LOCTITE®

LOCTITE® 3D MED3394™

Sterilizable
Sheer Black, White

LOCTITE®
Henkel Corporation
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LOCTITE 3D MED3394™

LOCTITE 3D MED3394 is a high-performance material developed to withstand the harsh environment created during sterilization cycles. The high temperature resistance and low water absorption means it can withstand multiple autoclave cycles.

LOCTITE 3D MED3394 is capable of meeting ISO 10993-5, -10, -11 (acute systemic) and -23 standards, as well as USP Class VI, for bio-compatibility when processed using a validated workflow. Certificates of Compliance are available upon request.

LOCTITE 3D MED3394 exhibits is available in both white and sheer black colors and can print on a variety of DLP, LCD, and mSLA style resin 3D printers.

Benefits:

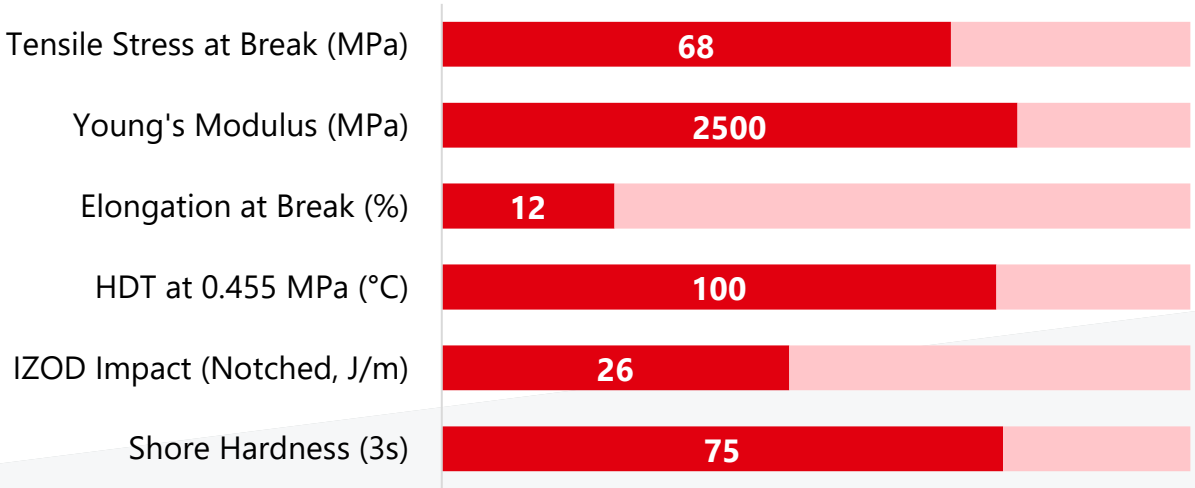
- High heat resistance, HDT 100° C
- Excellent biocompatibility
- Low water absorption

Ideal for:

- Medical Devices
- Laboratory Equipment
- Sterile Devices
- Cleanroom environments

Markets:

Healthcare



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PROPERTIES

Mechanical Properties	Measure	Method	Green	Post Processed
Young's Modulus	MPa	ASTM D638	1400 - 1700 [1]	2450 - 2650 [1]
Tensile Stress at Yield	MPa	ASTM D638	34 - 44 [1]	68 - 76 [1]
Elongation at Yield	%	ASTM D638	3.9 - 4.4 [1]	4.5 - 4.9 [1]
Tensile Stress at Break	MPa	ASTM D638	31 - 38 [1]	66 - 72 [1]
Elongation at Break	%	ASTM D638	25 - 39 [1]	9 - 16 [1]
Flexural Modulus	MPa	ASTM D790	-	2450 - 2750 [1]
Flexural Stress at Break	MPa	ASTM D790	-	-
Flexural Elongation at Break	%	ASTM D790	>5 [1]	>5 [1]
IZOD Impact (Notched)	J/m	ASTM D256	-	24.5 - 27.5 [1]
Shore Hardness (3s)	D	ASTM D2240	66 [2]	75 [2]
Other Properties				
HDT at 0.455 MPa	°C	ASTM D648	-	97 - 104 [1]
HDT at 1.82 MPa	°C	ASTM D648	-	82 - 94 [1]
Water Absorption (24hr)	%	ASTM D570	-	0.53 [3]
Water Absorption (48hr)	%	ASTM D570	-	0.69 [3]
Water Absorption (72hr)	%	ASTM D570	-	0.90 [3]
Solid Density	g/cm^3	ASTM D792	1.14 [4]	1.15 [4]
CTE (10°C to 60°C)	µm/(m·K)	ASTM E831	-	92.3 [5]

