LOCTITE

BEYOND THE BOND

COMPONENT BONDING

# YOUR CHALLENGE. BONDED.

Component Bonding is the invisible force behind high-performing components. Industrial adhesives that help you to overcome assembly challenges, so you can design, build, fix and scale with confidence.

Henkel

Henkel Adhesive Technologies

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# ENGINEERED FOR PERFORMANCE, *RELIABILITY AND INNOVATION*

The most reliable bonds have always depended on the factors that decide whether it holds: substrate compatibility, surface preparation, load capacity, and environmental durability.

This is as true today as it ever was. What has changed is the fact that those factors are continuously multiplying as modern engineering is outgrowing conventional joining methods with a need for lighter materials, tighter tolerances, mixed substrates, and new standards.

Component Bonding solutions from LOCTITE® and TEROSON® are the invisible force behind high-performing components. An industrial adhesive system engineered for performance, reliability and innovation, enabling engineers and manufacturers across industries to design, build, fix and scale with confidence.

### BOND WITHOUT COMPROMISE
Welding, fastening and other traditional joining methods add complex process steps, cost and risk of damaged materials. Component Bonding helps avoid these compromises.

### BOND WITH CONFIDENCE
No matter the application, from low-energy plastics and mixed metals to glass and advanced composites, our bonding solutions deliver the strength, reliability, and performance you can trust.

### BOND WITH FREEDOM
Lighter, mixed materials, smaller, stronger. Component Bonding can deliver the bond behind your next innovative design.

# WHATEVER YOU ARE BONDING, *WE TAKE CARE OF IT*

With Component Bonding, we help simplify the selection process by offering solutions for virtually every bonding challenge. For us, the question isn't what you're bonding, but what you need the bond to do:

- **FAST** when speed and productivity matter
- **STRONG** when durability and load-bearing performance are essential
- **ELASTIC** when flexibility, movement, and vibration resistance are required
- **SPECIAL** when your application demands a unique solution

Once you've identified your bonding goal, use the **Component Bonding Compass** to navigate to your specific challenge. For example, within **FAST**, you can refine your search based on substrate, appearance, or performance requirements, such as polyolefin bonding, low bloom, or heat resistance. Each challenge guides you toward a potential solution.*

* The full range of solutions goes deeper. Please contact your local consultant for solutions matched to your exact application.

# *THE COMPONENT* **BONDING COMPASS**

## *BOND* ***STRONG***

**STRONG** component bonding – structural epoxies, acrylics and hybrids – is built to bond tough without compromising your industrial operations. From drones and motors to fluid and industrial operations, it withstands loads, distributes stress and holds under heat.

Use **STRONG** Component Bonding when you need rigid structural joints such as metals, ceramics and magnets.

## *BOND* ***ELASTIC***

**ELASTIC** component bonding – silicones, MS polymers and sealants – absorbs stress and seals dissimilar materials. From railway and marine to special vehicles and data centres, it bends with the system and stays stable through vibration, UV, humidity and temperature swings.

Use **ELASTIC** Component Bonding when you need bonding, sealing and gap filling for applications such as panels, direct glazing and frames.

## *BOND* ***FAST***

**FAST** component bonding – instant adhesives – enables high-performance applications where speed, precision, and throughput matter the most. From bonding small parts in seconds to meeting tight assembly & repair windows. We keep operations moving across automotive, medical, electronic appliances, and other manufacturing industries.

Use **FAST** Component Bonding when you need instant fixing and clean bond lines, for small parts, plastics, and mixed substrates.

