / 55.6 MPa             |
|                       | Tensile Modulus<br>@ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                                             |                                                        | 370 ksi / 2,552 MPa                                                                                                                                                                                                                                                                                                                         | 550 ksi / 3,792 MPa                                                                             | 418 ksi / 2,880 MPa                                  |                                                                                                                                                                                               | 615 ksi / 4,237 MPa                                                                                                                                                                                                        | –                                                                                                                                                                                                                                                                                                                            | –                                                                                                                                                                          | 717 ksi / 4,940 MPa              |
|                       | Elongation<br>@ 77°F / 25°C (% at break)                                                                                                                                                                                                                                 |                                                        | 2,40 %                                                                                                                                                                                                                                                                                                                                      | 1,20 %                                                                                          | 2,50 %                                               |                                                                                                                                                                                               | 1,77 %                                                                                                                                                                                                                     | –                                                                                                                                                                                                                                                                                                                            | –                                                                                                                                                                          | 2,60%                            |
|                       | Compressive Strength<br>@ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                                        |                                                        | 12,000 psi / 82.8 MPa                                                                                                                                                                                                                                                                                                                       | 9,500 psi / 65.5 MPa                                                                            | 5,300 psi / 36.6 MPa                                 |                                                                                                                                                                                               | 10,000 psi / 68.9 MPa                                                                                                                                                                                                      | 11,329 psi / 78.1 MPa                                                                                                                                                                                                                                                                                                        | 32,000 psi / 220.7 MPa                                                                                                                                                     | 14,000 psi / 94.5 MPa            |
|                       | Compressive Modulus<br>@ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                                         |                                                        | 158 ksi / 1,089 MPa                                                                                                                                                                                                                                                                                                                         | 367 psi / 2,530 MPa                                                                             | –                                                    |                                                                                                                                                                                               | –                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                                                                            | –                                                                                                                                                                          | 429 ksi / 2.956 MPa              |
| Handling              | Mix RatioWeight<br>(PartA / Part B)                                                                                                                                                                                                                                      |                                                        | 100 : 58                                                                                                                                                                                                                                                                                                                                    | 100 : 33                                                                                        | 100 : 56                                             |                                                                                                                                                                                               | 100 : 17                                                                                                                                                                                                                   | 100 : 27                                                                                                                                                                                                                                                                                                                     | 100 : 20                                                                                                                                                                   | 100 : 17                         |
|                       | CureTemperature (°F / °C)                                                                                                                                                                                                                                                |                                                        | 77 – 200 °F / 25 - 93 °C                                                                                                                                                                                                                                                                                                                    | 77 – 200 °F / 25 – 93 °C                                                                        | 200 °F / 93 °C<br>250 °F / 121 °C<br>300 °F / 149 °C |                                                                                                                                                                                               | 77 – 200 °F / 25 – 93 °C                                                                                                                                                                                                   | 77 °F / 25 °C                                                                                                                                                                                                                                                                                                                | > 200 °F / 93 °C                                                                                                                                                           | 77 – 150 °F / 25 – 66 °C         |
|                       | CureTime                                                                                                                                                                                                                                                                 |                                                        | 5 – 7 Days / 1 Hour                                                                                                                                                                                                                                                                                                                         | 5 – 7 Days / 1 Hour                                                                             | 220 Minutes<br>150 Minutes<br>130 Minutes            |                                                                                                                                                                                               | 3 – 5 Days / 1 Hour                                                                                                                                                                                                        | 24 Hours                                                                                                                                                                                                                                                                                                                     | 1 Hour                                                                                                                                                                     | 5 Days / 1 Hour                  |
|                       | StorageTemperature (°F / °C)                                                                                                                                                                                                                                             |                                                        | 40 °F / 4 °C                                                                                                                                                                                                                                                                                                                                | 40 °F / 4 °C                                                                                    | 40 °F / 4 °C                                         |                                                                                                                                                                                               | 77 °F / 25 °C                                                                                                                                                                                                              | 77 °F / 25 °C                                                                                                                                                                                                                                                                                                                | 77 °F / 25 °C                                                                                                                                                              | 77 °F / 25 °C                    |
|                       | Pot Life<br>(minutes /lb) / (minutes /kg)                                                                                                                                                                                                                                |                                                        | > 30 minutes / 450 Gram Mass                                                                                                                                                                                                                                                                                                                | 40 – 50 minutes / 450 Gram Mass                                                                 | 120 Minutes / 250 Gram Mass                          |                                                                                                                                                                                               | 90 Minutes / 450 Gram Mass                                                                                                                                                                                                 | 20 – 30 Minutes / 100 Gram Mass                                                                                                                                                                                                                                                                                              | 7 Hours / 450 Gram Mass                                                                                                                                                    | 95 – 100 Minutes / 450 Gram Mass |
| Product               | New Product Name                                                                                                                                                                                                                                                         |                                                        | LOCTITE<br>EA 956<br>AERO                                                                                                                                                                                                                                                                                                                   | LOCTITE<br>EA 934NA<br>AERO                                                                     | LOCTITE<br>EA 9390<br>AERO                           |                                                                                                                                                                                               | LOCTITE<br>EA 9394<br>AERO                                                                                                                                                                                                 | LOCTITE<br>EA 9394.2<br>AERO                                                                                                                                                                                                                                                                                                 | LOCTITE<br>EA 9394/C-2<br>AERO                                                                                                                                             | LOCTITE<br>EA 9395<br>AERO       |
|                       | Known As                                                                                                                                                                                                                                                                 |                                                        | Hysol®<br>EA 956™                                                                                                                                                                                                                                                                                                                           | Hysol®<br>EA 934NA™                                                                             | Hysol®<br>EA 9390™                                   |                                                                                                                                                                                               | Hysol®<br>EA 9394™                                                                                                                                                                                                         | Hysol®<br>EA 9394.2™                                                                                                                                                                                                                                                                                                         | Hysol®<br>EA 9394™ / C-2™                                                                                                                                                  | Hysol®<br>EA 9395™               |
| Availability          | Packaging                                                                                                                                                                                                                                                                | Clip Pack, Gallon Kit, Gram Kit<br>Pint Kit, Quart Kit | Barrier Kit, Clip Pack, Gallon Kit, Gram<br>Kit, Pint Kit, Quart Kit“                                                                                                                                                                                                                                                                       | Quart Kit, Gram Kit, Clip Pack, Barrier<br>Kit                                                  |                                                      | 55-Gallon Kit, 5-Gallon Kit, Clip Pack, Dual<br>Cartridge, Gram Kit, Pint Kit, Quart Kit                                                                                                      | Dual Cartridge, Pint Kit, Quart Kit, Clip<br>Pack, Gallon Kit, 5-Gallon Kit                                                                                                                                                | Quart Kit, Injection Kit, Clip Pack                                                                                                                                                                                                                                                                                          | Quart Kit, Injection Kit, Clip Pack, 5-Gallon<br>Kit, Gallon Kit                                                                                                           |                                  |
| Description           | LOCTITE<br>EA 956<br>AERO<br>is a two-component, adhesive, which<br>has excellent elevated temperature<br>strength. Its room temperature cure<br>capability and low viscosity make it<br>ideal for repair applications, including<br>laminating, injection, and coating. |                                                        | LOCTITE<br>EA 934NA<br>AERO<br>is a two-component thixotropic<br>paste adhesive, which cures at room<br>temperature and possesses superior<br>strength to 300 °F / 149 °C and hig-<br>her. Its thixotropic nature and good<br>compressive strength make it ideal<br>for potting, filling, and fairing, as well<br>as for shim applications. | LOCTITE<br>EA 9390<br>AERO<br>• Good Hot/Wet Strength<br>• Good Wetting<br>• High Shear Modulus |                                                      | LOCTITE<br>EA 9394<br>AERO<br>• Good Gap Filling Capabilities<br>• Potting Material<br>• Room Temperature Storage<br>• Outstanding Mechanical Properties<br>• Long Pot Life<br>• Low Toxicity | LOCTITE<br>EA 9394.2<br>AERO<br>is a fast curing two-part structural paste<br>adhesive, which cures at room temperature.<br>Its thixotropic nature makes it ideal for pot-<br>ting, filling, and liquid shim applications. | LOCTITE<br>EA 9394/C-2<br>AERO<br>is an elevated temperature curing, high<br>service temperature structural paste adhe-<br>sive. It uses a non-aromatic amine curing<br>agent that retains many of the excellent<br>properties offered by aromatic amine cured<br>systems, high temperature service with a<br>long pot life. | LOCTITE<br>EA 9395<br>AERO<br>• Non-Metallic Filler<br>• Cures at Ambient Temperature<br>• Thixotropic<br>• Excellent Mechanical Properties<br>• Good Compressive Strength |                                  |

Metal, Honeycomb Bonding & Repair

|                       |                                                |                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                |                                                                                                                           |                              |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                          |                            |
|-----------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Characteristics       | 180°F / 82°C Service                           |                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                |                                                                                                                           |                              |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                                                                                                                                                                           | •                                                                                                                                                                                                                                                                                        | •                          |
|                       | 300°F / 149°C Service                          |                                                                                                                                                                                                                                                   | •                                                                                                                                                                                                                                                                                                              | •                                                                                                                         |                              |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                          |                            |
|                       | 350°F / 177°C Service                          |                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                |                                                                                                                           | •                            |                                                                                                                                                                                                            | •                                                                                                                                                                                                                                                                        | •                                                                                                                                                                         |                                                                                                                                                                                                                                                                                          |                            |
|                       | 450°F / 232°C Service                          |                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                |                                                                                                                           |                              |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                          |                            |
|                       | Improved Hot / Wet Properties                  |                                                                                                                                                                                                                                                   | •                                                                                                                                                                                                                                                                                                              | •                                                                                                                         |                              |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                          |                            |
|                       | Toughened                                      |                                                                                                                                                                                                                                                   | •                                                                                                                                                                                                                                                                                                              |                                                                                                                           | •                            |                                                                                                                                                                                                            | •                                                                                                                                                                                                                                                                        |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                          | •                          |
|                       | Consistency                                    |                                                                                                                                                                                                                                                   | Low Viscosity                                                                                                                                                                                                                                                                                                  | Low Viscosity                                                                                                             | Moderate Viscosity           |                                                                                                                                                                                                            | Thixotropic                                                                                                                                                                                                                                                              | Thixotropic                                                                                                                                                               | Thixotropic                                                                                                                                                                                                                                                                              | Moderate Viscosity         |
|                       | Form                                           |                                                                                                                                                                                                                                                   | 2 Part                                                                                                                                                                                                                                                                                                         | 2 Part                                                                                                                    | 2 Part                       |                                                                                                                                                                                                            | 2 Part                                                                                                                                                                                                                                                                   | 2 Part                                                                                                                                                                    | 2 Part                                                                                                                                                                                                                                                                                   | 2 Part                     |
|                       | Peel Strength                                  |                                                                                                                                                                                                                                                   | Moderate                                                                                                                                                                                                                                                                                                       | Low                                                                                                                       | High                         |                                                                                                                                                                                                            | High                                                                                                                                                                                                                                                                     | Low                                                                                                                                                                       | Nil                                                                                                                                                                                                                                                                                      | High                       |
| Mechanical Properties | Bell Peel 77°F (lb / in) 25°C (N / 25 mm)      |                                                                                                                                                                                                                                                   | 25 lbs / in 111 N / 25 mm                                                                                                                                                                                                                                                                                      | 15 lbs / in 67 N / 25 mm                                                                                                  | 25 lbs / in 111 N / 25 mm    |                                                                                                                                                                                                            | 40 lbs / in 178 N / 25 mm                                                                                                                                                                                                                                                | 20 lbs / in 90 N / 25 mm                                                                                                                                                  | –                                                                                                                                                                                                                                                                                        | 40 lbs / in 178 N / 25 mm  |
|                       | TENSILE LAP SHEAR                              | -67°F (psi) / -55°C (Mpa)                                                                                                                                                                                                                         | 3,300 psi / 22.8 MPa                                                                                                                                                                                                                                                                                           | 2,500 psi / 17.2 MPa                                                                                                      | 6,700 psi / 46.2 MPa         |                                                                                                                                                                                                            | 3,500 psi / 24.1 MPa                                                                                                                                                                                                                                                     | 3,300 psi / 22.7 MPa                                                                                                                                                      | –                                                                                                                                                                                                                                                                                        | 4600 psi / 31.7 Mpa        |
|                       |                                                | 77°F (psi) / 25°C (Mpa)                                                                                                                                                                                                                           | 3,500 psi / 24.1 MPa                                                                                                                                                                                                                                                                                           | 4,600 psi / 31.7 MPa                                                                                                      | 6,100 psi / 42.1 MPa         |                                                                                                                                                                                                            | 4,300 psi / 29.6 MPa                                                                                                                                                                                                                                                     | 4,200 psi / 28.9 MPa                                                                                                                                                      | 1,650 psi / 11.4 MPa                                                                                                                                                                                                                                                                     | 5400 psi / 37.2 Mpa        |
|                       |                                                | 180°F (psi) / 82°C (Mpa)                                                                                                                                                                                                                          | 3,200 psi / 22.0 MPa                                                                                                                                                                                                                                                                                           | 4,100 psi / 28.3 MPa                                                                                                      | 1,300 psi / 9.0 MPa          |                                                                                                                                                                                                            | 2,500 psi / 17.2 MPa                                                                                                                                                                                                                                                     | 3,000 psi / 20.7 MPa                                                                                                                                                      | 525 psi / 3.6 MPa                                                                                                                                                                                                                                                                        | 1000 psi / 6.9 Mpa         |
|                       |                                                | Elevated Temperature (psi / MPa)                                                                                                                                                                                                                  | 1,250 psi / 8.6 MPa                                                                                                                                                                                                                                                                                            | 2,500 psi / 17.2 MPa                                                                                                      | –                            |                                                                                                                                                                                                            | 1,000 psi / 6.9 MPa                                                                                                                                                                                                                                                      | 600 psi / 4.1 MPa                                                                                                                                                         | –                                                                                                                                                                                                                                                                                        | –                          |
| Bulk Properties       | Tg Dry (°F / °C)                               |                                                                                                                                                                                                                                                   | 208 °F / 98 °C                                                                                                                                                                                                                                                                                                 | 226°F / 108°C                                                                                                             | 127 °F / 53 °C               |                                                                                                                                                                                                            | 164 °F / 73 °C                                                                                                                                                                                                                                                           | 172 °F / 78 °C                                                                                                                                                            | 248 °F / 120 °C                                                                                                                                                                                                                                                                          | 174°F / 79°C               |
|                       | Tg Wet (°F / °C)                               |                                                                                                                                                                                                                                                   | 145 °F / 63 °C                                                                                                                                                                                                                                                                                                 | 232°F / 111°C                                                                                                             | 147 °F / 64 °C               |                                                                                                                                                                                                            | 144 °F / 62 °C                                                                                                                                                                                                                                                           | 154 °F / 68 °C                                                                                                                                                            | –                                                                                                                                                                                                                                                                                        | 138°F / 59°C               |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)     |                                                                                                                                                                                                                                                   | 8,000 psi / 55.2 MPa                                                                                                                                                                                                                                                                                           | –                                                                                                                         | 4,500 psi / 31 MPa           |                                                                                                                                                                                                            | 6,000 psi / 41.3 MPa                                                                                                                                                                                                                                                     | 6,675 psi / 46.0 MPa                                                                                                                                                      | –                                                                                                                                                                                                                                                                                        | 5400 psi / 37.2 Mpa        |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)      |                                                                                                                                                                                                                                                   | 400 ksi / 2,750 MPa                                                                                                                                                                                                                                                                                            | –                                                                                                                         | 338 ksi / 2,331 MPa          |                                                                                                                                                                                                            | 475 ksi / 3,273 MPa                                                                                                                                                                                                                                                      | 615 ksi / 4,237 MPa                                                                                                                                                       | –                                                                                                                                                                                                                                                                                        | –                          |
|                       | Elongation @ 77°F / 25°C (% at break)          |                                                                                                                                                                                                                                                   | 3,40 %                                                                                                                                                                                                                                                                                                         | –                                                                                                                         | 10,00 %                      |                                                                                                                                                                                                            | 4,00 %                                                                                                                                                                                                                                                                   | 1,70 %                                                                                                                                                                    | –                                                                                                                                                                                                                                                                                        | 4,80%                      |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa) |                                                                                                                                                                                                                                                   | 70,000 psi / 482.8 MPa                                                                                                                                                                                                                                                                                         | 14,000 psi / 96.6 MPa                                                                                                     | 7,000 psi / 48.2 MPa         |                                                                                                                                                                                                            | 9,300 psi / 64.1 MPa                                                                                                                                                                                                                                                     | 10,000 psi / 68.9 MPa                                                                                                                                                     | 3,270 psi / 22.5 MPa                                                                                                                                                                                                                                                                     | 7700 psi / 53 MPa          |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)  |                                                                                                                                                                                                                                                   | 8,000 psi / 55,150 MPa                                                                                                                                                                                                                                                                                         | –                                                                                                                         | 249 ksi / 1,716 MPa          |                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                        | –                                                                                                                                                                         | 172.5 ksi / 1,188 MPa                                                                                                                                                                                                                                                                    | 218 Ksi / 1502 MPa         |
| Handling              | Mix RatioWeight (PartA / Part B)               |                                                                                                                                                                                                                                                   | 100 : 30                                                                                                                                                                                                                                                                                                       | 100 : 36                                                                                                                  | 100 : 30                     |                                                                                                                                                                                                            | 100 : 32                                                                                                                                                                                                                                                                 | –                                                                                                                                                                         | 100 : 40                                                                                                                                                                                                                                                                                 | 100 : 22                   |
|                       | CureTemperature (°F / °C)                      |                                                                                                                                                                                                                                                   | 77 – 150 °F / 25 - 66 °C                                                                                                                                                                                                                                                                                       | 200 °F / 93 °C                                                                                                            | 77 °F / 25 °C 150 °F / 66 °C |                                                                                                                                                                                                            | 77 °F / 25 °C 180 °F / 82 °C                                                                                                                                                                                                                                             | 77 – 200 °F / 25 – 93 °C                                                                                                                                                  | 77 °F / 25 °C                                                                                                                                                                                                                                                                            | 77 – 200 °F / 25 – 93°C    |
|                       | CureTime                                       |                                                                                                                                                                                                                                                   | 3 – 5 Days / 1 Hour                                                                                                                                                                                                                                                                                            | 1 Hour                                                                                                                    | 3 – 5 Days / 1 Hour          |                                                                                                                                                                                                            | 5 – 7 Day / 1 Hour                                                                                                                                                                                                                                                       | 3 – 5 Days / 1 Hour                                                                                                                                                       | 24 Hours                                                                                                                                                                                                                                                                                 | 5 Days                     |
|                       | StorageTemperature (°F / °C)                   |                                                                                                                                                                                                                                                   | 77 °F / 25 °C                                                                                                                                                                                                                                                                                                  | 77 °F / 25 °C                                                                                                             | 77 °F / 25 °C                |                                                                                                                                                                                                            | 82 °F / 28 °C                                                                                                                                                                                                                                                            | 82 °F / 28 °C                                                                                                                                                             | 82 °F / 28 °C                                                                                                                                                                                                                                                                            | 82 °F / 28°C               |
|                       | Pot Life (minutes / lb) / (minutes / kg)       |                                                                                                                                                                                                                                                   | 120 Minutes / 100 Gram Mass                                                                                                                                                                                                                                                                                    | 7 Hours / 450 Gram Mass                                                                                                   | 120 Minutes / 100 Gram Mass  |                                                                                                                                                                                                            | 75 Minutes / 100 Gram Mass                                                                                                                                                                                                                                               | 90 Minutes / 450 Gram Mass                                                                                                                                                | 20 Minutes / 400 Gram Mass                                                                                                                                                                                                                                                               | 30 Minutes / 450 Gram Mass |
| Product               | New Product Name                               |                                                                                                                                                                                                                                                   | LOCTITE EA 9396 AERO                                                                                                                                                                                                                                                                                           | LOCTITE EA 9396/C-2 AERO                                                                                                  | LOCTITE EA 9309NA AERO       |                                                                                                                                                                                                            | LOCTITE EA 9392 AERO                                                                                                                                                                                                                                                     | LOCTITE EA 9394S AERO                                                                                                                                                     | LOCTITE EA 9891RP AERO                                                                                                                                                                                                                                                                   | LOCTITE EA 9309.2 AERO     |
|                       | Known As                                       |                                                                                                                                                                                                                                                   | Hysol® EA 9396™                                                                                                                                                                                                                                                                                                | Hysol® EA 9396™ / C-2™                                                                                                    | Hysol® EA 9309NA™            |                                                                                                                                                                                                            | Hysol® EA 9392™                                                                                                                                                                                                                                                          | Hysol® EA 9394S™                                                                                                                                                          | Hysol® EA 9891RP™                                                                                                                                                                                                                                                                        | Hysol® EA 9309.2™          |
| Availability          | Packaging                                      | 50-Gram Kit, 5-Gallon Kit, Barrier Kit, Clip Pack, Gallon Kit, Gram Kit, Injection Kit, Pint Kit, Quart Kit                                                                                                                                       | Quart Kit                                                                                                                                                                                                                                                                                                      | Pint Kit, Quart Kit, Gallon Kit, Clip Pack, Injection Kit                                                                 |                              | Quart Kit                                                                                                                                                                                                  | Injection Kit                                                                                                                                                                                                                                                            | Barrier Kit, Quart Kit                                                                                                                                                    | Pudding Cup, Quart Kit                                                                                                                                                                                                                                                                   |                            |
| Description           |                                                | LOCTITE EA 9396 AERO is a two-component, adhesive, which has excellent elevated temperature strength. Its room temperature cure capability and low viscosity make it ideal for repair applications, including laminating, injection, and coating. | LOCTITE EA 9396/C-2 AERO is a two-component thixotropic paste adhesive, which cures at room temperature and possesses superior strength to 300 °F / 149 °C and higher. Its thixotropic nature and good compressive strength make it ideal for potting, filling, and fairing, as well as for shim applications. | LOCTITE EA 9309NA AERO <ul style="list-style-type: none"><li>• High Peel Strength</li><li>• Bonds Many Surfaces</li></ul> |                              | LOCTITE EA 9392 AERO is a paste adhesive, which possesses excellent shear strength at high temperatures. This product exhibits excellent toughness and yields durable bonds over a wide temperature range. | Loctite EA 9394S AERO is a two-part structural paste adhesive, which possesses excellent strength at high temperatures. Its thixotropic nature and excellent high temperature compressive strength also make it ideal for potting, filling and liquid shim applications. | LOCTITE EA 9891RP AERO iis a two-component room temperature curing, abrasion resistant repair paste adhesive suitable for repairing LOCTITE EF 9890 AERO abrasdable seal. | LOCTITE EA 9309.2 AERO is a two part epoxy sytem bonds metal skins and honeycomb core to yield tough permanently flexible joints that resist humidity, water and most common fluids. Its outstanding feature is high shear and peel strength on aluminum bonds at moderate temperatures. |                            |