Test parameters:
"All specimen are printed unless otherwise noted. All specimen were conditioned in ambient lab conditions at 19-23°C / 40-60% RH for at least 24 hours." ASTM Methods: D638 Type IV, 5 mm/min, D790-B, 13 mm/min, D648, D256 Notched IZOD (Machine Notched), 6 mm x 12 mm, D570 0.125" x 2" Disc 24hr@ 25°C, D2240, Type "D" (3 seconds), D7867, D1475

Internal Data Sources:
[1] GEN676679, [2] FOR600710, [3] FOR610015, [4] FOR554095, [5] FOR670854

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PROPERTIES

Biocompatibility	Method	Green	Post Processed
Cytoxocity	ISO 10993-5	-	Comply [1]
Sensitization	ISO 10993-10	-	Comply [2]
Acute Systemic Toxicity	ISO 10993-11	-	Comply [3]
Irritation	ISO 10993-23	-	Comply [4]
USP Class VI	-	-	Comply [5]
Sterility via Autoclave	Internal	-	Comply [10]

Liquid Properties	Measure	Method	Value
Viscosity at 25°C (77°F)	cP	ASTM D7867	1000 - 1200 [6]
Liquid Density	g/cm^3	ASTM D1475	1.09 [7]

Electrical Properties	Measure	Method	Green	Post Processed
Volume Resistivity	Ω·cm	ASTM D257	-	1.05E +16 [8]
Surface Resistivity	Ω	ASTM D257	-	4.0E +11 [9]
AC Relative Permittivity (Dielectric Constant)[8]				
at 50 Hz (XY)	none	ASTM D150	-	3.8
at 1 kHz (XY)	none	ASTM D150	-	3.7
at 1 MHz (XY)	none	ASTM D150	-	3.4
AC Loss Characteristic (Dissipation Factor)[8]				
at 50 Hz (XY)	none	ASTM D150	-	0.010
at 1 kHz (XY)	none	ASTM D150	-	0.010
at 1 MHz (XY)	none	ASTM D150	-	0.027

Test parameters:
"All specimen are printed unless otherwise noted. All specimen were conditioned in ambient lab conditions at 19-23°C / 40-60% RH for at least 24 hours." ASTM Methods: D7867, D1475

Internal Data Sources:
[1] FOR653183, [2] FOR653182, [3] FOR653184, [4] FO653181, [5] FOR660013, [6] GEN793177, [7] FOR554095, [8] FOR665372, [9] FOR684560, [10] FOR679644

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WORKFLOW

Validated workflows need to be followed to achieve properties as provided in the TDS. Examples of validated workflow steps are listed below. Users should defer to the most current workflow information for best results which can be found at https://www.loctiteam.com/printer-validation-settings

PRINTER SETTINGS

LOCTITE 3D MED3394 SHR BK is formulated to print optimally on an industrial DLP printer. Read the safety data sheet carefully to get details about health and safety instructions. Recommended print parameters:

- Shake resin bottle well before usage
- Temperature: 20°C to 35°C
- Intensity: 3 mW/cm² to 7 mW/cm²

Settings: 385 nm at 5 mW/cm²	Measure	Method	Value
Layer Thickness	µm	Internal	100
Burn-in Region	s	Internal	40
Transition Region	s	Internal	15
Model Region	s	Internal	4.5

Settings: 385 nm at 5 mW/cm²	Measure	Method	Value
E_C	mJ/cm2	Internal	10.6 [1]
D_P	mm	Internal	0.32 [1]

Settings: 385 nm at 5 mW/cm²	Measure	Method	Exposure time
D_C = 50 µm	s	Internal	2.5*
D_C = 100 µm	s	Internal	2.9*

Test parameters:
*Exposure times are calculated without a safety factor

Internal data source:
[1] FOR602556

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WORKFLOW

Validated workflows need to be followed to achieve properties as provided in the TDS. Examples of validated workflow steps are listed below. Users should defer to the most current workflow information for best results which can be found at https://www.loctiteam.com/printer-validation-settings

CLEANING

LOCTITE 3D MED3394 SHR BK requires post processing to achieve specified properties. Prior to post curing, support structures should be removed from the printed part, and the part should then be washed. Use compressed air to remove residual solvent from the surface of the material between intervals.

Post Process Step	Agent	Method	Duration	Intervals	Additional Info
Cleaning Step #1	IPA	Ultrasonic	2 min	2	Dry after each interval
Dry	n.a.	Compressed air	10 s to 60 s	1	Air pressure (50psi)
Wait before post curing	n.a.	Ambient condition	60 min	1	Room temperature

POST CURING

LOCTITE 3D MED3394 SHR BK requires post curing to achieve specified properties. It is recommended that either an LED or wide spectrum lamp be used to post cure parts.