## *BOND* ***SPECIAL***

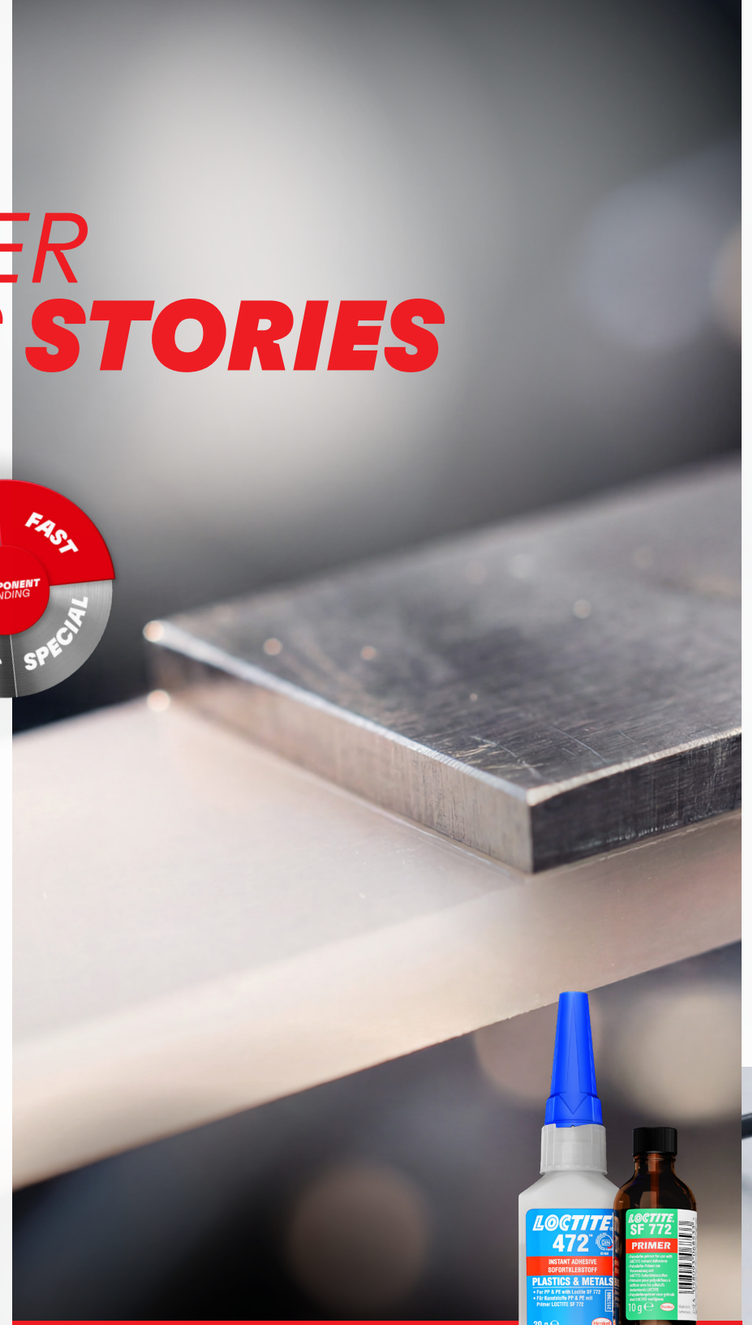
**SPECIAL** isn't a category – it's the work that lives outside one. From hard-to-bond plastics and UV-curing glass applications to thermally conductive adhesives and flame-retardant bonding systems for harsh environments.

Use **SPECIAL** Component Bonding when you need potting and encapsulating or heat dissipation, for optical devices and other extraordinary applications.

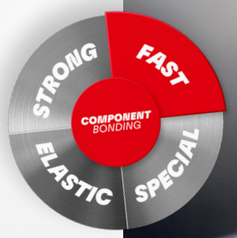
### ***RELIABLE BONDING STARTS*** *WITH SURFACE PREPARATION*

Proper cleaning removes contaminants and allows the adhesive to do its job. Where required, primers can be used to enhance adhesion on difficult-to-bond materials.

# CUSTOMER **SUCCESS STORIES**




## PLASTICS AND METALS? *BONDED.*




For decades, bonding **PE** and **PP** has been one of manufacturing's toughest challenges. Their low surface energy made reliable adhesion difficult, often requiring flame, plasma, or corona treatment before bonding could even begin. These extra processing steps add cost, complexity, and variability to production.