When structural integrity matters:  
**LOCTITE composite bonding  
and repair adhesives**

Concerning critical aircraft components, some questions might come up

In order to preserve the structural integrity of critical aircraft components, manufacturers need the right adhesives to bond or join composite sub-components with excellent chemical resistance, variable viscosity and extraordinary mechanical performance.

Henkel gives a strong answer: **LOCTITE composite bonding adhesives**

LOCTITE products for composite bonding fulfill all these requirements and allow engineers to create efficient structures. No fasteners are needed. They offer lower adherent thickness, let you take advantage of stiffness properties of composites and provide a separation of dissimilar materials.

Why choose **LOCTITE composite bonding adhesives**?

- › Easy to mix
- › Good environmental resistance
- › Sag resistant
- › High shear & peel strength
- › Bond line thickness control

LOCTITE composite bonding adhesives:  
**Facts at a glance**

**LOCTITE composite bonding adhesives key features:**

- › High service temperature
  - › Prepreg
  - › Compatibility with aerospace systems
  - › Good wetting of metallic and composite surfaces
  - › High mechanical performance
- › Toughness tailorable to requirements
  - › Variations in form: One or two part
  - › Variable viscosity to fit application requirements
  - › Excellent chemical resistance vs. solvents and water

**Key factors to consider when choosing the right LOCTITE composite bonding adhesive**

- › Viscosity
  - › Shelf life / out-time
- › Cure temperature
  - › Glass transition temperature (Tg)

**Composite Bonding and Repair**

|                       |                                                                                                                                                                                                          |                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                   |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics       | 180°F / 82°C Service                                                                                                                                                                                     | •                                                         | •                                                                                                                                                                                                                                                         | •                                                                                                                                                                                                 |
|                       | 300°F / 149°C Service                                                                                                                                                                                    |                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                   |
|                       | 350°F / 177°C Service                                                                                                                                                                                    |                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                   |
|                       | 450°F / 232°C Service                                                                                                                                                                                    |                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                   |
|                       | Improved Hot / Wet Properties                                                                                                                                                                            | •                                                         |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                   |
|                       | Toughened                                                                                                                                                                                                | •                                                         | •                                                                                                                                                                                                                                                         | •                                                                                                                                                                                                 |
|                       | Consistency                                                                                                                                                                                              | Moderate Viscosity                                        | Moderate Viscosity                                                                                                                                                                                                                                        | Thixotropic                                                                                                                                                                                       |
|                       | Form                                                                                                                                                                                                     | 2 Part                                                    | 2 Part                                                                                                                                                                                                                                                    | 2 Part                                                                                                                                                                                            |
|                       | Peel Strength                                                                                                                                                                                            | High                                                      | High                                                                                                                                                                                                                                                      | High                                                                                                                                                                                              |
| Mechanical Properties | Bell Peel 77°F (lb / in) / 25°C (N / 25 mm)                                                                                                                                                              | 94 lbs / in / 418 N / 25mm                                | 92 lbs / in / 409 N / 25 mm                                                                                                                                                                                                                               | 93 lbs / in / 414 N / 25 mm                                                                                                                                                                       |
|                       | TENSILE LAP SHEAR                                                                                                                                                                                        | -67°F (psi) / -55°C (Mpa)'                                | 5,500 psi / 38.0 MPa                                                                                                                                                                                                                                      | 5,000 psi / 34.5 MPa                                                                                                                                                                              |
|                       |                                                                                                                                                                                                          | 77°F (psi) / 25°C (Mpa)                                   | 5,000 psi / 34.5 MPa                                                                                                                                                                                                                                      | 5,000 psi / 34.5 Mpa                                                                                                                                                                              |
|                       |                                                                                                                                                                                                          | 180°F (psi) / 82°C (Mpa)                                  | 750 psi / 5.2 MPa                                                                                                                                                                                                                                         | 1,000 psi / 6.9 MPa                                                                                                                                                                               |
|                       |                                                                                                                                                                                                          | Elevated Temperature (psi / MPa)                          | –                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                 |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                         | 142 °F / 61 °C                                            | 135 °F / 57 °C                                                                                                                                                                                                                                            | 129 °F / 54 °C                                                                                                                                                                                    |
|                       | Tg Wet (°F / °C)                                                                                                                                                                                         | 147 °F / 64 °C                                            | –                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                 |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                               | 4,670 psi / 32.2 MPa                                      | 5,600 psi / 38.6 MPa                                                                                                                                                                                                                                      | 6,100 psi / 42.0 MPa                                                                                                                                                                              |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                | 334 ksi / 2,303 MPa                                       | 384 ksi / 2,646 MPa                                                                                                                                                                                                                                       | 390 ksi / 2,687 MPa                                                                                                                                                                               |
|                       | Elongation @ 77°F / 25°C (% at break)                                                                                                                                                                    | 10,00 %                                                   | 2,40 %                                                                                                                                                                                                                                                    | 9,00 %                                                                                                                                                                                            |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                           | 7,500 psi / 51.7 MPa                                      | 7,700 psi / 53.1 MPa                                                                                                                                                                                                                                      | –                                                                                                                                                                                                 |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                            | 245 ksi / 1,688 MPa                                       | 253 ksi / 1,743 MPa                                                                                                                                                                                                                                       | –                                                                                                                                                                                                 |
| Handling              | Mix RatioWeight (PartA / Part B)                                                                                                                                                                         | 100 : 22                                                  | 100 : 33                                                                                                                                                                                                                                                  | 100 : 33                                                                                                                                                                                          |
|                       | CureTemperature (°F / °C)                                                                                                                                                                                | 77 °F / 25 °C / 180 °F / 82 °C"                           | 77 – 200 °F / 25 – 93 °C                                                                                                                                                                                                                                  | > 77 – 200 °F / > 25 – 93 °C                                                                                                                                                                      |
|                       | CureTime                                                                                                                                                                                                 | 3 – 5 Days / 1 Hour                                       | 5 – 7 Days / 1 Hour                                                                                                                                                                                                                                       | 5 – 7 Days / 1 Hour                                                                                                                                                                               |
|                       | StorageTemperature (°F / °C)                                                                                                                                                                             | 77 °F / 25 °C                                             | 77 °F / 25 °C                                                                                                                                                                                                                                             | 77 °F / 25 °C                                                                                                                                                                                     |
|                       | Pot Life (minutes / lb) / (minutes / kg)                                                                                                                                                                 | 35 minutes / 450 Mram Mass                                | 60 Minutes / 100 Gram Mass                                                                                                                                                                                                                                | 60 Minutes / 100 Gram Mass                                                                                                                                                                        |
| Product               | New Product Name                                                                                                                                                                                         | LOCTITE EA 9309.3NA AERO                                  | LOCTITE EA 9330 AERO                                                                                                                                                                                                                                      | LOCTITE EA 9330.3 AERO                                                                                                                                                                            |
|                       | Known As                                                                                                                                                                                                 | Hysol® EA 9309.3NA™                                       | Hysol® EA 9330™                                                                                                                                                                                                                                           | Hysol® EA 9330.3™                                                                                                                                                                                 |
| Availability          | Packaging                                                                                                                                                                                                | Clip Pack, Gallon Kit, Gram Kit, Injection Kit, Quart Kit | Barrier Kit, Gram Kit, Gallon Kit                                                                                                                                                                                                                         | Quart Kit, Clip Pack                                                                                                                                                                              |
| Description           | LOCTITE EA 9309.3NA AERO <ul style="list-style-type: none"><li>• High Shear Strength</li><li>• High Peel Strength</li><li>• Bondline Thickness Control</li><li>• Good Environmental Resistance</li></ul> |                                                           | LOCTITE EA 9330 AERO <ul style="list-style-type: none"><li>• Two Component System</li><li>• Tolerant of Bondline Thickness Variations</li><li>• Room Temperature Cure</li><li>• High Peel Strength</li><li>• Excellent Environmental Resistance</li></ul> | LOCTITE EA 9330.3 AERO <ul style="list-style-type: none"><li>• Two Component System</li><li>• Low Slump</li><li>• Room Temperature Cure</li><li>• Easy Mix</li><li>• High Peel Strength</li></ul> |