An additional heat cure at 100°C for one hour is recommended for most workflows to realize highest HDT performance. Allow the parts to rest one hour between UV cure and heat cure. To minimize risk of warpage place parts in cold oven before ramping up temperature to target value and cool down parts slowly in switched off oven after reaching the heat curing conditions.

UV Curing Unit	UV Source	Intensity	Cure time per side	Additional Settings (Shelf, Output Energy)
Dymax 5000 EC Flood	Mercury Arc Bulb (broad spectrum)	150 mW/cm² at 380 nm	10 min	400W, Shelf K
Loctite CL36	405nm LED	80 mW/cm² at 405 nm	10 min	100% top & side

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WORKFLOW

Validated workflows need to be followed to achieve properties as provided in the TDS. Examples of validated workflow steps are listed below. Users should defer to the most current workflow information for best results which can be found at https://www.loctiteam.com/printer-validation-settings

STORAGE

Store LOCTITE 3D MED3394 SHR BK in the unopened container in a dry location. Optimal Storage: 8°C to 30°C. Storage below 8°C or above 30°C can adversely affect product properties. Material removed from containers may be contaminated during use. For this reason, filter used resin with 190 µm mesh filter before placing back into proper storage container.

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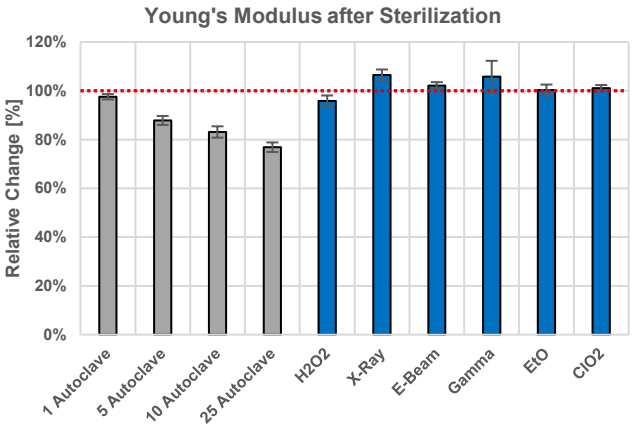
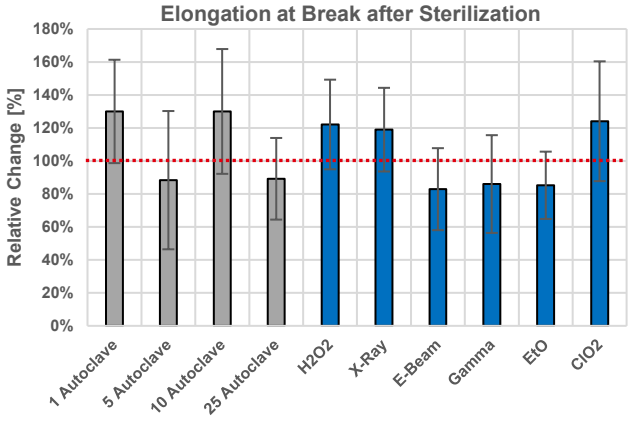
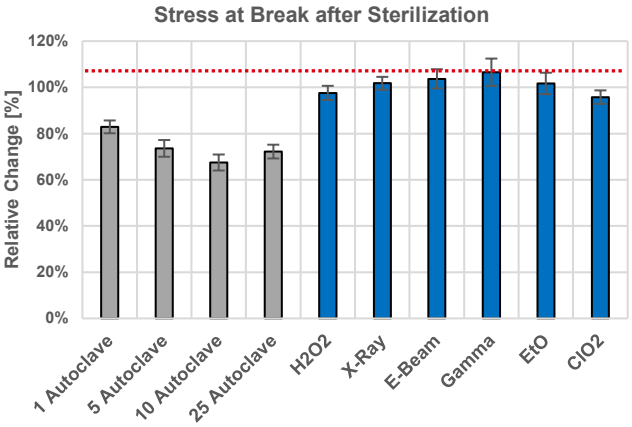
AGEING AND ENVIRONMENTAL EFFECTS – STERILIZATION