This changes today.

We present **LOCTITE 472** and **LOCTITE SF 772**: an innovative and powerful adhesive-primer combination. Together, they make it possible to eliminate process complexity, reduce production costs and unlock new possibilities.

### RESULTS AND BENEFITS

- Capital and process cost reduction
- New material combination: reliable PP/PE and mixed-material bonding
- Easy application: prime and bond
- Fixtures in under 10 seconds with LOCTITE 472 and LOCTITE SF 772
- Up to 8× higher bond strength on polyolefins with LOCTITE SF 772
- Formulated with no known CMRs

### PORSCHE MOTORSPORT

LOCTITE is the official adhesive partner of Porsche Formula E Team. See how LOCTITE instant adhesives perform at championship speed.

PORSCHE MOTORSPORT | OFFICIAL ADHESIVE PARTNER LOCTITE

Learn more





## HEAT AND LOAD? *BONDED.*

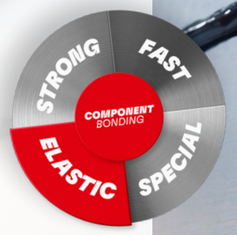
Coated metals can be difficult to bond reliably. A linear drive manufacturer needed to bond surface-treated steel guide rails up to 8 metres long to anodized aluminum. The customer's existing epoxy failed to achieve consistent performance. Different steel finishes led to inconsistent adhesion, while the joint had to withstand continuous loads and operating temperatures. One weak spot can make the entire rail unusable.

**LOCTITE SF 7063** cleaner with **LOCTITE EA E-120HP** high-performance **2K** epoxy, validated by FEA simulation, resulted in 30% higher bond strength and zero failures on coated metals.

### RESULTS AND BENEFITS

- Zero failures in customer reliability testing
- 30% higher bond strength on coated metals vs. the previous solution
- Maintains strength and durability at elevated temperature
- Tough and resilient, with 10% elongation
- Thin, controlled application reduces material use and process cost

## VIBRATION RESISTANCE? *BONDED.*




At one of our customers, the brief was clear: bond an an 11.5-metre aluminium panel onto a GRP sandwich sidewall to reinforce the trailer. Make it vibration-resistant in service. Accommodate the thermal expansion between the panel and sidewall. Hold the alignment to 1/2mm during assembly. Leave a mirror-smooth finish on the outside.

When the design changed, aluminium had to be bonded to a GRP sandwich sidewall. TEROSON MS 9399, an elastic panel-bonding adhesive, combined with TEROSON SB 450 cleaner and adhesion promoter, met every requirement at once.

### RESULTS AND BENEFITS

- Absorbs movement, vibration and thermal expansion
- High initial tack keeps panel in place
- Speeds up production: less rework, cleaning and surface correction
- Resists water ingress, weathering and UV exposure
- Isocyanate-free for safer handling and processing

## EXTREME DEMANDS? *BONDED.*

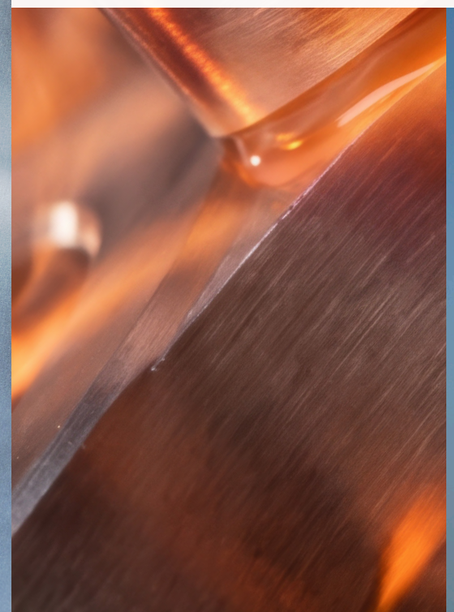
When Antoni Gaudí designed the Sagrada Familia, the technology to realise his full vision didn't yet exist. He knew it and left detailed requirements for future generations, trusting that engineering would catch up.