# Composite Bonding and Repair

|                       |                                                |                                  |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                      |                                                                                                                                                                                                             |                                                                                                                                                  |                                                                                                                                                                                                                                                               |
|-----------------------|------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics       | 180°F / 82°C Service                           |                                  | •                                                                                                                                                                                                                                                                                                       | •                                                                                                                                                                                                                                                                                                                          | •                                                                                                                                                                                                                                 |  | •                                                                                                                                                                                                                                    | •                                                                                                                                                                                                           |                                                                                                                                                  | •                                                                                                                                                                                                                                                             |
|                       | 300°F/149°C Service                            |                                  |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                      |                                                                                                                                                                                                             | •                                                                                                                                                | •                                                                                                                                                                                                                                                             |
|                       | 350°F / 177°C Service                          |                                  |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                      |                                                                                                                                                                                                             |                                                                                                                                                  |                                                                                                                                                                                                                                                               |
|                       | 450°F / 232°C Service                          |                                  |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                      |                                                                                                                                                                                                             |                                                                                                                                                  |                                                                                                                                                                                                                                                               |
|                       | Improved Hot / Wet Properties                  |                                  | •                                                                                                                                                                                                                                                                                                       | •                                                                                                                                                                                                                                                                                                                          | •                                                                                                                                                                                                                                 |  | •                                                                                                                                                                                                                                    |                                                                                                                                                                                                             | •                                                                                                                                                | •                                                                                                                                                                                                                                                             |
|                       | Toughened                                      |                                  | •                                                                                                                                                                                                                                                                                                       | •                                                                                                                                                                                                                                                                                                                          | •                                                                                                                                                                                                                                 |  | •                                                                                                                                                                                                                                    |                                                                                                                                                                                                             |                                                                                                                                                  | •                                                                                                                                                                                                                                                             |
|                       | Consistency                                    |                                  | Thixotropic                                                                                                                                                                                                                                                                                             | Thixotropic                                                                                                                                                                                                                                                                                                                | Thixotropic                                                                                                                                                                                                                       |  | Thixotropic                                                                                                                                                                                                                          | Moderate Viscosity                                                                                                                                                                                          | Low Viscosity                                                                                                                                    | Thixotropic                                                                                                                                                                                                                                                   |
|                       | Form                                           |                                  | 2 Part                                                                                                                                                                                                                                                                                                  | 2 Part                                                                                                                                                                                                                                                                                                                     | 2 Part                                                                                                                                                                                                                            |  | 2 Part                                                                                                                                                                                                                               | 2 Part                                                                                                                                                                                                      | 2 Part                                                                                                                                           | 2 Part                                                                                                                                                                                                                                                        |
|                       | Peel Strength                                  |                                  | High                                                                                                                                                                                                                                                                                                    | High                                                                                                                                                                                                                                                                                                                       | High                                                                                                                                                                                                                              |  | High                                                                                                                                                                                                                                 | Low                                                                                                                                                                                                         | Nil                                                                                                                                              | Low                                                                                                                                                                                                                                                           |
| Mechanical Properties | Bell Peel 77°F (lb / in) 25°C (N / 25 mm)      |                                  | 75 lbs / in 335 N / 25 mm                                                                                                                                                                                                                                                                               | 60 lbs / in 265 N / 25 mm                                                                                                                                                                                                                                                                                                  | 50 lbs / in 178 N / 25 mm                                                                                                                                                                                                         |  | 40 lbs / in 220 N / 25 mm                                                                                                                                                                                                            | 20 lbs / in 89 N / 25 mm                                                                                                                                                                                    | –                                                                                                                                                | 20 lbs / in 89 N / 25 mm                                                                                                                                                                                                                                      |
|                       | TENSILE LAP SHEAR                              | -67°F (psi) / -55°C (Mpa)'       | 4,000 psi / 27.6 MPa                                                                                                                                                                                                                                                                                    | 4,000 psi / 27.6 MPa                                                                                                                                                                                                                                                                                                       | 4,650 psi / 32.1 MPa                                                                                                                                                                                                              |  | 4,000 psi / 27.6 MPa                                                                                                                                                                                                                 | –                                                                                                                                                                                                           | 2,200 psi / 15.2 MPa                                                                                                                             | 3,300 psi / 22.7 MPa                                                                                                                                                                                                                                          |
|                       |                                                | 77°F (psi) / 25°C (Mpa)          | 4,500 psi / 31.0 MPa                                                                                                                                                                                                                                                                                    | 5,000 psi / 34.5 MPa                                                                                                                                                                                                                                                                                                       | 5,350 psi / 36.9 Mpa                                                                                                                                                                                                              |  | 5,100 psi / 35.0 MPa                                                                                                                                                                                                                 | 4,370 psi / 30.1 MPa                                                                                                                                                                                        | 2,600 psi / 17.9 MPa                                                                                                                             | 4,200 psi / 28.9 MPa                                                                                                                                                                                                                                          |
|                       |                                                | 180°F (psi) / 82°C (Mpa)         | 2,000 psi / 13.8 MPa                                                                                                                                                                                                                                                                                    | 3,000 psi / 20.7 MPa                                                                                                                                                                                                                                                                                                       | 4,200 psi / 29.0 MPa                                                                                                                                                                                                              |  | 4,000 psi / 27.5 MPa                                                                                                                                                                                                                 | –                                                                                                                                                                                                           | 3,000 psi / 20.7 MPa                                                                                                                             | 3,000 psi / 20.7 MPa                                                                                                                                                                                                                                          |
|                       |                                                | Elevated Temperature (psi / MPa) | 1,000 psi / 6.9 MPa                                                                                                                                                                                                                                                                                     | 950 psi / 6.5 Mpa                                                                                                                                                                                                                                                                                                          | 2,500 psi / 17.2 MPa                                                                                                                                                                                                              |  | 1,750 psi / 12 MPa                                                                                                                                                                                                                   | –                                                                                                                                                                                                           | 1,700 psi / 11.7 MPa                                                                                                                             | 1,200 psi / 8.3 MPa                                                                                                                                                                                                                                           |
| Bulk Properties       | Tg Dry (°F / °C)                               |                                  | 134°F / 51°C                                                                                                                                                                                                                                                                                            | 151 °F / 66 °C                                                                                                                                                                                                                                                                                                             | 200 °F / 93 °C                                                                                                                                                                                                                    |  | 223 °F / 106 °C                                                                                                                                                                                                                      | –                                                                                                                                                                                                           | 345 °F / 174 °C                                                                                                                                  | 172 °F / 78 °C                                                                                                                                                                                                                                                |
|                       | Tg Wet (°F / °C)                               |                                  | 150 °F / 66 °C                                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                                                                          | 225 °F / 108 °C                                                                                                                                                                                                                   |  | 192 °F / 89 °C                                                                                                                                                                                                                       | –                                                                                                                                                                                                           | 302 °F / 150 °C                                                                                                                                  | 154 °F / 68 °C                                                                                                                                                                                                                                                |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)     |                                  | 5300 psi / 36.6 MPa                                                                                                                                                                                                                                                                                     | –                                                                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                 |  | –                                                                                                                                                                                                                                    | –                                                                                                                                                                                                           | 8,200 psi / 56.5 MPa                                                                                                                             | 6,675 psi / 46.0 MPa                                                                                                                                                                                                                                          |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)      |                                  | 310 ksi / 2,136 MPa                                                                                                                                                                                                                                                                                     | 487.2 ksi / 3360 MPa                                                                                                                                                                                                                                                                                                       | –                                                                                                                                                                                                                                 |  | –                                                                                                                                                                                                                                    | –                                                                                                                                                                                                           | 418 ksi / 2,880 MPa                                                                                                                              | 615 ksi / 4,237 MPa                                                                                                                                                                                                                                           |
|                       | Elongation @ 77°F / 25°C (% at break)          |                                  | 7,70 %                                                                                                                                                                                                                                                                                                  | 5,00 %                                                                                                                                                                                                                                                                                                                     | –                                                                                                                                                                                                                                 |  | –                                                                                                                                                                                                                                    | –                                                                                                                                                                                                           | 2,50 %                                                                                                                                           | 1,77%                                                                                                                                                                                                                                                         |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa) |                                  | 7,700 psi / 53.1 MPa                                                                                                                                                                                                                                                                                    | 9,878 psi / 68 MPa                                                                                                                                                                                                                                                                                                         | 11,300 psi / 78 MPa                                                                                                                                                                                                               |  | –                                                                                                                                                                                                                                    | –                                                                                                                                                                                                           | 5,300 psi / 36.6 MPa                                                                                                                             | 10,000 psi / 68.9 MPa                                                                                                                                                                                                                                         |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)  |                                  | –                                                                                                                                                                                                                                                                                                       | 368 ksi / 2,538 MPa                                                                                                                                                                                                                                                                                                        | 355 ksi / 2,950 MPa                                                                                                                                                                                                               |  | –                                                                                                                                                                                                                                    | –                                                                                                                                                                                                           | –                                                                                                                                                | –                                                                                                                                                                                                                                                             |
| Handling              | Mix RatioWeight (PartA / Part B)               |                                  | 100 : 44                                                                                                                                                                                                                                                                                                | 100 : 43                                                                                                                                                                                                                                                                                                                   | 100 : 55                                                                                                                                                                                                                          |  | 100 : 45                                                                                                                                                                                                                             | 100 : 42.4                                                                                                                                                                                                  | 100 : 56                                                                                                                                         | 100 : 17                                                                                                                                                                                                                                                      |
|                       | CureTemperature (°F / °C)                      |                                  | 77-- 180 °F / 25 – 82 °C                                                                                                                                                                                                                                                                                | 77 – 180 °F / 25 – 82 °C                                                                                                                                                                                                                                                                                                   | ≥ 160 – 175 °F / 70 – 80 °C                                                                                                                                                                                                       |  | 180 – 220 °F / 82 – 104 °C                                                                                                                                                                                                           | > 77 °F / 25 °C 180 °F / 83 °C"                                                                                                                                                                             | 200 °F / 93 °C 250 °F / 121 °C 300 °F / 149 °C"                                                                                                  | 77 – 200 °F / 25 – 93 °C                                                                                                                                                                                                                                      |
|                       | CureTime                                       |                                  | 5 – 7 Days / 1 Hour                                                                                                                                                                                                                                                                                     | 5 – 7 Days/ 1 Hour                                                                                                                                                                                                                                                                                                         | 240 Minutes                                                                                                                                                                                                                       |  | 2 hours / 1 hour                                                                                                                                                                                                                     | 5 – 7 Days / 1 Hour                                                                                                                                                                                         | 220 Minutes 150 Minutes 130 Minutes                                                                                                              | 3 – 5 Days / 1 Hour                                                                                                                                                                                                                                           |
|                       | StorageTemperature (°F / °C)                   |                                  | 77 °F / 25 °C                                                                                                                                                                                                                                                                                           | 77 °F / 25 °C                                                                                                                                                                                                                                                                                                              | 40 °F / 4 °C                                                                                                                                                                                                                      |  | 40 °F / 4 °C                                                                                                                                                                                                                         | 77 °F / 25 °C                                                                                                                                                                                               | 40 °F / 4 °C                                                                                                                                     | 77 °F / 25 °C                                                                                                                                                                                                                                                 |
|                       | Pot Life (minutes / lb) / (minutes / kg)       |                                  | 60 Minutes / 100 Gram Mass / 50 Minutes / 200 Gram Mass / 40 Minutes / 450 Gram Mass                                                                                                                                                                                                                    | 50 Minutes / 200 Gram Mass                                                                                                                                                                                                                                                                                                 | 180 Minutes / 500 Gram Mass                                                                                                                                                                                                       |  | 300 Minutes / 500 Gram Mass                                                                                                                                                                                                          | 60 Minutes / 20 Gram Mass                                                                                                                                                                                   | 120 Minutes / 250 Gram Mass                                                                                                                      | 90 Minutes/ 450 Gram Mass                                                                                                                                                                                                                                     |
| Product               | New Product Name                               |                                  | LOCTITE EA 9359.3 AERO                                                                                                                                                                                                                                                                                  | LOCTITE EA 9360 AERO                                                                                                                                                                                                                                                                                                       | LOCTITE EA 9380 AERO                                                                                                                                                                                                              |  | LOCTITE EA 9380.05 AERO                                                                                                                                                                                                              | LOCTITE EA 9364FR AERO                                                                                                                                                                                      | LOCTITE EA 9390 AERO                                                                                                                             | LOCTITE EA 9394 AERO                                                                                                                                                                                                                                          |
|                       | Known As                                       |                                  | Hysol® EA 9359.3™                                                                                                                                                                                                                                                                                       | Hysol® EA 9360™                                                                                                                                                                                                                                                                                                            | Hysol® EA 9380™NEW!                                                                                                                                                                                                               |  | Hysol® EA 9380.05                                                                                                                                                                                                                    | Hysol® EA 9364FR™                                                                                                                                                                                           | Hysol® EA 9390™                                                                                                                                  | Hysol® EA 9394™                                                                                                                                                                                                                                               |
| Availability          | Packaging                                      |                                  | Quart Kit, Dual Cartridge, Gallon Kit"                                                                                                                                                                                                                                                                  | Quart Kit, Dual Cartridge, Gallon Kit                                                                                                                                                                                                                                                                                      | Dual Cartridge, Barrier Kit, Quart Kit                                                                                                                                                                                            |  | –                                                                                                                                                                                                                                    | –                                                                                                                                                                                                           | Quart Kit, Gram Kit, Clip Pack, Barrier Kit                                                                                                      | 55-Gallon Kit, 5-Gallon Kit, Clip Pack, Dual Cartridge, Gram Kit, Pint Kit, Quart Kit                                                                                                                                                                         |
| Description           |                                                |                                  | LOCTITE EA 9359.3 AERO <ul style="list-style-type: none"><li>• Easy Mix</li><li>• Good Environmental Resistance</li><li>• Non Sag</li><li>• High Shear Strength</li><li>• Bondline Thickness Control</li><li>• High Peel Strength</li><li>• Available in 2:1 Dual Cartridge with Static Mixer</li></ul> | LOCTITE EA 9360 AERO <ul style="list-style-type: none"><li>• Available in dual cartridge pack-aging</li><li>• High peel strength</li><li>• Excellent static stress durability</li><li>• &gt;225°F (107°C) service</li><li>• Easy mixing two component system</li><li>• Room temperature cure</li><li>• Low Slump</li></ul> | LOCTITE EA 9380 AERO <ul style="list-style-type: none"><li>• Low temp curing two-part adhesive</li><li>• Meter mixable</li><li>• High strength, toughness and high temp resistance</li><li>• Prebond humidity resistant</li></ul> |  | LOCTITE EA 9380.05 AERO <ul style="list-style-type: none"><li>• Low temp curing two-part adhesive</li><li>• Meter mixable</li><li>• High strength, toughness and high temp resistance</li><li>• Prebond humidity resistant</li></ul> | LOCTITE EA 9364FR AERO is a two-component flame retardant toughened paste adhesive, with excellent mechanical performance. It contains no halogenated resins common in many other flame retardant products. | LOCTITE EA 9390 AERO <ul style="list-style-type: none"><li>• Good Hot/Wet Strength</li><li>• Good Wetting</li><li>• High Shear Modulus</li></ul> | LOCTITE EA 9394 AERO <ul style="list-style-type: none"><li>• Good Gap Filling Capabilities</li><li>• Potting Material</li><li>• Room Temperature Storage</li><li>• Outstanding Mechanical Properties</li><li>• Long Pot Life</li><li>• Low Toxicity</li></ul> |