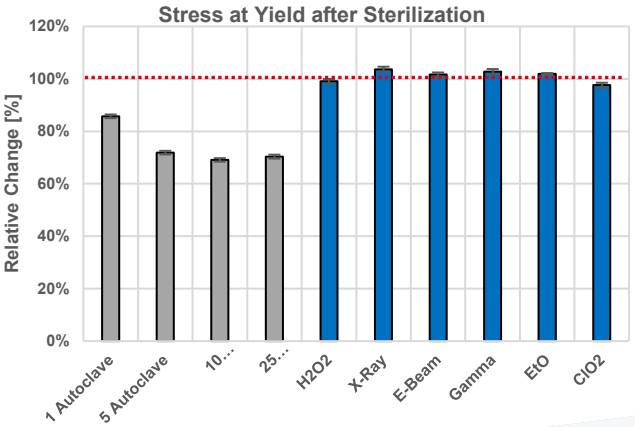
LOCTITE 3D MED3394 SHR BK was sterilized via a variety of sterilization methods. Sterilized samples were conditioned for a minimum of 24 hours before mechanical testing. Control samples were stored at a constant 22°C. All samples were printed using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C).

Data represents mechanical properties shortly after sterilization and are not indicative of long-term shelf-aged performance.









Test parameters:
ASTM D638: Type IV, Pull speed: 5 mm/min, Young's modulus measured at 0.1-1.0% (regression), 22°C. Stereilization Information: Autocalve – 134°C for 18 minutes at 2.1 bar, H2O2 – 4 injection sterilization cycle of 59% H2O2, X-Ray – 11kGy nominal dose, E-Beam – 11kGy nominal dose, Gamma – 40kGy nominal dose, EtO – 3 cycles, ClO2 – under vacuum conditions.

Internal Data Sources:
GEN685128

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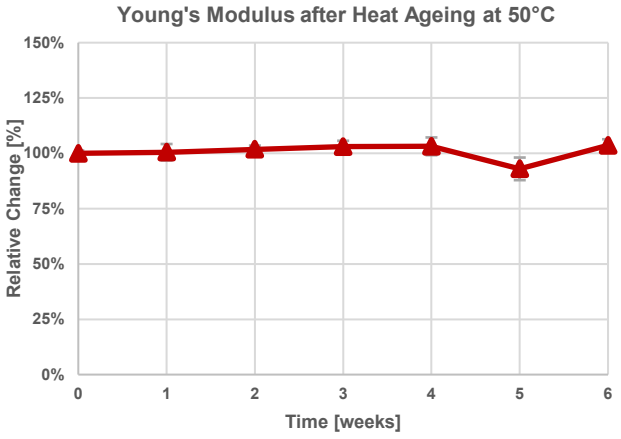
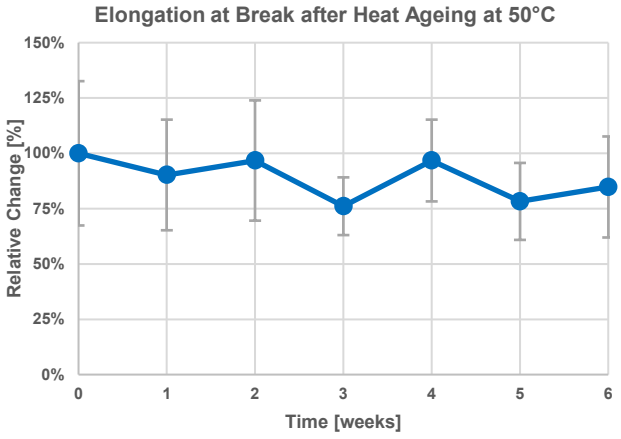
AGEING AND ENVIRONMENTAL EFFECTS – HEAT AGEING

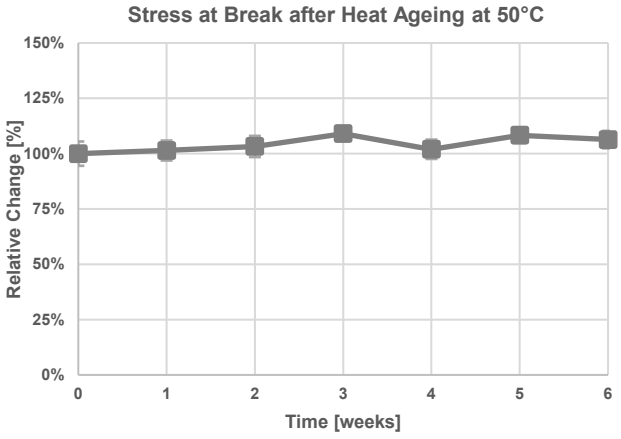
LOCTITE 3D MED3394 SHR BK was heat aged without load according to ASTM D3045. Test samples were exposed for a defined time at 50°C and conditioned for 24 hours at 22°C before mechanical testing. Control samples were stored at a constant 22°C. All samples were printed in the same print job using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C).