Over a century later, component bonding innovation became part of the answer. At the heart of the breakthrough: bonding stone to steel so the two materials function as a single structural element, enabling a modular construction system that wasn't possible before.

LOCTITE EA 9497 – a two-part epoxy applied in liquid form – united 2,100+ stone elements with steel reinforcement across 826 panels of the basilica's six central towers, completing Gaudí's vision. More than 24 tonnes of LOCTITE EA 9497 were used throughout construction, underscoring not only the scale of the project but also the trust placed in the adhesive to deliver lasting structural integrity.

### RESULTS AND BENEFITS

- Construction time reduced from 50–60 years to around 10 years
- Bonds dissimilar materials, such as steel and concrete
- Tested compressive strength above 98 MPa
- Designed for coastal humidity, vibration and temperature fluctuations
- Durability validated through 1,000-hour ageing tests



# EVERY BOND
# *IN THE COMPASS*

Explore the products in the Component Bonding Compass across the **FAST**, **STRONG**, **ELASTIC** and **SPECIAL** categories and find specifications that matter for selection.

| Category | Product | Key Benefit | Adhesion to | | | | |
|---|---|---|---|---|---|---|---|
| | | | Plastics | Polyolefin | Rubber | Metals | Glass |
| FAST | LOCTITE 472 New | Plastics & Metals | ▪▪ | ▪▪* | ▪▪ | ▪▪ | – |
| | LOCTITE 401 | Universal | ▪▪ | ▪* | ▪▪ | ▪ | – |
| | LOCTITE 406 | Plastics & Rubbers | ▪▪ | ▪▪* | ▪▪ | ▪ | – |
| | LOCTITE 480 | Impact Resistance | ▪▪ | ▪* | ▪▪ | ▪▪ | – |
| | LOCTITE 402 | Heat Resistance | ▪▪ | ▪* | ▪▪ | ▪ | – |
| | LOCTITE 460 | Low Bloom/Odour | ▪▪ | ▪* | ▪▪ | ▪ | – |
| | LOCTITE 454 | Non-Drip | ▪▪ | ▪* | ▪▪ | ▪ | – |
| | LOCTITE 3090 | Gap Filling | ▪▪ | ▪* | ▪▪ | ▪ | – |
| ELASTIC | TEROSON MS 9399 | Fast Setting | ▪ | – | ▪ | ▪▪ | ▪▪ |
| | TEROSON MS 939 | Universal | ▪ | – | ▪ | ▪▪ | ▪▪ |
| | TEROSON MS 930 | High Flexibility | ▪ | – | ▪ | ▪▪ | ▪▪ |
| | TEROSON MS 9380 | High Tack | ▪ | – | ▪ | ▪▪ | ▪▪ |
| | LOCTITE SI 5366/7/8 | General Sealing | ▪ | – | ▪ | ▪▪ | ▪▪ |
| | LOCTITE SI 5300 | High Temperature | ▪ | – | ▪ | ▪▪ | ▪▪ |
| STRONG | LOCTITE EA E-120HP | Hot Strength | ▪ | – | ▪ | ▪▪ | ▪▪ |
| | LOCTITE EA 9466 | High Strength | ▪ | – | ▪ | ▪▪ | ▪▪ |
| | LOCTITE EA 3430 | Ultra Clear | ▪ | – | ▪ | ▪▪ | ▪▪ |
| | LOCTITE AA 326/ SF 7649 | No Mix Rigid | – | – | – | ▪▪ | ▪▪ |
| | LOCTITE HY 4070 | Fast Versatile | ▪▪ | ▪* | ▪▪ | ▪▪ | – |
| | LOCTITE HY 4090 | Versatile | ▪▪ | ▪* | ▪ | ▪▪ | – |
| SPECIAL | TEROSON MS 939 FR | Flame Retardant | ▪ | – | ▪ | ▪▪ | ▪▪ |
| | LOCTITE AA 3915 | UV Plastics | ▪▪ | – | ▪▪ | ▪▪ | ▪ |
| | TFX 3010 | Thermal Gap Filler | ▪ | – | ▪ | ▪ | ▪ |
| | LOCTITE AA 3342 | Fast High Temperature | – | – | – | ▪▪ | ▪ |

** with LOCTITE SF 772 Primer*
*** only applicable to LOCTITE HY 4070/4090*

Request personalized technical guidance.