Composite Bonding and Repair

|                       |                                                |                                  |                                                                          |                                                                                                                                                                                                        |                                                                 |                                                                                                                                                                            |                                     |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                        |                                                                                                                                      |                                                                                                                       |
|-----------------------|------------------------------------------------|----------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Characteristics       | 180°F / 82°C Service                           |                                  |                                                                          | •                                                                                                                                                                                                      | •                                                               |                                                                                                                                                                            |                                     |                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                      | •                                                                                                                                    | •                                                                                                                     |
|                       | 300°F/149°C Service                            |                                  |                                                                          | •                                                                                                                                                                                                      |                                                                 |                                                                                                                                                                            |                                     |                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                      | •                                                                                                                                    | •                                                                                                                     |
|                       | 350°F / 177°C Service                          |                                  |                                                                          |                                                                                                                                                                                                        |                                                                 |                                                                                                                                                                            |                                     |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                        |                                                                                                                                      |                                                                                                                       |
|                       | 450°F / 232°C Service                          |                                  |                                                                          |                                                                                                                                                                                                        |                                                                 |                                                                                                                                                                            |                                     |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                        |                                                                                                                                      |                                                                                                                       |
|                       | Improved Hot / Wet Properties                  |                                  |                                                                          |                                                                                                                                                                                                        |                                                                 |                                                                                                                                                                            |                                     |                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                      | •                                                                                                                                    | •                                                                                                                     |
|                       | Toughened                                      |                                  |                                                                          | •                                                                                                                                                                                                      | •                                                               | •                                                                                                                                                                          |                                     |                                                                                                                                                                                                                                                                                                 | •                                                                                                                                                      | •                                                                                                                                    |                                                                                                                       |
|                       | Consistency                                    |                                  |                                                                          | Thixotropic                                                                                                                                                                                            | Moderate Viscosity                                              | Moderate Viscosity                                                                                                                                                         |                                     | Moderate Viscosity                                                                                                                                                                                                                                                                              | Thixotropic                                                                                                                                            | Low Viscosity                                                                                                                        | Low Viscosity                                                                                                         |
|                       | Form                                           |                                  |                                                                          | 2 Part                                                                                                                                                                                                 | 2 Part                                                          | 2 Part                                                                                                                                                                     |                                     | 2 Part                                                                                                                                                                                                                                                                                          | 2 Part                                                                                                                                                 | 2 Part                                                                                                                               | 2 Part                                                                                                                |
|                       | Peel Strength                                  |                                  |                                                                          | Nil                                                                                                                                                                                                    | High                                                            | High                                                                                                                                                                       |                                     | Low                                                                                                                                                                                                                                                                                             | Low                                                                                                                                                    | Moderate                                                                                                                             | Low                                                                                                                   |
| Mechanical Properties | Bell Peel 77°F (lb / in) 25°C (N / 25 mm)      |                                  |                                                                          | 20 lbs / in 90 N / 25 mm                                                                                                                                                                               | 44 lbs / in 196 N / 25 mm                                       | 65 lbs / in 289 N / 25 mm                                                                                                                                                  |                                     | 10 lbs / in 45 N / 25 mm                                                                                                                                                                                                                                                                        | 15 lbs / in 67 N / 25 mm                                                                                                                               | 25 lbs / in 111 N / 25 mm                                                                                                            | 15 lbs / in 67 N / 25 mm                                                                                              |
|                       | TENSILE LAP SHEAR                              | -67°F (psi) / -55°C (Mpa)        |                                                                          | 2,700 psi / 18.6 MPa                                                                                                                                                                                   | –                                                               | 6,525 psi / 45 MPa                                                                                                                                                         |                                     | 3,500 psi / 24.1 MPa                                                                                                                                                                                                                                                                            | 2,300 psi / 15.8 MPa                                                                                                                                   | 3,300 psi / 22.8 MPa                                                                                                                 | 2,500 psi / 17.2 MPa                                                                                                  |
|                       |                                                | 77°F (psi) / 25°C (Mpa)          |                                                                          | 4,910 psi / 33.9 MPa                                                                                                                                                                                   | 4,800 psi / 33.1 MPa                                            | 6,525 psi / 45 MPa                                                                                                                                                         |                                     | 5,000 psi / 34.5 MPa                                                                                                                                                                                                                                                                            | 4,300 psi / 29.7 MPa                                                                                                                                   | 3,500 psi / 24.1 MPa                                                                                                                 | 4,600 psi / 31.7 MPa                                                                                                  |
|                       |                                                | 180°F (psi) / 82°C (Mpa)         |                                                                          | 3,140 psi / 21.7 MPa                                                                                                                                                                                   | –                                                               | 3,625 psi / 25 MPa                                                                                                                                                         |                                     | 4,000 psi / 27.5 MPa                                                                                                                                                                                                                                                                            | 3,500 psi / 24.1 MPa                                                                                                                                   | 3,200 psi / 22.0 MPa                                                                                                                 | 4,100 psi / 28.3 MPa                                                                                                  |
|                       |                                                | Elevated Temperature (psi / MPa) |                                                                          | 1,640 psi / 11.3 MPa                                                                                                                                                                                   | –                                                               | –                                                                                                                                                                          |                                     | 2,500 psi / 17.2 MPa                                                                                                                                                                                                                                                                            | 1,200 psi / 8.3 MPa                                                                                                                                    | 1,250 psi / 8.6 MPa                                                                                                                  | 2,500 psi / 17.2 MPa                                                                                                  |
| Bulk Properties       | Tg Dry (°F / °C)                               |                                  |                                                                          | 158 °F / 70 °C                                                                                                                                                                                         | 208 °F / 98 °C                                                  | –                                                                                                                                                                          |                                     | –                                                                                                                                                                                                                                                                                               | 163 °F / 73 °C                                                                                                                                         | 208 °F / 98 °C                                                                                                                       | 226°F / 108°C                                                                                                         |
|                       | Tg Wet (°F / °C)                               |                                  |                                                                          | 196 °F / 91 °C                                                                                                                                                                                         | 145 °F / 63 °C                                                  | –                                                                                                                                                                          |                                     | –                                                                                                                                                                                                                                                                                               | 246 °F / 119 °C                                                                                                                                        | 145 °F / 63 °C                                                                                                                       | 232°F / 111°C                                                                                                         |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)     |                                  |                                                                          | –                                                                                                                                                                                                      | –                                                               | –                                                                                                                                                                          |                                     | –                                                                                                                                                                                                                                                                                               | 8,070 psi / 55.6 MPa                                                                                                                                   | 8,000 psi / 55.2 MPa                                                                                                                 | –                                                                                                                     |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)      |                                  |                                                                          | –                                                                                                                                                                                                      | –                                                               | –                                                                                                                                                                          |                                     | –                                                                                                                                                                                                                                                                                               | 717 ksi / 4,940 MPa                                                                                                                                    | 400 ksi / 2,750 MPa                                                                                                                  | –                                                                                                                     |
|                       | Elongation @ 77°F / 25°C (% at break)          |                                  |                                                                          | –                                                                                                                                                                                                      | –                                                               | –                                                                                                                                                                          |                                     | –                                                                                                                                                                                                                                                                                               | 2,60 %                                                                                                                                                 | 3,40 %                                                                                                                               | –                                                                                                                     |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa) |                                  |                                                                          | 11,329 psi / 78.1 MPa                                                                                                                                                                                  | –                                                               | –                                                                                                                                                                          |                                     | 32,000 psi / 220.7 MPa                                                                                                                                                                                                                                                                          | 14,000 psi / 94.5 MPa                                                                                                                                  | 70,000 psi / 482.8 MPa                                                                                                               | 14,000 psi / 96.6 MPa                                                                                                 |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)  |                                  |                                                                          | –                                                                                                                                                                                                      | –                                                               | –                                                                                                                                                                          |                                     | –                                                                                                                                                                                                                                                                                               | 429 ksi / 2.956 MPa                                                                                                                                    | 8,000 psi / 55,150 MPa                                                                                                               | –                                                                                                                     |
| Handling              | Mix RatioWeight (PartA / Part B)               |                                  |                                                                          | 100 : 27                                                                                                                                                                                               | 100 : 35                                                        | 100 : 43                                                                                                                                                                   |                                     | 100 : 20                                                                                                                                                                                                                                                                                        | 100 : 17                                                                                                                                               | 100 : 30                                                                                                                             | 100 : 36                                                                                                              |
|                       | CureTemperature (°F / °C)                      |                                  |                                                                          | 77 °F / 25 °C                                                                                                                                                                                          | > 77 °F / 25 °C 150 °F / 66 °C"                                 | > 77 °F / 25 °C 150 °F / 66 °C"                                                                                                                                            |                                     | > 200 °F / 93 °C                                                                                                                                                                                                                                                                                | 77 – 150 °F / 25 - 66 °C                                                                                                                               | 77 – 150 °F / 25 - 66 °C                                                                                                             | 200 °F / 93 °C                                                                                                        |
|                       | CureTime                                       |                                  |                                                                          | 24 Hours                                                                                                                                                                                               | 5 Days / 1 Hour                                                 | 5 –7 Days / 2 Hours                                                                                                                                                        |                                     | 1 Hour                                                                                                                                                                                                                                                                                          | 5 Days / 1 Hour                                                                                                                                        | 3 – 5 Days / 1 Hour                                                                                                                  | 1 Hour                                                                                                                |
|                       | StorageTemperature (°F / °C)                   |                                  |                                                                          | 77 °F / 25 °C                                                                                                                                                                                          | 82 °F / 28 °C                                                   | 82 °F / 28 °C                                                                                                                                                              |                                     | 77 °F / 25 °C                                                                                                                                                                                                                                                                                   | 77 °F / 25 °C                                                                                                                                          | 77 °F / 25 °C                                                                                                                        | 77 °F / 25 °C                                                                                                         |
|                       | Pot Life (minutes /lb) / (minutes /kg)         |                                  |                                                                          | 20 – 30 Minutes / 100 Gram Mass                                                                                                                                                                        | 90 Minutes/ 400 Gram Mass                                       | 30 Minutes / 100 Gram Mass                                                                                                                                                 |                                     | 7 Hours / 450 Gram Mass                                                                                                                                                                                                                                                                         | 95 – 100 Minutes / 450 Gram Mass                                                                                                                       | 120 Minutes / 100 Gram Mass                                                                                                          | 7 Hours / 450 Gram Mass                                                                                               |
| Product               | New Product Name                               |                                  |                                                                          | LOCTITE EA 9394.2 AERO                                                                                                                                                                                 | LOCTITE EA 9345 AERO                                            | LOCTITE EA 9363 AERO                                                                                                                                                       |                                     | LOCTITE EA 9394/C-2 AERO                                                                                                                                                                                                                                                                        | LOCTITE EA 9395 AERO                                                                                                                                   | LOCTITE EA 9396 AERO                                                                                                                 | LOCTITE EA 9396/C-2 AERO                                                                                              |
|                       | Known As                                       |                                  |                                                                          | Hysol® EA 9394.2™                                                                                                                                                                                      | Hysol® EA 9345™                                                 | Hysol® EA 9363™                                                                                                                                                            |                                     | Hysol® EA 9394™ / C-2™                                                                                                                                                                                                                                                                          | Hysol® EA 9395™                                                                                                                                        | Hysol® EA 9396™                                                                                                                      | Hysol® EA 9396™ / C-2™                                                                                                |
| Availability          | Packaging                                      |                                  | Dual Cartridge, Pint Kit, Quart Kit, Clip Pack, Gallon Kit, 5-Gallon Kit | Gallon Kit                                                                                                                                                                                             | 5-Gallon Kit, Gallon Kit                                        |                                                                                                                                                                            | Quart Kit, Injection Kit, Clip Pack | Quart Kit, Injection Kit, Clip Pack, 5-Gallon Kit, Gallon Kit                                                                                                                                                                                                                                   | 50-Gram Kit, 5-Gallon Kit, Barrier Kit, Clip Pack, Gallon Kit, Gram Kit, Injection Kit, Pint Kit, Quart Kit"                                           | Quart Kit                                                                                                                            |                                                                                                                       |
| Description           |                                                |                                  |                                                                          | LOCTITE EA 9394.2 AERO is a fast curing two-part structural paste adhesive, which cures at room temperature. Its thixotropic nature makes it ideal for potting, filling, and liquid shim applications. | LOCTITE EA 9345 AERO • Long Pot Life • Non-Asbestos • Toughened | LOCTITE EA 9363 AERO is a two-component toughened paste adhesive, which combines high peel strength at room temperature with tensile lap shear strength at 200 °F / 93 °C. |                                     | LOCTITE EA 9394/C-2 AERO is an elevated temperature curing, high service temperature structural paste adhesive. It uses a non-aromatic amine curing agent that retains many of the excellent properties offered by aromatic amine cured systems, high temperature service with a long pot life. | LLOCTITE EA 9395 AERO • Non-Metallic Filler • Cures at Ambient Temperature • Thixotropic • Excellent Mechanical Properties • Good Compressive Strength | LOCTITE EA 9396 AERO • Low Viscosity • Room Temperature Cure • Room Temperature Storage • High Strength at Low and High Temperatures | LOCTITE EA 9396/C-2 AERO • Low Viscosity • Long Work Life • Non-MDA Curing Agent • Ideal for use as Neat Lay-up Resin |

Composite Bonding and Repair

|                       |                                                                                                                           |                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                            |                                                                                                                              |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                          |                            |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Characteristics       | 180°F / 82°C Service                                                                                                      |                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                            |                                                                                                                              | •                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                          | •                          |
|                       | 300°F/149°C Service                                                                                                       |                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                            |                                                                                                                              |                                                                                                                                                                                                               | •                                                                                                                                                                                                                                                                                        |                            |
|                       | 350°F / 177°C Service                                                                                                     |                                                           | •                                                                                                                                                                                                          | •                                                                                                                                                                                                                                                                        | •                          |                                                                                                                              |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                          |                            |
|                       | 450°F / 232°C Service                                                                                                     |                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                            |                                                                                                                              |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                          |                            |
|                       | Improved Hot / Wet Properties                                                                                             |                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                            |                                                                                                                              |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                          |                            |
|                       | Toughened                                                                                                                 |                                                           | •                                                                                                                                                                                                          | •                                                                                                                                                                                                                                                                        |                            |                                                                                                                              | •                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                          | •                          |
|                       | Consistency                                                                                                               |                                                           | Moderate Viscosity                                                                                                                                                                                         | Thixotropic                                                                                                                                                                                                                                                              | Thixotropic                |                                                                                                                              | Moderate Viscosity                                                                                                                                                                                            | Thixotropic                                                                                                                                                                                                                                                                              | Moderate Viscosity         |
|                       | Form                                                                                                                      |                                                           | 2 Part                                                                                                                                                                                                     | 2 Part                                                                                                                                                                                                                                                                   | 2 Part                     |                                                                                                                              | 2 Part                                                                                                                                                                                                        | 2 Part                                                                                                                                                                                                                                                                                   | 2 Part                     |
|                       | Peel Strength                                                                                                             |                                                           | High                                                                                                                                                                                                       | High                                                                                                                                                                                                                                                                     | Low                        |                                                                                                                              | High                                                                                                                                                                                                          | Nil                                                                                                                                                                                                                                                                                      | High                       |
| Mechanical Properties | Bell Peel 77°F (lb / in) 25°C (N / 25 mm)                                                                                 |                                                           | 25 lbs / in 111 N / 25 mm                                                                                                                                                                                  | 40 lbs / in 178 N / 25 mm                                                                                                                                                                                                                                                | 20 lbs / in 90 N / 25 mm   |                                                                                                                              | 35 lbs / in 150 N / 25 mm                                                                                                                                                                                     | –                                                                                                                                                                                                                                                                                        | 40 lbs / in 178 N / 25 mm  |
|                       | TENSILE LAP SHEAR                                                                                                         | -67°F (psi) / -55°C (Mpa)'                                | 6,700 psi / 46.2 MPa                                                                                                                                                                                       | 3,500 psi / 24.1 MPa                                                                                                                                                                                                                                                     | 3,300 psi / 22.7 MPa       |                                                                                                                              | 4,900 psi / 33.8 MPa                                                                                                                                                                                          | 2,000 psi / 13.8 MPa                                                                                                                                                                                                                                                                     | 4600 psi / 31.7 Mpa        |
|                       |                                                                                                                           | 77°F (psi) / 25°C (Mpa)                                   | 6,100 psi / 42.1 MPa                                                                                                                                                                                       | 4,300 psi / 29.6 MPa                                                                                                                                                                                                                                                     | 4,200 psi / 28.9 MPa       |                                                                                                                              | 5,000 psi / 34.5 MPa                                                                                                                                                                                          | 2,200 psi / 15.2 MPa                                                                                                                                                                                                                                                                     | 5400 psi / 37.2 Mpa        |
|                       |                                                                                                                           | 180°F (psi) / 82°C (Mpa)                                  | 1,300 psi / 9.0 MPa                                                                                                                                                                                        | 2,500 psi / 17.2 MPa                                                                                                                                                                                                                                                     | 3,000 psi / 20.7 MPa       |                                                                                                                              | 2,300 psi / 15.9 MPa                                                                                                                                                                                          | 700 psi / 4.8 MPa                                                                                                                                                                                                                                                                        | 1000 psi / 6.9 Mpa         |
|                       | Elevated Temperature (psi / MPa)                                                                                          | –                                                         | 1,000 psi / 6.9 MPa                                                                                                                                                                                        | 600 psi / 4.1 MPa                                                                                                                                                                                                                                                        |                            | –                                                                                                                            | –                                                                                                                                                                                                             | –                                                                                                                                                                                                                                                                                        |                            |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                          |                                                           | 127 °F / 53 °C                                                                                                                                                                                             | 164 °F / 73 °C                                                                                                                                                                                                                                                           | 172 °F / 78 °C             |                                                                                                                              | 180 °F / 82 °C                                                                                                                                                                                                | 150 °F / 66 °C                                                                                                                                                                                                                                                                           | 174°F / 79°C               |
|                       | Tg Wet (°F / °C)                                                                                                          |                                                           | 147 °F / 64 °C                                                                                                                                                                                             | 144 °F / 62 °C                                                                                                                                                                                                                                                           | 154 °F / 68 °C             |                                                                                                                              | –                                                                                                                                                                                                             | 175 °F / 79 °C                                                                                                                                                                                                                                                                           | 138°F / 59°C               |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)                                                                                |                                                           | 4,500 psi / 31 MPa                                                                                                                                                                                         | 6,000 psi / 41.3 MPa                                                                                                                                                                                                                                                     | 6,675 psi / 46.0 MPa       |                                                                                                                              | 5,000 psi / 34.5 MPa                                                                                                                                                                                          | 2200 psi / 15.2 MPA                                                                                                                                                                                                                                                                      | 5400 psi / 37.2 Mpa        |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                 |                                                           | 338 ksi / 2,331 MPa                                                                                                                                                                                        | 475 ksi / 3,273 MPa                                                                                                                                                                                                                                                      | 615 ksi / 4,237 MPa        |                                                                                                                              | 330 ksi / 2,274 MPa                                                                                                                                                                                           | –                                                                                                                                                                                                                                                                                        | –                          |
|                       | Elongation @ 77°F / 25°C (% at break)                                                                                     |                                                           | 10,00 %                                                                                                                                                                                                    | 4,00 %                                                                                                                                                                                                                                                                   | 1,70 %                     |                                                                                                                              | 9,00 %                                                                                                                                                                                                        | –                                                                                                                                                                                                                                                                                        | 4,80%                      |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa)                                                                            |                                                           | 7,000 psi / 48.2 MPa                                                                                                                                                                                       | 9,300 psi / 64.1 MPa                                                                                                                                                                                                                                                     | 10,000 psi / 68.9 MPa      |                                                                                                                              | 8,000 psi / 55.1 MPa                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                                        | 7700 psi / 53 MPa          |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)                                                                             |                                                           | 249 ksi / 1,716 MPa                                                                                                                                                                                        | –                                                                                                                                                                                                                                                                        | –                          |                                                                                                                              | 265 ksi / 1,826 MPa                                                                                                                                                                                           | –                                                                                                                                                                                                                                                                                        | 218 Ksi / 1502 MPa         |
| Handling              | Mix RatioWeight (PartA / Part B)                                                                                          |                                                           | 100 : 30                                                                                                                                                                                                   | 100 : 32                                                                                                                                                                                                                                                                 | –                          |                                                                                                                              | 100 : 19                                                                                                                                                                                                      | 100 : 50                                                                                                                                                                                                                                                                                 | 100 : 22                   |
|                       | CureTemperature (°F / °C)                                                                                                 |                                                           | 77 °F / 25 °C 150 °F / 66 °C"                                                                                                                                                                              | 77 °F / 25 °C 180 °F / 82 °C"                                                                                                                                                                                                                                            | 77 – 200 °F / 25 – 93 °C"  |                                                                                                                              | > 77 – 200°F / > 25 - 93°C                                                                                                                                                                                    | 77 – 160 °F / 25 – 71 °C                                                                                                                                                                                                                                                                 | 77 – 200 °F / 25 – 93°C    |
|                       | CureTime                                                                                                                  |                                                           | 3 – 5 Days / 1 Hour                                                                                                                                                                                        | 5 – 7 Day / 1 Hour                                                                                                                                                                                                                                                       | 3 – 5 Days/ 1 Hour         |                                                                                                                              | 5 – 7 Days / 1 Hour                                                                                                                                                                                           | 24 Hours / 1 Hour                                                                                                                                                                                                                                                                        | 5 Days                     |
|                       | StorageTemperature (°F / °C)                                                                                              |                                                           | 77 °F / 25 °C                                                                                                                                                                                              | 82 °F / 28 °C                                                                                                                                                                                                                                                            | 82 °F / 28 °C              |                                                                                                                              | 77 °F / 25 °C                                                                                                                                                                                                 | 77 °F / 25 °C                                                                                                                                                                                                                                                                            | 82 °F / 28°C               |
|                       | Pot Life (minutes / lb) / (minutes / kg)                                                                                  |                                                           | 120 Minutes / 100 Gram Mass                                                                                                                                                                                | 75 Minutes / 100 Gram Mass                                                                                                                                                                                                                                               | 90 Minutes / 450 Gram Mass |                                                                                                                              | 25 Minutes / 200 Gram Mass                                                                                                                                                                                    | 30 minutes / 100 Gram Mass                                                                                                                                                                                                                                                               | 30 Minutes / 450 Gram Mass |
| Product               | New Product Name                                                                                                          |                                                           | LOCTITE EA 9309NA AERO                                                                                                                                                                                     | LOCTITE EA 9392 AERO                                                                                                                                                                                                                                                     | LOCTITE EA 9394S AERO      |                                                                                                                              | LOCTITE EA 9320NA AERO                                                                                                                                                                                        | LOCTITE EA 960F AERO                                                                                                                                                                                                                                                                     | LOCTITE EA 9309.2 AERO     |
|                       | Known As                                                                                                                  |                                                           | Hysol® EA 9309NA™                                                                                                                                                                                          | Hysol® EA 9392™                                                                                                                                                                                                                                                          | Hysol® EA 9394S™           |                                                                                                                              | Hysol® EA 9320NA™                                                                                                                                                                                             | Hysol® EA 960F™                                                                                                                                                                                                                                                                          | Hysol® EA 9309.2™          |
| Availability          | Packaging                                                                                                                 | Pint Kit, Quart Kit, Gallon Kit, Clip Pack, Injection Kit | Quart Kit                                                                                                                                                                                                  | Injection Kit                                                                                                                                                                                                                                                            |                            |                                                                                                                              | Quart Kit, Gallon Kit, Injection Kit                                                                                                                                                                          | 50-Gram Kit, 5-Gallon Kit, Clip Pack, Gallon Kit, Quart Kit                                                                                                                                                                                                                              | Pudding Cup, Quart Kit     |
| Description           | LOCTITE EA 9309NA AERO <ul style="list-style-type: none"><li>• High Peel Strength</li><li>• Bonds Many Surfaces</li></ul> |                                                           | LOCTITE EA 9392 AERO is a paste adhesive, which possesses excellent shear strength at high temperatures. This product exhibits excellent toughness and yields durable bonds over a wide temperature range. | Loctite EA 9394S AERO is a two-part structural paste adhesive, which possesses excellent strength at high temperatures. Its thixotropic nature and excellent high temperature compressive strength also make it ideal for potting, filling and liquid shim applications. |                            | LOCTITE EA 9320NA AERO is a two-component paste adhesive with good peel strength as well as elevated temperature resistance. | LOCTITE 960F AERO iis a fairing and smoothing compound for exterior aircraft surfaces. It is a two-component system, which cures rapidly at room temperature. It is color coded to identify when fully mixed. | LOCTITE EA 9309.2 AERO is a two part epoxy sytem bonds metal skins and honeycomb core to yield tough permanently flexible joints that resist humidity, water and most common fluids. Its outstanding feature is high shear and peel strength on aluminum bonds at moderate temperatures. |                            |

Notes

LOCTITE fire retardant

Be sure to protect your aircraft from fire

For aircrafts, fire breakout is one of the most dangerous incidents. By using the right fire retardant on honeycomb panels for edge close out, insert bonding or potting, aircraft manufacturers can do their best to protect their aircraft.