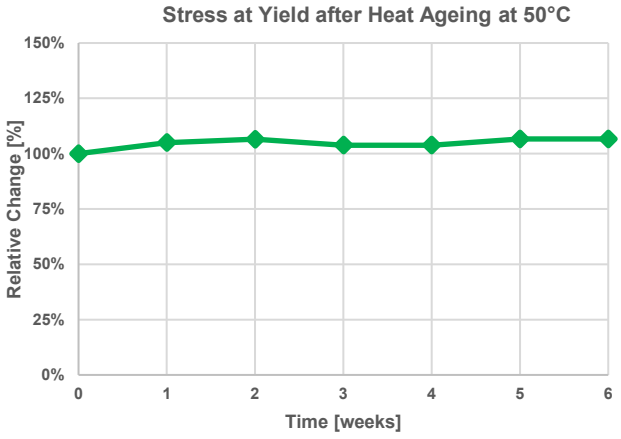
"0 weeks" represents non-aged samples stored at 22°C and tested 24 hours after post-processing.

Based on temperature dependence of reaction rates a test time of 6 weeks at 50°C can be interpreted as approximately 12 months at ambient temperature.









Test parameters:
ASTM D638: Type IV, Pull speed: 5 mm/min, Young's modulus measured at 0.1-1.0% (regression), 22°C

Internal Data Sources:
FOR635905, FOR635909

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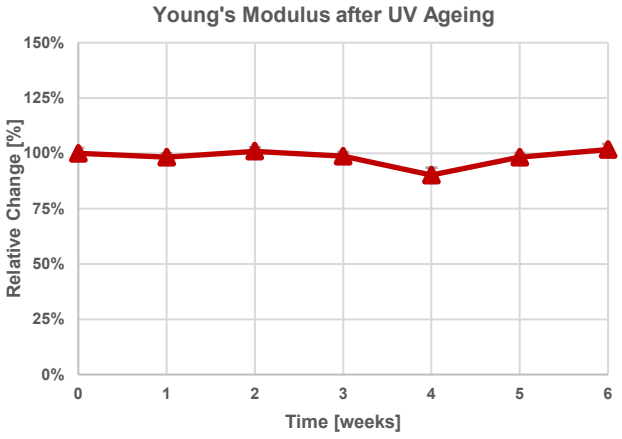
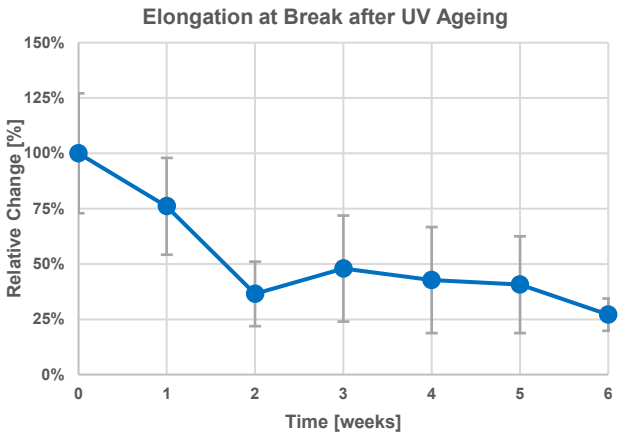
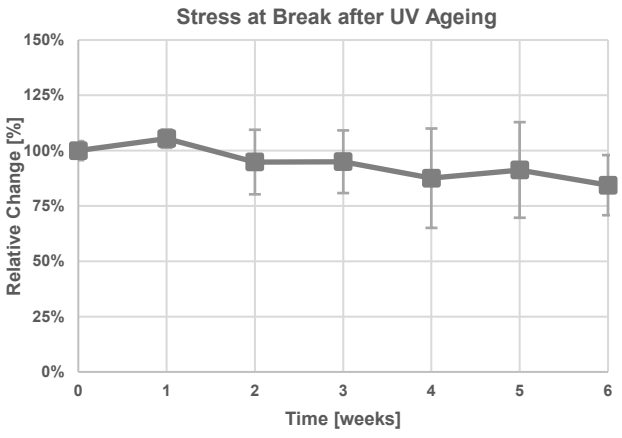
AGEING AND ENVIRONMENTAL EFFECTS – ACCELERATED WEATHERING (UV AGEING)