Products in Success Stories

| Category | Product | Key Benefit | Compatibility | | | | Application/ Dry Time |
|---|---|---|---|---|---|---|---|
| | | | Fast | ELASTIC | STRONG | SPECIAL | |
| SURFACE PREPARATION | LOCTITE SF 7063 | Solvent-Based Cleaner | ++ | ++ | ++ | ++ | Fast Evaporation |
| | BONDERITE C-MC 90014 | Water-Based Cleaner | ++ | ++ | + | + | Impregnated Wipes |
| | LOCTITE SF 772 New | Polyolefin Primer | ++ | - | + +** | - | 10 sec |
| | TEROSON SB 450 | Cleaner & Adhesion Promoter | + | ++ | + | + | 30 sec |

| Gap Filling | Cure Speed / Fixture time | Temperature | Viscosity | Tensile Shear Strength (GBMS unless specified) |
|---|---|---|---|---|
| – | 5 - 45 sec. | -40 to 120°C | 70 mPa.s | 22 N/mm² |
| – | 5 - 10 sec. | -40 to 120°C | 100 mPa.s | 20 N/mm² |
| – | 5 - 45 sec. | -40 to 120°C | 20 mPa.s | 16 N/mm² |
| – | 10 - 120 sec. | -40 to 100°C | 150 mPa.s | 26 N/mm² |
| – | 5 - 60 sec. | -40 to 135°C | 110 mPa.s | 22 N/mm² |
| – | 5 - 30 sec. | -40 to 80°C | 40 mPa.s | 21 N/mm² |
| – | 5 - 60 sec. | -40 to 120°C | Gel | 21 N/mm² |
| + | 90 - 180 sec. | -40 to 80°C | Gel | 21 N/mm² |
| ++ | Full cure/24h (2c mix) | -40 to 100°C | Pasty | 1.9 N/mm² |
| ++ | 3 mm/24h | -40 to 100°C | Pasty | 1.9 N/mm² |
| ++ | 4 mm/24h | -50 to 80°C | Pasty | 0.8 N/mm² |
| ++ | 3 mm/24h | -40 to 100°C | Pasty | 2 N/mm² |
| ++ | 5 mm/24h | -50 to 200°C | Pasty | 2 N/mm² |
| ++ | 3 mm/24h | -50 to 300°C | Pasty | 1 N/mm² |
| + | 6 h | -55 to 155°C | 18 000 mPa.s | 30 N/mm² |
| + | 180 min | -55 to 120°C | 35 000 mPa.s | 37 N/mm² |
| + | 15 min | -55 to 100°C | 23 000 mPa.s | 22 N/mm² |
| - | 3 min | 120°C | 18 000 mPa.s | 15 N/mm² |
| + | 5 min | -40 to 100°C | Gel | 25 N/mm² |
| + | 4-6 min | -40 to 155°C | Gel | 17 N/mm² |
| ++ | 3 mm/24h | -40 to 100 °C | Pasty | 1.9 N/mm2 |
| + | 5 sec @ 100mW/cm2 | -40 to 130°C | 300 mPa.s | 5.2 N/mm2 (PC) |
| + | 24 h | -40 to 80°C | Pasty | |
| + | < 3.5 min | 180°C | 90 000 mPa.s | 22 N/mm² |

Disclaimer: Values shown are typical and for guidance only; they are not product specifications. Performance may vary with application and test conditions. Refer to the latest product TDS/SDS and validate suitability for the intended use.

LOCTITE

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