Especially developed for the highest safety standards: LOCTITE fire retardant

Henkel has developed special flame retardant products for aircraft interior applications. They are toughened paste adhesive with superior dispense rate and high compressive strength potting compound. LOCTITE flame retardants are halogens, antimony and phenol-free.

Why choose LOCTITE fire retardant?

- › Easy to apply
- › Room temperature storage
- › Provide excellent mechanical properties
- › Offer long mixed working life
- › Supplied in cartridges

LOCTITE fire retardant: Facts at a glance

LOCTITE fire retardants key features:

- › Two component product
- › Halogens, antimony and phenol-free
- › Slump resistant
- › Excellent strength after cure

|                       |                                               |                                                                                                                                                                                                                   |                                   |                                                                                                                                                                                                                                                                       |
|-----------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics       | 180°F / 82°C Service                          |                                                                                                                                                                                                                   | •                                 | •                                                                                                                                                                                                                                                                     |
|                       | 350°F / 177°C Service                         |                                                                                                                                                                                                                   |                                   |                                                                                                                                                                                                                                                                       |
|                       | Consistency                                   |                                                                                                                                                                                                                   | Moderate Viscosity                |                                                                                                                                                                                                                                                                       |
|                       | Form                                          |                                                                                                                                                                                                                   | 2 Part                            |                                                                                                                                                                                                                                                                       |
|                       | Peel Strength                                 |                                                                                                                                                                                                                   | Low                               |                                                                                                                                                                                                                                                                       |
| Mechanical Properties | Bell Peel @ 77°F (lb / in) / 25°C (N / 25 mm) |                                                                                                                                                                                                                   | 20 lbs / in<br>89 N / 25 mm       | –                                                                                                                                                                                                                                                                     |
|                       | TENSILE LAP SHEAR                             | 77°F (psi) / 25°C (Mpa)                                                                                                                                                                                           | 4,370 psi / 30.1 MPa              | –                                                                                                                                                                                                                                                                     |
| Handling              | Mix RatioWeight (PartA / Part B)              |                                                                                                                                                                                                                   | 100 : 42.4                        |                                                                                                                                                                                                                                                                       |
|                       | CureTemperature (°F / °C)                     |                                                                                                                                                                                                                   | > 77 °F / 25 °C<br>180 °F / 83 °C | 250 °F / 121 °C<br>or 350 °F / 177 °C                                                                                                                                                                                                                                 |
|                       | CureTime                                      |                                                                                                                                                                                                                   | 5 – 7 Days /<br>1 Hour            | 90 Minutes / 60 Minutes                                                                                                                                                                                                                                               |
|                       | StorageTemperature (°F / °C)                  |                                                                                                                                                                                                                   | 77 °F / 25 °C                     | 0 °F / -18 °C                                                                                                                                                                                                                                                         |
|                       | Pot Life (minutes / lb) / (minutes / kg)      |                                                                                                                                                                                                                   | 60 Minutes / 20 Gram Mass         | –                                                                                                                                                                                                                                                                     |
| Product               | New Product Name                              |                                                                                                                                                                                                                   | LOCTITE<br>EA 9364FR<br>AERO      | LOCTITE<br>EF 562SFR AERO                                                                                                                                                                                                                                             |
|                       | Known As                                      |                                                                                                                                                                                                                   | Hysol® EA 9364FR™                 | Hysol® MA 562SFR™                                                                                                                                                                                                                                                     |
| Availability          | Packaging                                     |                                                                                                                                                                                                                   | Dual Cartridge, Gallon Kit        | Sheet                                                                                                                                                                                                                                                                 |
| Description           |                                               | LOCTITE<br>EA 9364FR AERO<br>is a two-component flame retardant toughened paste adhesive, with excellent mechanical performance. It contains no halogenated resins common in many other flame retardant products. |                                   | LOCTITE<br>EF 562SFR AERO<br>is an expanding foam adhesive, which is supplied as a fil for core splicing and closeout of honeycomb panels. It offers the advantages of a fire retardant structural adhesive, which may be cured at 250 °F / 121 °C or 350 °F / 177 °C |

We mind the gaps for you with  
**LOCTITE liquid shims**

The way to eliminate small gaps

Whenever gaps and differences between two composite parts occur, shims both in solid and liquid form are used to eliminate them. For gaps less than 3 millimeters or for wide area fit up, liquid shims are employed. They are spread on one side of the rib, squeezed together and bolted. This forces any excess shim material to be squeezed out leaving just the necessary amount of shim to bridge any gaps occurring in the manufacturing process.

Guaranteeing a perfect result: LOCTITE liquid shims

LOCTITE liquid shims are epoxy-based materials that provide not only high compressive strength, but also a balance between open assembly time and strength. They operate as both, an adhesive and shim, offer good compressive strength across a wide temperature range and allow a long out time to facilitate larger parts.

Why choose LOCTITE liquid shims?

- › Good gap filling capabilities
- › Fast cure time
- › Tough – resistance to microcracking
- › Qualified at most commercial aircraft OEMs
- › Optimized to match CTE difference on composite substrates

LOCTITE liquid shims:  
**Facts at a glance**

LOCTITE liquid shims key features:

- › Two-part custom filled epoxy-based materials
- › Ambient temperature storage
- › Extremely high compressive strength
- › Ambient & elevated temperature cure

Key factors to consider when choosing the right LOCTITE liquid shim

- › Good compression properties
- › Temperature performance
- › Fluid resistance: fuel, water ingresson
- › Low slump: low flow on vertical surfaces
- › Adhesion properties: must bond well to substrate

Liquid Shim

|                       |                                                                                                                                                                                                                                                               |                                                                                       |                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics       | 180°F / 82°C Service                                                                                                                                                                                                                                          |                                                                                       | •                                                                                                                                                      | •                                                                                                                                                                                                                                                                                                                         |
|                       | 300°F / 149°C Service                                                                                                                                                                                                                                         | •                                                                                     |                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                           |
|                       | 350°F / 177°C Service                                                                                                                                                                                                                                         |                                                                                       |                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                           |
|                       | Improved Hot / Wet Properties                                                                                                                                                                                                                                 | •                                                                                     |                                                                                                                                                        | •                                                                                                                                                                                                                                                                                                                         |
|                       | Toughened                                                                                                                                                                                                                                                     | •                                                                                     |                                                                                                                                                        | •                                                                                                                                                                                                                                                                                                                         |
|                       | Consistency                                                                                                                                                                                                                                                   | Thixotropic                                                                           | Thixotropic                                                                                                                                            | Thixotropic                                                                                                                                                                                                                                                                                                               |
|                       | Form                                                                                                                                                                                                                                                          | 2 Part                                                                                | 2 Part                                                                                                                                                 | 2 Part                                                                                                                                                                                                                                                                                                                    |
|                       | Peel Strength                                                                                                                                                                                                                                                 | Low                                                                                   | High                                                                                                                                                   | High                                                                                                                                                                                                                                                                                                                      |
| Mechanical Properties | Bell Peel 77°F (lb / in) 25°C (N / 25 mm)                                                                                                                                                                                                                     | 20 lbs / in 89 N / 25 mm                                                              | 50 lbs / in 178 N / 25 mm                                                                                                                              | 60 lbs / in 265 N / 25 mm                                                                                                                                                                                                                                                                                                 |
|                       | TENSILE LAP SHEAR                                                                                                                                                                                                                                             | -67°F (psi) / -55°C (Mpa)'                                                            | 3,300 psi / 22.7 MPa                                                                                                                                   | 4,650 psi / 32.1 MPa                                                                                                                                                                                                                                                                                                      |
|                       |                                                                                                                                                                                                                                                               | 77°F (psi) / 25°C (Mpa)                                                               | 4,200 psi / 28.9 MPa                                                                                                                                   | 5,350 psi / 36.9 MPa                                                                                                                                                                                                                                                                                                      |
|                       |                                                                                                                                                                                                                                                               | 180°F (psi) / 82°C (Mpa)                                                              | 3,000 psi / 20.7 MPa                                                                                                                                   | 4,200 psi / 29.0 MPa                                                                                                                                                                                                                                                                                                      |
|                       |                                                                                                                                                                                                                                                               | Elevated Temperature (psi / MPa)                                                      | 1,200 psi / 8.3 MPa                                                                                                                                    | 2,500 psi / 17.2 MPa                                                                                                                                                                                                                                                                                                      |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                                              | 172 °F / 78 °C                                                                        | 153 °F / 67 °C                                                                                                                                         | 151 °F / 66 °C                                                                                                                                                                                                                                                                                                            |
|                       | Tg Wet (°F / °C)                                                                                                                                                                                                                                              | 154 °F / 68 °C                                                                        | –                                                                                                                                                      | –                                                                                                                                                                                                                                                                                                                         |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                                    | 6,675 psi / 46.0 MPa                                                                  | –                                                                                                                                                      | –                                                                                                                                                                                                                                                                                                                         |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                                     | 615 ksi / 4,237 MPa                                                                   | –                                                                                                                                                      | 487.2 ksi / 3360 MPa                                                                                                                                                                                                                                                                                                      |
|                       | Elongation @ 77°F / 25°C (% at break)                                                                                                                                                                                                                         | 1,77 %                                                                                | –                                                                                                                                                      | 5,00 %                                                                                                                                                                                                                                                                                                                    |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                                | 10,000 psi / 68.9 MPa                                                                 | 11,300 psi / 78 MPa                                                                                                                                    | 9,878 psi / 68 MPa                                                                                                                                                                                                                                                                                                        |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                                 | –                                                                                     | 355 ksi / 2,950 MPa                                                                                                                                    | 368 ksi / 2,538 MPa                                                                                                                                                                                                                                                                                                       |
| Handling              | Mix RatioWeight (PartA / Part B)                                                                                                                                                                                                                              | 100 : 17                                                                              | 100 : 55                                                                                                                                               | 100 : 43                                                                                                                                                                                                                                                                                                                  |
|                       | CureTemperature (°F / °C)                                                                                                                                                                                                                                     | 77 – 200 °F / 25 – 93 °C                                                              | ≥ 160 – 175 °F / 70 – 80 °C                                                                                                                            | 77 – 180 °F / 25 – 82 °C                                                                                                                                                                                                                                                                                                  |
|                       | CureTime                                                                                                                                                                                                                                                      | 3 – 5 Days / 1 Hour                                                                   | 240 Minutes                                                                                                                                            | 5 – 7 Days/ 1 Hour                                                                                                                                                                                                                                                                                                        |
|                       | StorageTemperature (°F / °C)                                                                                                                                                                                                                                  | 77 °F / 25 °C                                                                         | 40 °F / 4 °C                                                                                                                                           | 77 °F / 25 °C                                                                                                                                                                                                                                                                                                             |
|                       | Pot Life (minutes / lb) / (minutes / kg)                                                                                                                                                                                                                      | 90 Minutes 450 Gram Mass                                                              | 180 Minutes 500 Gram Mass                                                                                                                              | 50 Minutes 200 Gram Mass                                                                                                                                                                                                                                                                                                  |
| Product               | New Product Name                                                                                                                                                                                                                                              | LOCTITE EA 9394 AERO                                                                  | LOCTITE EA 9377 AERO                                                                                                                                   | LOCTITE EA 9360 AERO                                                                                                                                                                                                                                                                                                      |
|                       | Known As                                                                                                                                                                                                                                                      | Hysol® EA 9394™                                                                       | Hysol® EA 9377™                                                                                                                                        | Hysol® EA 9360™                                                                                                                                                                                                                                                                                                           |
| Availability          | Packaging                                                                                                                                                                                                                                                     | 55-Gallon Kit, 5-Gallon Kit, Clip Pack, Dual Cartridge, Gram Kit, Pint Kit, Quart Kit | Barrier Kit, Clip Pack, Quart Kit, Injection Kit, Gram Kit                                                                                             | Quart Kit, Dual Cartridge, Gallon Kit                                                                                                                                                                                                                                                                                     |
| Description           | LOCTITE EA 9394 AERO <ul style="list-style-type: none"><li>• Good Gap Filling Capabilities</li><li>• Potting Material</li><li>• Room Temperature Storage</li><li>• Outstanding Mechanical Properties</li><li>• Long Pot Life</li><li>• Low Toxicity</li></ul> |                                                                                       | LOCTITE EA 9377 AERO is a two-component moldable plastic shim with excellent microcrack resistance under thermal cycling and high compressive strength | LOCTITE EA 9360 AERO <ul style="list-style-type: none"><li>• Available in dual cartridge packaging</li><li>• High peel strength</li><li>• Excellent static stress durability</li><li>• &gt;225°F (107°C) service</li><li>• Easy mixing two component system</li><li>• Room temperature cure</li><li>• Low Slump</li></ul> |