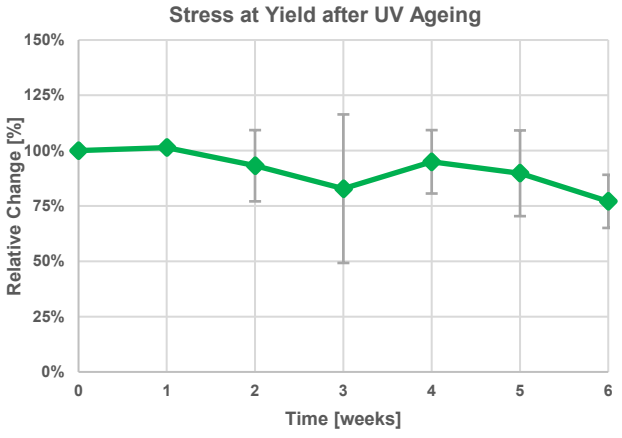
LOCTITE 3D MED3394 SHR BK has been tested after accelerated outdoor weathering according to ASTM D4329 (Cycle A). Test samples were exposed to defined conditions of heat, water condensation and UV light. Exposed samples were conditioned for 24 hours at 22°C before mechanical testing. Control samples were stored at a constant 22°C. All samples were printed in the same print job using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C). "0 weeks" represents non-aged samples stored at 22°C and tested 24 hours after post-processing.

Please note, accelerated weathering testing can never fully represent real outdoor conditions and complexity. It is therefore recommended to conduct additional (outdoor) testing relevant for your specific application needs.









Test parameters:
ASTM D638: Type IV, Pull speed: 5 mm/min, Young's modulus measured at 0.1-1% (regression), 22 °C
ASTM D4329: Cycle A for general applications, QUV/se, UVA 340 nm, 0.89 W/m²·nm, 8 hours UV light at 60°C followed by 4 hours at 50°C condensation in the dark. To reduce any sample warpage during test time samples were placed in tailor-made holders without any fixation clamps or mechanical load. Exposed samples were always removed from QUV before next condensation cycle to avoid samples that are soaked excessively with water before testing.

Internal Data Sources:
FOR640990, FOR640994

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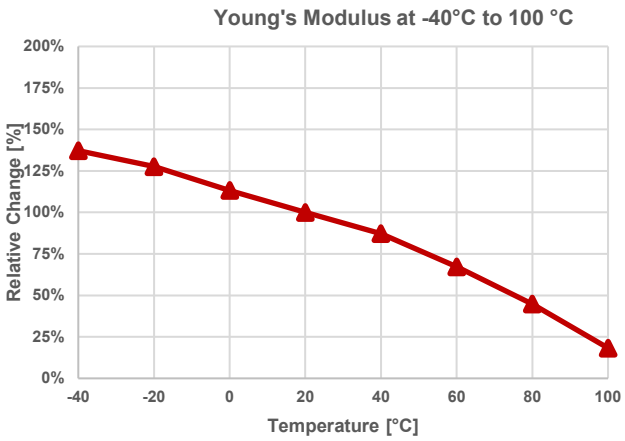
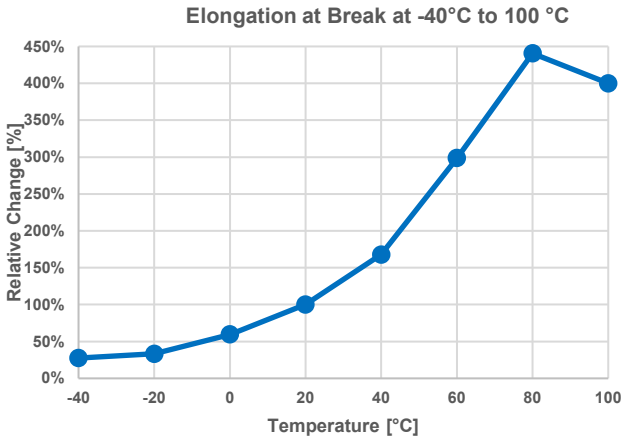
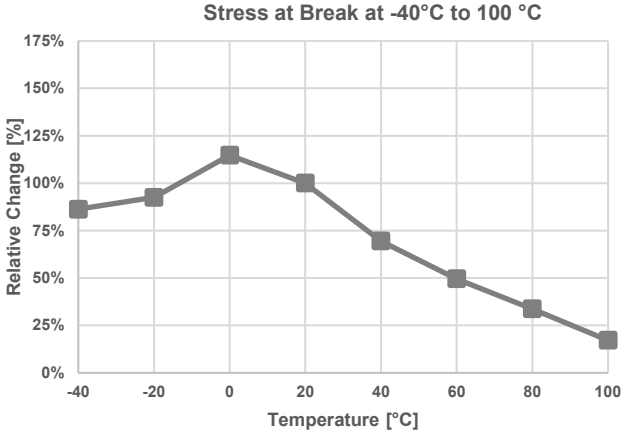
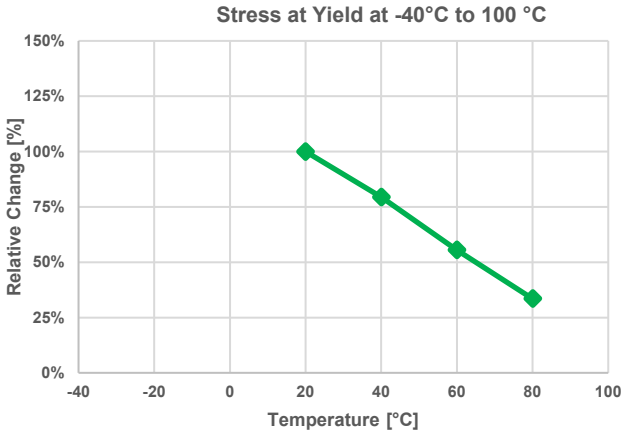
THERMAL INFLUENCE ON MECHANICAL PROPERTIES

LOCTITE 3D MED3394 SHR BK has been tested according to ASTM D638 at varied environmental temperatures, from -40°C to 100°C. All samples were printed in the same print job using a validated workflow. Mechanical testing was conducted according to ASTM D638. Before each test series samples were conditioned for 60 minutes at the specific test temperature.









Test parameters:
ASTM D638, Type IV, Pull speed: 5 mm/min, Young's modulus measured at 0.1-1% (regression)

Internal Data Sources:
FOR667304, FOR669197

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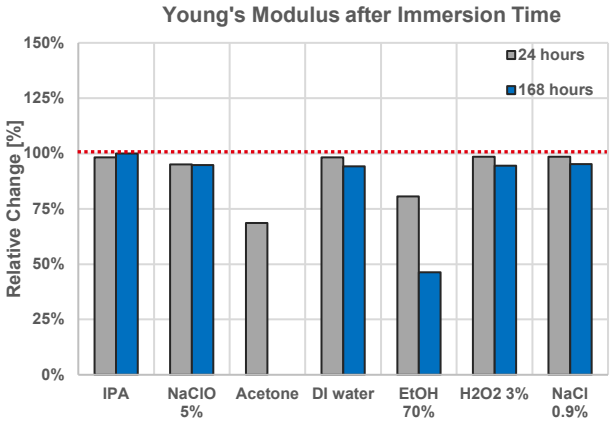
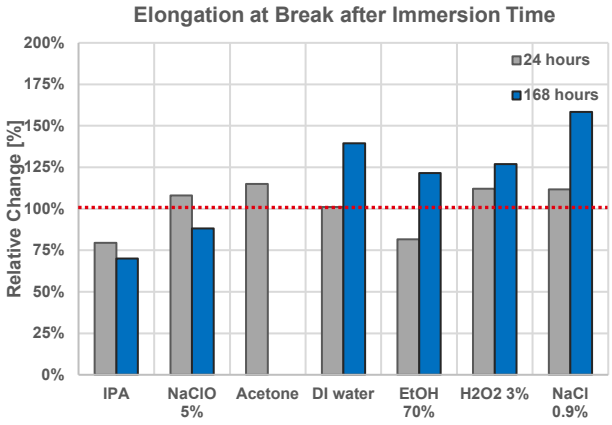
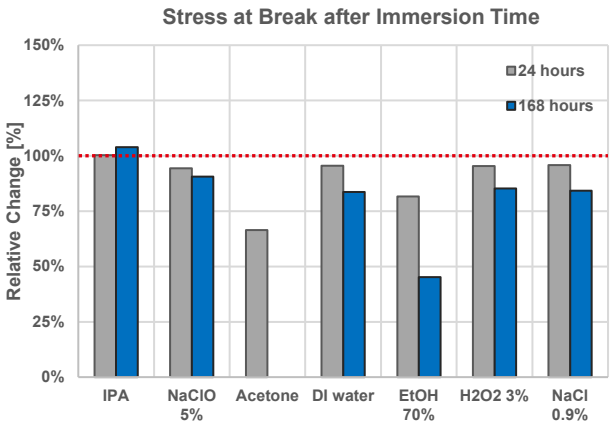
AGEING AND ENVIRONMENTAL EFFECTS – CHEMICAL RESISTANCE MEDICAL