Liquid Shim

Notes

|                       |                                                                                                                                                                                                                                   |                                        |                                                                                                                                                                                                                                      |                                                                                                                                                                                                         |                                  |                                                                                                                                                                                                                                                                          |                                                                                                                                                  |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics       | 180°F / 82°C Service                                                                                                                                                                                                              |                                        | •                                                                                                                                                                                                                                    | •                                                                                                                                                                                                       |                                  |                                                                                                                                                                                                                                                                          |                                                                                                                                                  |
|                       | 300°F / 149°C Service                                                                                                                                                                                                             |                                        |                                                                                                                                                                                                                                      |                                                                                                                                                                                                         | •                                |                                                                                                                                                                                                                                                                          | •                                                                                                                                                |
|                       | 350°F / 177°C Service                                                                                                                                                                                                             |                                        |                                                                                                                                                                                                                                      |                                                                                                                                                                                                         |                                  | •                                                                                                                                                                                                                                                                        |                                                                                                                                                  |
|                       | Improved Hot / Wet Properties                                                                                                                                                                                                     |                                        | •                                                                                                                                                                                                                                    | •                                                                                                                                                                                                       |                                  |                                                                                                                                                                                                                                                                          | •                                                                                                                                                |
|                       | Toughened                                                                                                                                                                                                                         |                                        | •                                                                                                                                                                                                                                    | •                                                                                                                                                                                                       | •                                |                                                                                                                                                                                                                                                                          |                                                                                                                                                  |
|                       | Consistency                                                                                                                                                                                                                       |                                        | Thixotropic                                                                                                                                                                                                                          | Thixotropic                                                                                                                                                                                             | Thixotropic                      | Thixotropic                                                                                                                                                                                                                                                              | Low Viscosity                                                                                                                                    |
|                       | Form                                                                                                                                                                                                                              |                                        | 2 Part                                                                                                                                                                                                                               | 2 Part                                                                                                                                                                                                  | 2 Part                           | 2 Part                                                                                                                                                                                                                                                                   | 2 Part                                                                                                                                           |
|                       | Peel Strength                                                                                                                                                                                                                     |                                        | High                                                                                                                                                                                                                                 | High                                                                                                                                                                                                    | Nil                              | Low                                                                                                                                                                                                                                                                      | Nil                                                                                                                                              |
| Mechanical Properties | Bell Peel 77°F (lb / in) 25°C (N / 25 mm)                                                                                                                                                                                         |                                        | 50 lbs / in 178 N / 25 mm                                                                                                                                                                                                            | 40 lbs / in 220 N / 25 mm                                                                                                                                                                               | 20 lbs / in 90 N / 25 mm         | 20 lbs / in 90 N / 25 mm                                                                                                                                                                                                                                                 | –                                                                                                                                                |
|                       | TENSILE LAP SHEAR                                                                                                                                                                                                                 | -67°F (psi) / -55°C (Mpa)              | 4,650 psi / 32.1 MPa                                                                                                                                                                                                                 | 4,000 psi / 27.6 MPa                                                                                                                                                                                    | 2,700 psi / 18.6 MPa             | 3,300 psi / 22.7 MPa                                                                                                                                                                                                                                                     | 2,200 psi / 15.2 MPa                                                                                                                             |
|                       |                                                                                                                                                                                                                                   | 77°F (psi) / 25°C (Mpa)                | 5,350 psi / 36.9 Mpa                                                                                                                                                                                                                 | 5,100 psi / 35.0 MPa                                                                                                                                                                                    | 4,910 psi / 33.9 MPa             | 4,200 psi / 28.9 MPa                                                                                                                                                                                                                                                     | 2,600 psi / 17.9 MPa                                                                                                                             |
|                       |                                                                                                                                                                                                                                   | 180°F (psi) / 82°C (Mpa)               | 4,200 psi / 29.0 MPa                                                                                                                                                                                                                 | 4,000 psi / 27.5 MPa                                                                                                                                                                                    | 3,140 psi / 21.7 MPa             | 3,000 psi / 20.7 MPa                                                                                                                                                                                                                                                     | 3,000 psi / 20.7 MPa                                                                                                                             |
|                       |                                                                                                                                                                                                                                   | Elevated Temperature (psi / MPa)       | 2,500 psi / 17.2 MPa                                                                                                                                                                                                                 | 1,750 psi / 12 MPa                                                                                                                                                                                      | 1,640 psi / 11.3 MPa             | 600 psi / 4.1 MPa                                                                                                                                                                                                                                                        | 1,700 psi / 11.7 MPa                                                                                                                             |
|                       |                                                                                                                                                                                                                                   |                                        |                                                                                                                                                                                                                                      |                                                                                                                                                                                                         |                                  |                                                                                                                                                                                                                                                                          |                                                                                                                                                  |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                  |                                        | 200 °F / 93 °C                                                                                                                                                                                                                       | 223 °F / 106 °C                                                                                                                                                                                         | 158 °F / 70 °C                   | 172 °F / 78 °C                                                                                                                                                                                                                                                           | 345 °F / 174 °C                                                                                                                                  |
|                       | Tg Wet (°F / °C)                                                                                                                                                                                                                  |                                        | 225 °F / 108 °C                                                                                                                                                                                                                      | 192 °F / 89 °C                                                                                                                                                                                          | 196 °F / 91 °C                   | 154 °F / 68 °C                                                                                                                                                                                                                                                           | 302 °F / 150 °C                                                                                                                                  |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                        |                                        | –                                                                                                                                                                                                                                    | –                                                                                                                                                                                                       | –                                | 6,675 psi / 46.0 MPa                                                                                                                                                                                                                                                     | 8,200 psi / 56.5 MPa                                                                                                                             |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                         |                                        | –                                                                                                                                                                                                                                    | –                                                                                                                                                                                                       | –                                | 615 ksi / 4,237 MPa                                                                                                                                                                                                                                                      | 418 ksi / 2,880 MPa                                                                                                                              |
|                       | Elongation @ 77°F / 25°C (% at break)                                                                                                                                                                                             |                                        | –                                                                                                                                                                                                                                    | –                                                                                                                                                                                                       | –                                | 1,70 %                                                                                                                                                                                                                                                                   | 2,50 %                                                                                                                                           |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                    |                                        | 11,300 psi / 78 MPa                                                                                                                                                                                                                  | –                                                                                                                                                                                                       | 11,329 psi / 78.1 MPa            | 10,000 psi / 68.9 MPa                                                                                                                                                                                                                                                    | 5,300 psi / 36.6 MPa                                                                                                                             |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                     |                                        | 355 ksi / 2,950 MPa                                                                                                                                                                                                                  | –                                                                                                                                                                                                       | –                                | –                                                                                                                                                                                                                                                                        | –                                                                                                                                                |
|                       |                                                                                                                                                                                                                                   |                                        |                                                                                                                                                                                                                                      |                                                                                                                                                                                                         |                                  |                                                                                                                                                                                                                                                                          |                                                                                                                                                  |
| Handling              | Mix RatioWeight (PartA / Part B)                                                                                                                                                                                                  |                                        | 100 : 55                                                                                                                                                                                                                             | 100 : 45                                                                                                                                                                                                | 100 : 27                         | –                                                                                                                                                                                                                                                                        | 100 : 56                                                                                                                                         |
|                       | CureTemperature (°F / °C)                                                                                                                                                                                                         |                                        | ≥ 160 – 175 °F / 70 – 80 °C                                                                                                                                                                                                          | 180 – 220 °F / 82 – 104 °C                                                                                                                                                                              | 77 °F / 25 °C                    | 77 – 200 °F / 25 – 93 °C                                                                                                                                                                                                                                                 | 200 °F / 93 °C<br>250 °F / 121 °C<br>300 °F / 149 °C                                                                                             |
|                       | CureTime                                                                                                                                                                                                                          |                                        | 240 Minutes                                                                                                                                                                                                                          | 2 hours / 1 hour                                                                                                                                                                                        | 24 Hours                         | 3 – 5 Days / 1 Hour                                                                                                                                                                                                                                                      | 220 Minutes<br>150 Minutes<br>130 Minutes                                                                                                        |
|                       | StorageTemperature (°F / °C)                                                                                                                                                                                                      |                                        | 40 °F / 4 °C                                                                                                                                                                                                                         | 40 °F / 4 °C                                                                                                                                                                                            | 77 °F / 25 °C                    | 82 °F / 28 °C                                                                                                                                                                                                                                                            | 40 °F / 4 °C                                                                                                                                     |
|                       | Pot Life (minutes / lb) / (minutes / kg)                                                                                                                                                                                          |                                        | 180 Minutes<br>500 Gram Mass                                                                                                                                                                                                         | 300 Minutes<br>500 Gram Mass                                                                                                                                                                            | 20 – 30 Minutes<br>100 Gram Mass | 90 Minutes<br>450 Gram Mass                                                                                                                                                                                                                                              | 120 Minutes<br>250 Gram Mass                                                                                                                     |
| Product               | New Product Name                                                                                                                                                                                                                  |                                        | LOCTITE EA 9380 AERO                                                                                                                                                                                                                 | LOCTITE EA 9380.05 AERO                                                                                                                                                                                 | LOCTITE EA 9394.2 AERO           | LOCTITE EA 9394S AERO                                                                                                                                                                                                                                                    | LOCTITE EA 9390 AERO                                                                                                                             |
|                       | Known As                                                                                                                                                                                                                          |                                        | Hysol® EA 9380™NEW!                                                                                                                                                                                                                  | Hysol® EA 9380.05                                                                                                                                                                                       | Hysol® EA 9394.2™                | Hysol® EA 9394S™                                                                                                                                                                                                                                                         | Hysol® EA 9390™                                                                                                                                  |
| Availability          | Packaging                                                                                                                                                                                                                         | Dual Cartridge, Barrier Kit, Quart Kit | –                                                                                                                                                                                                                                    | Dual Cartridge, Pint Kit, Quart Kit, Clip Pack, Gallon Kit, 5-Gallon Kit                                                                                                                                |                                  | Injection Kit                                                                                                                                                                                                                                                            | Quart Kit, Gram Kit, Clip Pack, Barrier Kit                                                                                                      |
| Description           | LOCTITE EA 9380 AERO <ul style="list-style-type: none"><li>• Low temp curing two-part adhesive</li><li>• Meter mixable</li><li>• High strength, toughness and high temp resistance</li><li>• Prebond humidity resistant</li></ul> |                                        | LOCTITE EA 9380.05 AERO <ul style="list-style-type: none"><li>• Low temp curing two-part adhesive</li><li>• Meter mixable</li><li>• High strength, toughness and high temp resistance</li><li>• Prebond humidity resistant</li></ul> | LLOCTITE EA 9394.2 AERO is a fast curing two-part structural paste adhesive, which cures at room temperature. Its thixotropic nature makes it ideal for potting, filling, and liquid shim applications. |                                  | Loctite EA 9394S AERO is a two-part structural paste adhesive, which possesses excellent strength at high temperatures. Its thixotropic nature and excellent high temperature compressive strength also make it ideal for potting, filling and liquid shim applications. | LOCTITE EA 9390 AERO <ul style="list-style-type: none"><li>• Good Hot/Wet Strength</li><li>• Good Wetting</li><li>• High Shear Modulus</li></ul> |

Low viscosity, high quality:  
**LOCTITE** laminate and wet lay-up resins

For high temperature applications ...

A low viscosity system is needed for high temperature wet lay-up composite construction or repairs. It should allow wet lamination processes as well as out-of-autoclave curing processes to be employed.

... and perfect surface preparation: **LOCTITE** low viscosity wet lay-up.

With more than 50 years experience, Henkel offers the right solution for this challenge: **LOCTITE** low viscosity wet lay-up solutions. Curing very fast under heat, they provide an optimal adhering surface for subsequent painting and coating.

Why choose **LOCTITE** low viscosity wet lay-up products?

- › High-temperature applications
- › Long open life up to eight hours
- › Enhanced occupational safety during employee exposure times

LOCTITE laminate and wet lay up resins:  
**Facts at a glance**

**LOCTITE** low viscosity wet lay-up key features:

- › Two-component system
  - › Low viscosity
- › Room temperature or elevated cure
  - › Ideal for OEM assembly or repair

**Key factors to consider when choosing the right **LOCTITE** low viscosity wet lay-up solution**

- › Fiber volume ratio (55 %)
  - › Porosity level (<1 %)
  - › Cure temperature
- › Fabric alignment
  - › Resin physical-chemical properties (viscosity)
  - › Pot life

Laminate and Wet Lay-up Resins

|                       |                                                |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                  |                                                                                                                                      |
|-----------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
|                       | 300°F/149°C Service                            |                                                                                                                                                                                                                                                                                                                                                                               | •                                                                                                                                                                                                                                                | •                                                                                                                                    |
|                       | Improved Hot / Wet Properties                  |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                  | •                                                                                                                                    |
|                       | Toughened                                      | •                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                  | •                                                                                                                                    |
|                       | Consistency                                    | Low Viscosity                                                                                                                                                                                                                                                                                                                                                                 | Low Viscosity                                                                                                                                                                                                                                    | Low Viscosity                                                                                                                        |
|                       | Form                                           | 2 Part                                                                                                                                                                                                                                                                                                                                                                        | 2 Part                                                                                                                                                                                                                                           | 2 Part                                                                                                                               |
|                       | Peel Strength                                  | High                                                                                                                                                                                                                                                                                                                                                                          | Nil                                                                                                                                                                                                                                              | Moderate                                                                                                                             |
|                       |                                                |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                  |                                                                                                                                      |
| Mechanical Properties | Bell Peel 77°F (lb / in) / 25°C (N / 25 mm)    | 60 lbs / in / 267 N / 25 mm                                                                                                                                                                                                                                                                                                                                                   | –                                                                                                                                                                                                                                                | 25 lbs / in / 111 N / 25 mm                                                                                                          |
|                       | TENSILE LAP SHEAR                              | -67°F (psi) / -55°C (Mpa)'                                                                                                                                                                                                                                                                                                                                                    | 4,200 psi / 28.9 MPa                                                                                                                                                                                                                             | 1,780 psi / 12.3 MPa                                                                                                                 |
|                       |                                                | 77°F (psi) / 25°C (Mpa)                                                                                                                                                                                                                                                                                                                                                       | 4,500 psi / 31.0 MPa                                                                                                                                                                                                                             | 2,300 psi / 15.8 MPa                                                                                                                 |
|                       |                                                | 180°F (psi) / 82°C (Mpa)                                                                                                                                                                                                                                                                                                                                                      | 500 psi / 3.5 Mpa                                                                                                                                                                                                                                | 1,500 psi / 10.3 MPa                                                                                                                 |
|                       |                                                | Elevated Temperature (psi / MPa)                                                                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                | 1,000 psi / 6.9 MPa                                                                                                                  |
| Bulk Properties       | Tg Dry (°F / °C)                               | 120 °F / 49 °C                                                                                                                                                                                                                                                                                                                                                                | 156 °F / 69 °C                                                                                                                                                                                                                                   | 208 °F / 98 °C                                                                                                                       |
|                       | Tg Wet (°F / °C)                               | –                                                                                                                                                                                                                                                                                                                                                                             | –                                                                                                                                                                                                                                                | 145 °F / 63 °C                                                                                                                       |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)     | 6,300 psi / 45 MPa                                                                                                                                                                                                                                                                                                                                                            | 5,800 psi / 40.0 MPa                                                                                                                                                                                                                             | 8,000 psi / 55.2 MPa                                                                                                                 |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)      | 330 ksi / 2,274 MPa                                                                                                                                                                                                                                                                                                                                                           | 370 ksi / 2,552 MPa                                                                                                                                                                                                                              | 400 ksi / 2,750 MPa                                                                                                                  |
|                       | Elongation @ 77°F / 25°C (% at break)          | 8,00 %                                                                                                                                                                                                                                                                                                                                                                        | 2,40 %                                                                                                                                                                                                                                           | 3,40 %                                                                                                                               |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa) | 9,040 psi / 62.3 MPa                                                                                                                                                                                                                                                                                                                                                          | 12,000 psi / 82.8 MPa                                                                                                                                                                                                                            | 70,000 psi / 482.8 MPa                                                                                                               |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)  | 263 ksi / 1,812 MPa                                                                                                                                                                                                                                                                                                                                                           | 158 ksi / 1,089 MPa                                                                                                                                                                                                                              | 8,000 psi / 55,150 MPa                                                                                                               |
|                       |                                                |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                  |                                                                                                                                      |
| Handling              | Mix RatioWeight (PartA / Part B)               | 100 : 25                                                                                                                                                                                                                                                                                                                                                                      | 100 : 58                                                                                                                                                                                                                                         | 100 : 30                                                                                                                             |
|                       | CureTemperature (°F / °C)                      | 77 °F / 25 °C<br>100 °F / 38 °C<br>140 °F / 60 °C<br>200 °F / 93 °C"                                                                                                                                                                                                                                                                                                          | 77 – 200 °F / 25 - 93 °C                                                                                                                                                                                                                         | 77 – 150 °F / 25 – 66 °C                                                                                                             |
|                       | CureTime                                       | 8 Hours / 75 Minutes / 30 Minutes / 5 Minutes                                                                                                                                                                                                                                                                                                                                 | 5 – 7 Days / 1 Hour                                                                                                                                                                                                                              | 3 – 5 Days / 1 Hour                                                                                                                  |
|                       | StorageTemperature (°F / °C)                   | 77 °F / 25 °C                                                                                                                                                                                                                                                                                                                                                                 | 40 °F / 4 °C                                                                                                                                                                                                                                     | 77 °F / 25 °C                                                                                                                        |
|                       | Pot Life (minutes / lb) / (minutes / kg)       | 60 Minutes / 200 Gram Mass                                                                                                                                                                                                                                                                                                                                                    | > 30 minutes / 450 Gram Mass                                                                                                                                                                                                                     | 120 Minutes / 100 Gram Mass                                                                                                          |
|                       |                                                |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                  |                                                                                                                                      |
| Product               | New Product Name                               | LOCTITE EA 9313 AERO                                                                                                                                                                                                                                                                                                                                                          | LOCTITE EA 956 AERO                                                                                                                                                                                                                              | LOCTITE EA 9396 AERO                                                                                                                 |
|                       | Known As                                       | Hysol® EA 9313™                                                                                                                                                                                                                                                                                                                                                               | Hysol® EA 956™                                                                                                                                                                                                                                   | Hysol® EA 9396™                                                                                                                      |
| Availability          | Packaging                                      | Quart Kit                                                                                                                                                                                                                                                                                                                                                                     | Clip Pack, Gallon Kit, Gram Kit, Pint Kit, Quart Kit                                                                                                                                                                                             | 50-Gram Kit, 5-Gallon Kit, Barrier Kit, Clip Pack, Gallon Kit, Gram Kit, Injection Kit, Pint Kit, Quart Kit"                         |
|                       |                                                |                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                  |                                                                                                                                      |
| Description           |                                                | LOCTITE EA 9313 AERO is a low viscosity, two component paste adhesive designed for bonds requiring flexibility. The low viscosity of the mixed system allows it to be injected into pre-assembled parts. The flexibility of the cured adhesive makes it useful for bonding dissimilar substrates. It can also be used as a laminating resin and for potting small assemblies. | LOCTITE EA 956 AERO is a two-component, adhesive, which has excellent elevated temperature strength. Its room temperature cure capability and low viscosity make it ideal for repair applications, including laminating, injection, and coating. | LOCTITE EA 9396 AERO • Low Viscosity • Room Temperature Cure • Room Temperature Storage • High Strength at Low and High Temperatures |

## Laminate and Wet Lay-up Resins

## Notes

|                 |                               |               |
|-----------------|-------------------------------|---------------|
| Characteristics | 300°F/149°C Service           | •             |
|                 | Improved Hot / Wet Properties | •             |
|                 | Toughened                     |               |
|                 | Consistency                   | Low Viscosity |
|                 | Form                          | 2 Part        |
|                 | Peel Strength                 | Low           |

|                       |                   |                                              |                             |
|-----------------------|-------------------|----------------------------------------------|-----------------------------|
| Mechanical Properties |                   | Bell Peel 77°F (lb / in)<br>25°C (N / 25 mm) | 15 lbs / in<br>67 N / 25 mm |
|                       | TENSILE LAP SHEAR | -67°F (psi) /<br>-55°C (Mpa)'                | 2,500 psi /<br>17.2 MPa     |
|                       |                   | 77°F (psi) /<br>25°C (Mpa)                   | 4,600 psi /<br>31.7 MPa     |
|                       |                   | 180°F (psi) /<br>82°C (Mpa)                  | 4,100 psi /<br>28.3 MPa     |
|                       |                   | Elevated Temperature<br>(psi / MPa)          | 2,500 psi / 17.2 MPa        |

|                 |                                                   |                       |
|-----------------|---------------------------------------------------|-----------------------|
| Bulk Properties | Tg Dry (°F / °C)                                  | 226°F / 108°C         |
|                 | Tg Wet (°F / °C)                                  | 232°F / 111°C         |
|                 | Tensile Strength<br>@ 77°F (psi) / 25°C (MPa)     | –                     |
|                 | Tensile Modulus<br>@ 77°F (ksi) / 25°C (MPa)      | –                     |
|                 | Elongation<br>@ 77°F / 25°C (% at break)          | –                     |
|                 | Compressive Strength<br>@ 77°F (psi) / 25°C (MPa) | 14,000 psi / 96.6 MPa |
|                 | Compressive Modulus<br>@ 77°F (ksi) / 25°C (MPa)  | –                     |

|          |                                          |                         |
|----------|------------------------------------------|-------------------------|
| Handling | Mix RatioWeight (PartA / Part B)         | 100 : 36                |
|          | CureTemperature (°F / °C)                | 200 °F / 93 °C          |
|          | CureTime                                 | 1 Hour                  |
|          | StorageTemperature (°F / °C)             | 77 °F / 25 °C           |
|          | Pot Life (minutes / lb) / (minutes / kg) | 7 Hours / 450 Gram Mass |

|         |                  |                                                     |
|---------|------------------|-----------------------------------------------------|
| Product | New Product Name | <b>LOCTITE</b><br><b>EA 9396/C-2</b><br><b>AERO</b> |
|         | Known As         | Hysol®<br>EA 9396™ / C-2™                           |

| Availability | Packaging | Quart Kit |
|--------------|-----------|-----------|
|--------------|-----------|-----------|

| Description |                                                                                                                                                                                                                                   |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <p><b>LOCTITE</b><br/><b>EA 9396/C-2</b><br/><b>AERO</b></p> <ul style="list-style-type: none"><li>• Low Viscosity</li><li>• Long Work Life</li><li>• Non-MDA Curing Agent</li><li>• Ideal for use as Neat Lay-up Resin</li></ul> |

[illegible]

Gives you strength:  
**LOCTITE** potting and edge compounds

**What potting and edge fill compounds can do for you**

Potting and Edge Fill and encapsulation compounds provide mechanical reinforcement to housed assemblies, fill voids, and protect devices from the effects of exposure to chemicals, moisture, mechanical shock and vibration. High-quality potting and edge fill products effectively prevent corrosion and ensure the long-term integrity of your device.

**And why LOCTITE potting and edge fill compounds do it best**

LOCTITE offers a broad variety of potting and edge fill and encapsulating compounds to use with various substrates, operating temperatures and other environmental factors. All of them improve the mechanical strength as well as the resistance to vibration, shock and thermal stress.

At the same time, they protect against corrosion, dust and chemicals and provide electrical insulation. Because of their thermal properties they are ideally suited for aerospace temperature requirements.

**Why choose LOCTITE potting and edge Fill compounds?**

- › Significantly improved shelf life
- › Easy to apply
- › Improves mechanical strength
- › Provide insulation
- › Enhances resistance to vibration and shock
- › Prevents corrosion from moisture, thermal cycling, dust and chemicals
- › Broad selection of product chemistries allows use with different substrates, operating temperatures and other environmental factors
- › Reduces open time in dispensing, assembling and testing

LOCTITE potting and edge Fill compounds:  
**Facts at a glance**

**LOCTITE potting and edge Fill compounds key features:**

- › Suitable packaging configurations for application
  - › No sag for vertical applications
  - › Co-curable with sandwich assembly
- › Adhesive can be drilled and sanded without damage
  - › Dual cure or step cure processing capability
  - › Products available in low to medium densities

**Potting and Edge Fill**

|                       |                                                                                                                                                                                                                                                                                                                                                                                          |                                      |                                     |                           |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------|---------------------------|
| Characteristics       | 180°F / 82°C Service                                                                                                                                                                                                                                                                                                                                                                     | •                                    |                                     | •                         |
|                       | 300°F/149°C Service                                                                                                                                                                                                                                                                                                                                                                      |                                      |                                     |                           |
|                       | 350°F / 177°C Service                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                     |                           |
|                       | 450°F / 232°C Service                                                                                                                                                                                                                                                                                                                                                                    |                                      | •                                   |                           |
|                       | Cured Density (g / cc)                                                                                                                                                                                                                                                                                                                                                                   | 1.3                                  |                                     | 0.48                      |
|                       | Improved Hot / Wet Properties                                                                                                                                                                                                                                                                                                                                                            |                                      |                                     |                           |
|                       | Toughened                                                                                                                                                                                                                                                                                                                                                                                | •                                    |                                     |                           |
|                       | Consistency                                                                                                                                                                                                                                                                                                                                                                              | Thixotropic                          | Moderate Viscosity                  | Syntactic                 |
|                       | Form                                                                                                                                                                                                                                                                                                                                                                                     | 2 Part                               | 2 Part                              | 2 Part                    |
|                       | Peel Strength                                                                                                                                                                                                                                                                                                                                                                            | Low                                  | Low                                 | Nil                       |
| Mechanical Properties | Bell Peel 77°F (lb / in 25°C (N / 25 mm)                                                                                                                                                                                                                                                                                                                                                 | 6 lbs / in 25 N / 25 mm"             | 10 lbs / in 45 N / 25 mm"           | –                         |
|                       | TENSILE LAP SHEAR                                                                                                                                                                                                                                                                                                                                                                        | -67°F (psi) / -55°C (Mpa)'           | 3,000 psi / 20.7 MPa                | 3,500 psi / 24.1 MPa      |
|                       |                                                                                                                                                                                                                                                                                                                                                                                          | 77°F (psi) / 25°C (Mpa)              | 4,000 psi / 27.6 MPa                | 5,000 psi / 34.5 MPa      |
|                       |                                                                                                                                                                                                                                                                                                                                                                                          | 180°F (psi) / 82°C (Mpa)             | 2,900 psi / 20.0 MPa                | 4,000 psi / 27.5 MPa      |
|                       |                                                                                                                                                                                                                                                                                                                                                                                          | Elevated Temperature (psi / MPa)     | 500 psi / 3.4 MPa                   | 2,500 psi / 17.2 MPa      |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                                                                                                                                                                         | 230 °F / 110 °C                      | –                                   | 248 °F / 120 °C           |
|                       | Tg Wet (°F / °C)                                                                                                                                                                                                                                                                                                                                                                         | 190 °F / 88 °C                       | –                                   | –                         |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                                                                                                                                                               | 7,100 psi / 49.0 MPa                 | –                                   | –                         |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                                                                                                                                                                | 42 ksi / 2.90 MPa                    | –                                   | –                         |
|                       | Elongation @ 77°F / 25°C (% at break)                                                                                                                                                                                                                                                                                                                                                    | 6,00 %                               | –                                   | –                         |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                                                                                                                                                           | 9,280 psi / 64.00 MPa                | 32,000 psi / 220.7 MPa              | 2,500 psi / 17.2 MPa      |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                                                                                                                                                            | 284 ksi / 1,960 MPa                  | –                                   | 110 ksi / 758 MPa         |
| Handling              | Mix RatioWeight (PartA / Part B)                                                                                                                                                                                                                                                                                                                                                         | 100 :50                              | 100 :20                             | 100 :34.2                 |
|                       | CureTemperature (°F / °C)                                                                                                                                                                                                                                                                                                                                                                | 77 – 200 °F / 25 - 93 °C             | › 200 °F / 93 °C                    | 77 °F / 25 °C             |
|                       | CureTime                                                                                                                                                                                                                                                                                                                                                                                 | 5 – 7 Days / 1 Hour                  | 1 Hour                              | 5 – 7 Days                |
|                       | StorageTemperature (°F / °C)                                                                                                                                                                                                                                                                                                                                                             | 40 °F / 4 °C                         | 77 °F / 25 °C                       | 82 °F / 28 °C             |
|                       | Pot Life (minutes / lb) / (minutes / kg)                                                                                                                                                                                                                                                                                                                                                 | 40 Minutes / 450 Gram Mass           | 7 Hours / 450 Gram Mass             | 60 Minutes / 70 Gram Mass |
| Product               | New Product Name                                                                                                                                                                                                                                                                                                                                                                         | LOCTITE EA 9321 AERO                 | LOCTITE EA 9394/C-2 AERO            | LOCTITE HC 3056 AERO      |
|                       | Known As                                                                                                                                                                                                                                                                                                                                                                                 | Hysol® EA 9321™                      | Hysol® EA 9394™ / C-2™              | SynSkin® HC 3056™         |
| Availability          | Packaging                                                                                                                                                                                                                                                                                                                                                                                | Clip Pack, Dual Cartridge, Quart Kit | Quart Kit, Injection Kit, Clip Pack | Gallon Kit                |
| Description           | LOCTITE EA 9321 AERO is a two-component thixotropic paste adhesive, which exhibits toughness and retains strength at elevated temperatures. This product cures at room temperature and yields durable bonds over a wide temperature range.                                                                                                                                               |                                      |                                     |                           |
|                       | LOCTITE EA 9394/C-2 AERO is an elevated temperature curing, high service temperature structural paste adhesive. It uses a non-aromatic amine curing agent that retains many of the excellent properties offered by aromatic amine cured systems, high temperature service with a long pot life.                                                                                          |                                      |                                     |                           |
|                       | LOCTITE HC 3056 AERO is a two-component low-density potting compound. It is self-extinguishing and its thixotropic characteristics make it ideal for use in honeycomb panels for edge close out, insert potting, and smoothing. It is a closed cell structure with minimum moisture penetration. Although it is epoxy chemistry, clean up is with hot, soapy water rather than solvents. |                                      |                                     |                           |

## Potting and Edge Fill

|                       |                                                                                                                                                                                                                                                                                                             |                                                                   |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                        |                      |                                                                                                                                                                                                                                       |                                                                                                                                      |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics       | 180°F / 82°C Service                                                                                                                                                                                                                                                                                        | •                                                                 |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                        |                      |                                                                                                                                                                                                                                       |                                                                                                                                      |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                         |
|                       | 300°F / 149°C Service                                                                                                                                                                                                                                                                                       | •                                                                 | •                                                                                                                                                                                                                                                             | •                                                                                                                                                                                                      |                      | •                                                                                                                                                                                                                                     | •                                                                                                                                    |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                         |
|                       | 350°F / 177°C Service                                                                                                                                                                                                                                                                                       |                                                                   |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                        |                      |                                                                                                                                                                                                                                       | •                                                                                                                                    | •                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                         |
|                       | 450°F / 232°C Service                                                                                                                                                                                                                                                                                       |                                                                   |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                        |                      |                                                                                                                                                                                                                                       |                                                                                                                                      |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                         |
|                       | Cured Density (g / cc)                                                                                                                                                                                                                                                                                      | 1.38                                                              | 1.37                                                                                                                                                                                                                                                          |                                                                                                                                                                                                        |                      |                                                                                                                                                                                                                                       | 0.60                                                                                                                                 | 0.87                                                                                                                                                                                                                                                                              | 0.72                                                                                                                                                                                                                                                                    |
|                       | Improved Hot / Wet Properties                                                                                                                                                                                                                                                                               |                                                                   | •                                                                                                                                                                                                                                                             |                                                                                                                                                                                                        |                      | •                                                                                                                                                                                                                                     |                                                                                                                                      |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                         |
|                       | Toughened                                                                                                                                                                                                                                                                                                   |                                                                   | •                                                                                                                                                                                                                                                             | •                                                                                                                                                                                                      |                      | •                                                                                                                                                                                                                                     |                                                                                                                                      |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                         |
|                       | Consistency                                                                                                                                                                                                                                                                                                 | Thixotropic                                                       | Thixotropic                                                                                                                                                                                                                                                   | Thixotropic                                                                                                                                                                                            |                      | Thixotropic                                                                                                                                                                                                                           | Syntactic                                                                                                                            | Thixotropic                                                                                                                                                                                                                                                                       | Thixotropic                                                                                                                                                                                                                                                             |
|                       | Form                                                                                                                                                                                                                                                                                                        | 2 Part                                                            | 2 Part                                                                                                                                                                                                                                                        | 2 Part                                                                                                                                                                                                 |                      | 2 Part                                                                                                                                                                                                                                | 2 Part                                                                                                                               | 1 Part                                                                                                                                                                                                                                                                            | 1 Part                                                                                                                                                                                                                                                                  |
|                       | Peel Strength                                                                                                                                                                                                                                                                                               | Nil                                                               | Low                                                                                                                                                                                                                                                           | Nil                                                                                                                                                                                                    |                      | Low                                                                                                                                                                                                                                   | Nil                                                                                                                                  | Nil                                                                                                                                                                                                                                                                               | Nil                                                                                                                                                                                                                                                                     |
| Mechanical Properties | Bell Peel 77°F (lb / in) 25°C (N / 25 mm)                                                                                                                                                                                                                                                                   | –                                                                 | 20 lbs / in 89 N / 25 mm"                                                                                                                                                                                                                                     | 20 lbs / in 90 N / 25 mm"                                                                                                                                                                              |                      | 15 lbs / in 67 N / 25 mm"                                                                                                                                                                                                             | –                                                                                                                                    | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
|                       | TENSILE LAP SHEAR                                                                                                                                                                                                                                                                                           | -67°F (psi) / -55°C (Mpa)'                                        | 3,100 psi / 21.4 MPa                                                                                                                                                                                                                                          | 3,300 psi / 22.7 MPa                                                                                                                                                                                   | 2,700 psi / 18.6 MPa | 2,300 psi / 15.8 MPa                                                                                                                                                                                                                  | 2,000 psi / 13.8 MPa                                                                                                                 | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
|                       |                                                                                                                                                                                                                                                                                                             | 77°F (psi) / 25°C (Mpa)                                           | 3,700 psi / 25.5 MPa                                                                                                                                                                                                                                          | 4,200 psi / 28.9 MPa                                                                                                                                                                                   | 4,910 psi / 33.9 MPa | 4,300 psi / 29.7 MPa                                                                                                                                                                                                                  | 2,700 psi / 18.6 MPa                                                                                                                 | –                                                                                                                                                                                                                                                                                 | 2,000 psi / 13.8 MPa                                                                                                                                                                                                                                                    |
|                       |                                                                                                                                                                                                                                                                                                             | 180°F (psi) / 82°C (Mpa)                                          | 2,800 psi / 19.3 MPa                                                                                                                                                                                                                                          | 3,000 psi / 20.7 MPa                                                                                                                                                                                   | 3,140 psi / 21.7 MPa | 3,500 psi / 24.1 MPa                                                                                                                                                                                                                  | 1,500 psi / 10.3 MPa                                                                                                                 | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
|                       |                                                                                                                                                                                                                                                                                                             | Elevated Temperature (psi / MPa)                                  | 1,200 psi / 8.3 MPa                                                                                                                                                                                                                                           | 1,200 psi / 8.3 MPa                                                                                                                                                                                    | 1,640 psi / 11.3 MPa | 1,200 psi / 8.3 MPa                                                                                                                                                                                                                   | 1,400 psi / 9.7 MPa                                                                                                                  | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
| Bulk Properties       | Tg Dry (°F / °C)                                                                                                                                                                                                                                                                                            | 159 °F / 71 °C                                                    | 172 °F / 78 °C                                                                                                                                                                                                                                                | 158 °F / 70 °C                                                                                                                                                                                         |                      | 163 °F / 73 °C                                                                                                                                                                                                                        | 147 °F / 64 °C                                                                                                                       | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
|                       | Tg Wet (°F / °C)                                                                                                                                                                                                                                                                                            | 235 °F / 113 °C                                                   | 154 °F / 68 °C                                                                                                                                                                                                                                                | 196 °F / 91 °C                                                                                                                                                                                         |                      | 246 °F / 119 °C                                                                                                                                                                                                                       | –                                                                                                                                    | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
|                       | Tensile Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                                                                                  | 5,800 psi / 40.0 MPa                                              | 6,675 psi / 46.0 MPa                                                                                                                                                                                                                                          | –                                                                                                                                                                                                      |                      | 8,070 psi / 55.6 MPa                                                                                                                                                                                                                  | 3,000 psi / 20.7 MPa                                                                                                                 | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
|                       | Tensile Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                                                                                   | 550 ksi / 3,792 MPa                                               | 615 ksi / 4,237 MPa                                                                                                                                                                                                                                           | –                                                                                                                                                                                                      |                      | 717 ksi / 4,940 MPa                                                                                                                                                                                                                   | 290 ksi / 2,000 MPa                                                                                                                  | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
|                       | Elongation @ 77°F / 25°C (% at break)                                                                                                                                                                                                                                                                       | 1,20 %                                                            | 1,77 %                                                                                                                                                                                                                                                        | –                                                                                                                                                                                                      |                      | 2,60 %                                                                                                                                                                                                                                | 2 – 3 %                                                                                                                              | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
|                       | Compressive Strength @ 77°F (psi) / 25°C (MPa)                                                                                                                                                                                                                                                              | 9,500 psi / 65.5 MPa                                              | 10,000 psi / 68.9 MPa                                                                                                                                                                                                                                         | 11,329 psi / 78.1 MPa                                                                                                                                                                                  |                      | 14,000 psi / 94.5 MPa                                                                                                                                                                                                                 | 6,500 psi / 44.8 MPa                                                                                                                 | 22,800 psi / 157 MPa                                                                                                                                                                                                                                                              | 12,232 psi / 84 MPa                                                                                                                                                                                                                                                     |
|                       | Compressive Modulus @ 77°F (ksi) / 25°C (MPa)                                                                                                                                                                                                                                                               | 367 psi / 2,530 MPa                                               | –                                                                                                                                                                                                                                                             | –                                                                                                                                                                                                      |                      | 429 ksi / 2.956 MPa                                                                                                                                                                                                                   | –                                                                                                                                    | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
| Handling              | Mix RatioWeight (PartA / Part B)                                                                                                                                                                                                                                                                            | 100 :33                                                           | 100 :17                                                                                                                                                                                                                                                       | 100 :27                                                                                                                                                                                                |                      | 100 :17                                                                                                                                                                                                                               | 100 :31                                                                                                                              | –                                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                       |
|                       | CureTemperature (°F / °C)                                                                                                                                                                                                                                                                                   | 77 – 200 °F / 25 – 93 °C                                          | 77 – 200 °F / 25 – 93 °C                                                                                                                                                                                                                                      | 77 °F / 25 °C                                                                                                                                                                                          |                      | 77 – 150 °F / 25 – 66 °C                                                                                                                                                                                                              | 77 – 200 °F / 25 – 93 °C                                                                                                             | 250 °F / 121 °C 350 °F / 177 °C"                                                                                                                                                                                                                                                  | 250 °F / 121 °C 350 °F / 177 °C"                                                                                                                                                                                                                                        |
|                       | CureTime                                                                                                                                                                                                                                                                                                    | 5 – 7 Days / 1 Hour                                               | 3 – 5 Days / 1 Hour                                                                                                                                                                                                                                           | 24 Hours                                                                                                                                                                                               |                      | 5 Days / 1 Hour                                                                                                                                                                                                                       | 5 – 7 Days / 1 Hour                                                                                                                  | 90 – 100 Minutes / 60 – 70 Minutes                                                                                                                                                                                                                                                | 90 – 100 Minutes / 60 – 70 Minutes                                                                                                                                                                                                                                      |
|                       | StorageTemperature (°F / °C)                                                                                                                                                                                                                                                                                | 40 °F / 4 °C                                                      | 77 °F / 25 °C                                                                                                                                                                                                                                                 | 77 °F / 25 °C                                                                                                                                                                                          |                      | 77 °F / 25 °C                                                                                                                                                                                                                         | 40 °F / 4 °C                                                                                                                         | 0 °F / -18 °C                                                                                                                                                                                                                                                                     | 0 °F / -18 °C                                                                                                                                                                                                                                                           |
|                       | Pot Life (minutes / lb) / (minutes / kg)                                                                                                                                                                                                                                                                    | 40 – 50 minutes / 450 Gram Mass                                   | 90 Minutes / 450 Gram Mass                                                                                                                                                                                                                                    | 20 – 30 Minutes / 100 Gram Mass                                                                                                                                                                        |                      | 95 – 100 Minutes / 450 Gram Mass                                                                                                                                                                                                      | 120 Minutes / 100 Gram Mass                                                                                                          | > 8 Hours                                                                                                                                                                                                                                                                         | > 8 Hours                                                                                                                                                                                                                                                               |
| Product               | New Product Name                                                                                                                                                                                                                                                                                            | LOCTITE EA 934NA AERO                                             | LOCTITE EA 9394 AERO                                                                                                                                                                                                                                          | LOCTITE EA 9394.2 AERO                                                                                                                                                                                 |                      | LOCTITE EA 9395 AERO                                                                                                                                                                                                                  | LOCTITE EA 9396.6MD AERO                                                                                                             | LOCTITE EA 9820 AERO                                                                                                                                                                                                                                                              | LOCTITE EA 9825 AERO                                                                                                                                                                                                                                                    |
|                       | Known As                                                                                                                                                                                                                                                                                                    | Hysol® EA 934NA™                                                  | Hysol® EA 9394™                                                                                                                                                                                                                                               | Hysol® EA 9394.2™                                                                                                                                                                                      |                      | Hysol® EA 9395™                                                                                                                                                                                                                       | Hysol® EA 9396.6MD™                                                                                                                  | Hysol® EA 9820™                                                                                                                                                                                                                                                                   | Hysol® EA 9825™                                                                                                                                                                                                                                                         |
| Availability          | Packaging                                                                                                                                                                                                                                                                                                   | Barrier Kit, Clip Pack, Gallon Kit, Gram Kit, Pint Kit, Quart Kit | 55-Gallon Kit, 5-Gallon Kit, Clip Pack, Dual Cartridge, Gram Kit, Pint Kit, Quart Kit                                                                                                                                                                         | Dual Cartridge, Pint Kit, Quart Kit, Clip Pack, Gallon Kit, 5-Gallon Kit                                                                                                                               |                      | Quart Kit, Injection Kit, Clip Pack, 5-Gallon Kit, Gallon Kit"                                                                                                                                                                        | Gallon Kit, Barrier Kit                                                                                                              | Cartridge Gallon Kit                                                                                                                                                                                                                                                              | Dual Cartridge                                                                                                                                                                                                                                                          |
| Description           | LOCTITE EA 934NA AERO is a two-component thixotropic paste adhesive, which cures at room temperature and possesses superior strength to 300 °F / 149 °C and higher. Its thixotropic nature and good compressive strength make it ideal for potting, filling, and fairing, as well as for shim applications. |                                                                   | LOCTITE EA 9394 AERO <ul style="list-style-type: none"><li>• Good Gap Filling Capabilities</li><li>• Potting Material</li><li>• Room Temperature Storage</li><li>• Outstanding Mechanical Properties</li><li>• Long Pot Life</li><li>• Low Toxicity</li></ul> | LOCTITE EA 9394.2 AERO is a fast curing two-part structural paste adhesive, which cures at room temperature. Its thixotropic nature makes it ideal for potting, filling, and liquid shim applications. |                      | LOCTITE EA 9395 AERO <ul style="list-style-type: none"><li>• Non-Metallic Filler</li><li>• Cures at Ambient Temperature</li><li>• Thixotropic</li><li>• Excellent Mechanical Properties</li><li>• Good Compressive Strength</li></ul> | LOCTITE EA 9396.6MD AERO is an easy mixing, two-part syntactic epoxy adhesive with good compressive strength at higher temperatures. | LOCTITE EA 9820 AERO is an intermediate density, one-component epoxy syntactic for use on honeycomb composite parts requiring high compressive strength at temperatures up to 350 °F (177 °C). It may also be used for fastener or attachment potting and panel edge reinforcing. | LOCTITE EA 9825 AERO is a low-density, one-component epoxy syntactic for use on honeycomb composite parts requiring high compressive strength at temperatures up to 350 °F (177 °C). It may also be used for fastener or attachment potting and panel edge reinforcing. |

Aerospace industry has many standards:

## LOCTITE FREKOTE is the one for release materials

### Choosing the right release material is not as easy as you might think ...

Aircraft manufacturers' demands on professional release materials are high: They require a wide range of mold releases with different characteristics to meet all needs. They want to be sure to apply a sustainable solution. And last but not least, they only accept materials that comply with the most rigorous requirements – their own ones.

### ... unless you discover LOCTITE FREKOTE.

Henkel's LOCTITE FREKOTE release agents, sealers and cleaners are based on over 50 years of technical experience and are the most trusted for consistent release of composite parts from tools. These wax- and silicone-free release agents polymerize to create a low surface energy film which is durable, chemically resistant and thermally stable. A minimal transfer to molded components, minimized fouling, easy application and the highest number of releases possible per application are guaranteed.

### Why choose LOCTITE FREKOTE mold release materials?

- › Semi-permanent mold release bonds to mold surface for consistent release
- › Higher productivity and profitability through reduced downtime
- › Low reject rates
- › Available with no volatile organic compounds (VOCs) and CFCs for improved sustainability
- › Dispensing equipment available

## LOCTITE FREKOTE mold release materials: All facts at a glance

### Key factors to consider when choosing the right LOCTITE mold release

- › Water-based vs. solvent-based
- › Slip / release characteristics
- › Service temperature
- › Transfer characteristics

### LOCTITE FREKOTE mold releases can be used with following materials:

- › Thermoset epoxies, phenolics and BMIs
- › Natural & synthetic rubbers
- › Silicones
- › Urethanes
- › Thermoplastic polymers
- › Thermoset prepregs
- › Thermoplastic prepregs
- › Polyester resins
- › Vinyl ester resins
- › MRO & repair

### LOCTITE FREKOTE mold releases can be used in all composite manufacturing processes:

- › Hand lay-up
- › Automated fiber placement & tape laying
- › Autoclave molding
- › Vacuum bag only molding
- › Resin transfer molding
- › Vacuum infusion processes
- › Resin film infusion
- › Filament winding
- › Injection molding
- › Compression molding
- › Pultrusion
- › Rotational molding
- › Metallic, ceramic and composite tooling
- › Automated spray application

With support from its authorized aerospace distribution network, Henkel delivers LOCTITE FREKOTE mold release agents for aerospace customers throughout the globe.



Mold Release

|                       |                                                                                |                                                                       |                                                                                                               |                                 |                                                                                                                                 |                                                                                                              |                                                                                                                      |                                                                                                       |                                                                                                                                                         |                                  |                              |                |         |                              |   |
|-----------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------|----------------|---------|------------------------------|---|
| Applications          | Mold Cleaning                                                                  | •                                                                     | •                                                                                                             |                                 |                                                                                                                                 |                                                                                                              |                                                                                                                      |                                                                                                       |                                                                                                                                                         |                                  |                              |                |         |                              |   |
|                       | Mold Sealing                                                                   |                                                                       |                                                                                                               | •                               |                                                                                                                                 |                                                                                                              |                                                                                                                      |                                                                                                       |                                                                                                                                                         |                                  |                              |                |         |                              |   |
|                       | Composites Molding                                                             |                                                                       |                                                                                                               |                                 |                                                                                                                                 | •                                                                                                            | •                                                                                                                    | •                                                                                                     | •                                                                                                                                                       | •                                | •                            | •              | •       | •                            | • |
|                       | Compression Molding                                                            |                                                                       |                                                                                                               |                                 |                                                                                                                                 | •                                                                                                            | •                                                                                                                    | •                                                                                                     | •                                                                                                                                                       | •                                | •                            | •              | •       | •                            | • |
|                       | Casting                                                                        |                                                                       |                                                                                                               |                                 |                                                                                                                                 | •                                                                                                            | •                                                                                                                    | •                                                                                                     | •                                                                                                                                                       | •                                | •                            | •              | •       | •                            | • |
|                       | Vacuum Bagging                                                                 |                                                                       |                                                                                                               |                                 |                                                                                                                                 | •                                                                                                            | •                                                                                                                    | •                                                                                                     | •                                                                                                                                                       | •                                | •                            | •              | •       | •                            | • |
|                       | High Release                                                                   |                                                                       |                                                                                                               |                                 |                                                                                                                                 |                                                                                                              |                                                                                                                      | •                                                                                                     | •                                                                                                                                                       | •                                | •                            | •              | •       | •                            | • |
|                       | Filament Winding                                                               |                                                                       |                                                                                                               |                                 |                                                                                                                                 |                                                                                                              |                                                                                                                      |                                                                                                       |                                                                                                                                                         | •                                | •                            | •              | •       | •                            | • |
| Mechanical Properties | Appearance                                                                     | Clear liquid                                                          | Beige-Pasty liquid                                                                                            | Clear liquid                    |                                                                                                                                 | Clear Liquid                                                                                                 | Clear Liquid                                                                                                         | Clear Liquid                                                                                          | Clear Liquid                                                                                                                                            | Clear Liquid                     | Milky White Emulsion         |                |         |                              |   |
|                       | Finish                                                                         | –                                                                     | –                                                                                                             | Gloss                           |                                                                                                                                 | Matte                                                                                                        | Satin                                                                                                                | Gloss                                                                                                 | Gloss                                                                                                                                                   | Matte                            |                              |                |         |                              |   |
|                       | Density at 77 °F / 25°C (g / ml)                                               | 0.821 to 0.854 LMS                                                    | 0.97 to 0.99 LMS                                                                                              | 0.745 to 0.775 LMS              |                                                                                                                                 | 0.76 to 0.782 LMS                                                                                            | 0.715 to 0.725 LMS                                                                                                   | 0.755 to 0.764 LMS                                                                                    | 0.715 to 0.725 LMS                                                                                                                                      | 0.98 to 1.02 LMS                 |                              |                |         |                              |   |
| Handling              | CureTemperature (°F / °C)                                                      | Ambient                                                               | Ambient                                                                                                       | Ambient                         | 210 – 300 °F<br>100 – 150 °C                                                                                                    | Ambient                                                                                                      | 210 – 300 °F<br>100 – 150 °C                                                                                         | Ambient                                                                                               | 210 – 300 °F<br>100 – 150 °C                                                                                                                            | Ambient                          | 210 – 300 °F<br>100 – 150 °C | Ambient        | Ambient | 210 – 300 °F<br>100 – 150 °C |   |
|                       | CureTime                                                                       | –                                                                     | –                                                                                                             | 24 Hours                        | 60 Minutes                                                                                                                      | 3 Hours                                                                                                      | 15 Minutes                                                                                                           | 30 Minutes                                                                                            | 5 Minutes                                                                                                                                               | 10 minutes                       | 5 Minutes                    | 5 – 10 Minutes | 3 Hours | 12 Minutes                   |   |
|                       | StorageTemperature (°F / °C)                                                   | 46 – 70 °F<br>8 – 21 °C                                               | 46 – 70 °F<br>8 – 21 °C                                                                                       | 46 – 70 °F<br>8 – 21 °C         |                                                                                                                                 | 46 – 70 °F<br>8 – 21 °C                                                                                      | 46 – 70 °F<br>8 – 21 °C                                                                                              | 46 – 70 °F<br>8 – 21 °C                                                                               | 46 – 70 °F<br>8 – 21 °C                                                                                                                                 | 46 – 70 °F<br>8 – 21 °C          | 37 – 68 °F<br>3 – 20 °C      |                |         |                              |   |
|                       | Storage Time                                                                   | 24 Months                                                             | 24 Months                                                                                                     | 12 Months                       |                                                                                                                                 | 12 Months                                                                                                    | 12 Months                                                                                                            | 12 Months                                                                                             | 12 Months                                                                                                                                               | 12 Months                        | 9 Months                     |                |         |                              |   |
| Product               | New Product Name                                                               | LOCTITE<br>FREKOTE PMC<br>AERO                                        | LOCTITE<br>FREKOTE PMC 915WB<br>AERO                                                                          | LOCTITE<br>FREKOTE B-15<br>AERO |                                                                                                                                 | LOCTITE<br>FREKOTE 44-NC<br>AERO                                                                             | LOCTITE<br>FREKOTE 55-NC<br>AERO                                                                                     | LOCTITE<br>FREKOTE 700-NC<br>AERO                                                                     | LOCTITE<br>FREKOTE 770-NC<br>AERO                                                                                                                       | LOCTITE<br>FREKOTE C-800<br>AERO |                              |                |         |                              |   |
|                       | Known As                                                                       | Frekote®<br>PMC™                                                      | Frekote®<br>915WB™                                                                                            | Frekote®<br>B-15™               |                                                                                                                                 | Frekote®<br>44-NC™                                                                                           | Frekote®<br>55-NC™                                                                                                   | Frekote®<br>700-NC™                                                                                   | Frekote®<br>770-NC™                                                                                                                                     | Frekote®<br>Aqualine®<br>C-800™  |                              |                |         |                              |   |
| Availability          | Packaging                                                                      | Can, Pail                                                             | Can                                                                                                           | Can, Pail                       |                                                                                                                                 | Can, Pail, Drum, Aerosol                                                                                     | Can, Pail, Drum, Aerosol                                                                                             | Can, Pail, Drum, Aerosol                                                                              | Can, Pail, Drum, Aerosol                                                                                                                                | Can, Pail                        |                              |                |         |                              |   |
| Description           | LOCTITE<br>FREKOTE PMC<br>AERO                                                 | LOCTITE<br>FREKOTE PMC 915WB<br>AERO                                  | LLOCTITE<br>FREKOTE B-15<br>AERO                                                                              |                                 | LOCTITE<br>FREKOTE 44-NC<br>AERO                                                                                                | LOCTITE<br>FREKOTE 55-NC<br>AERO                                                                             | LOCTITE<br>FREKOTE 700-NC<br>AERO                                                                                    | LOCTITE<br>FREKOTE 770-NC<br>AERO                                                                     | LOCTITE<br>FREKOTE C-800<br>AERO                                                                                                                        |                                  |                              |                |         |                              |   |
|                       | • Easy to use<br>• Eliminates contaminants<br>• Enhances release effectiveness | • Water based polisher<br>• Polishing liquid<br>• Removes cured films | • Seals mold porosity, scratches, or imperfections<br>• No contaminating transfer<br>• High thermal stability |                                 | • Better mold utilisation<br>• Non contaminating transfer<br>• No mold build up<br>• Significantly lower mold maintenance costs | • Fast drying<br>• Non contaminating transfer<br>• High thermal stability<br>• Non-CFC<br>• No mold build-up | • No chlorinated solvents<br>• High gloss finish<br>• High slip<br>• No contaminating transfer<br>• No mold build-up | • No contaminating transfer<br>• High gloss finish<br>• High slip<br>• No mold build-up<br>• Low odor | • High slip<br>• Easy application<br>• Multiple releases<br>• Low transfer<br>• No corrosion / oxidation of the mold surface<br>• Minimal mold build-up |                                  |                              |                |         |                              |   |

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| LOCTITE Nomenclature |                     |
|----------------------|---------------------|
| LOCTITE EA           | Epoxy Adhesives     |
| LOCTITE EF           | Expanding Materials |
| LOCTITE HC           | Syntactic Core      |

[illegible]

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**BONDERITE®**  
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