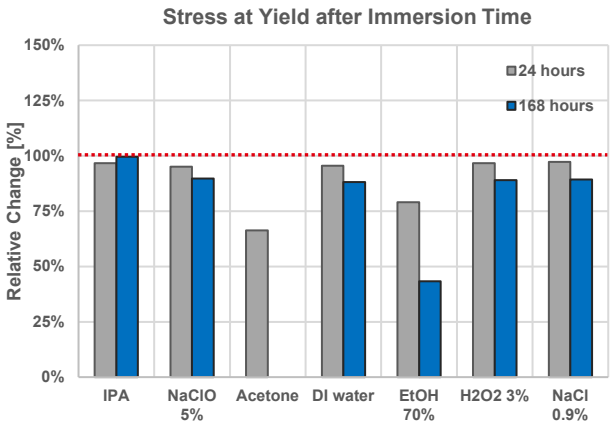
LOCTITE 3D MED3394 SHR BK has been tested after chemical ageing according to ASTM D543. The influence of chemicals was tested by measuring mechanical properties after different test times (Immersion test for 24 and 168 hours). Exposed samples were stored in containers and fully immersed in different chemicals. Samples were stirred every 24 hours using a shaker. After removal, exposed samples were washed and conditioned for 24 hours at 22°C before mechanical testing. All samples were printed using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C).

"100%" represents non-aged samples stored at 22°C and tested 24 hours after post-processing.









Test parameters:
ASTM D638: Type IV, Pull speed: 5 mm/min, Young's modulus measured at 0.1-1.0% (regression), 22°C
ASTM D543: Samples immersed in different chemicals were stored at 22°C.

Internal Data Sources:
FOR669958, FOR669957, FOR669960, FOR676378, FOR669962, FOR676381, FOR676383

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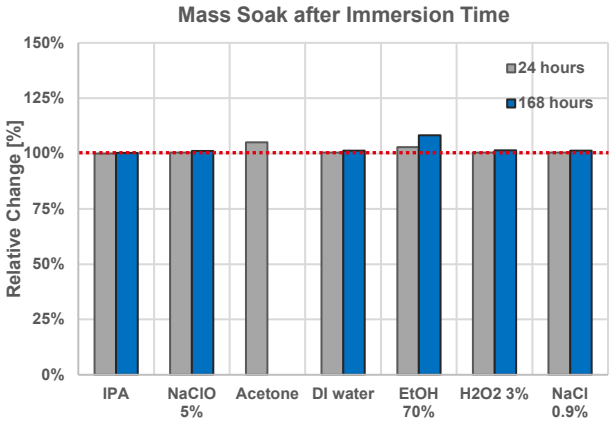
AGEING AND ENVIRONMENTAL EFFECTS – CHEMICAL RESISTANCE MASS SOAK

LOCTITE 3D MED3394 SHR BK has been tested after chemical ageing according to ASTM D543. The influence of chemicals was tested by measuring the mass change after different test times (Immersion test for 24 and 168 hours). Exposed samples were stored in containers and fully immersed in different chemicals. Samples were stirred every 24 hours using a shaker. After removal exposed samples were washed, dried and immediately weighed. All samples were printed using a validated workflow.

"100%" represents the initial weight 24 hours after post-processing.



Test parameters:
ASTM D543: Samples immersed in different chemicals were stored at 22°C.

Internal Data Sources:
FOR669958, FOR669957, FOR669960, FOR676378, FOR669962, FOR676381, FOR676383

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PROPERTIES

Mechanical Properties	Measure	Method	Green	Post Processed
Young's Modulus	MPa	ASTM D638	1400 - 1850 [1]	2400 - 2750 [1]
Tensile Stress at Yield	MPa	ASTM D638	35 - 46 [1]	67 – 72 [1]
Elongation at Yield	%	ASTM D638	3.9 - 4.2 [1]	4.4 - 4.7 [1]
Tensile Stress at Break	MPa	ASTM D638	31 - 36 [1]	64 - 70 [1]
Elongation at Break	%	ASTM D638	18 - 33 [1]	9 - 13 [1]
Flexural Modulus	MPa	ASTM D790	-	2300 [1]
Flexural Stress at Break	MPa	ASTM D790	-	-
Flexural Elongation at Break	%	ASTM D790	>5 [2]	>5 [2]
IZOD Impact (Notched)	J/m	ASTM D256	-	26.5 - 27.5 [1]
Shore Hardness (3s)	D	ASTM D2240	-	74 [2]
Other Properties				
HDT at 0.455 MPa	°C	ASTM D648	-	97 - 100 [1]
HDT at 1.82 MPa	°C	ASTM D648	-	80 - 84 [1]
Water Absorption (24hr)	%	ASTM D570	-	0.73 [2]
Water Absorption (48hr)	%	ASTM D570	-	0.85 [2]
Water Absorption (72hr)	%	ASTM D570	-	0.86 [2]
Solid Density	g/cm^3	ASTM D792	1.15 [2]	1.20 [2]
CTE (10°C to 60°C)	µm/(m·K)	ASTM E831	-	91.3 [6]

Test parameters:
"All specimen are printed unless otherwise noted. All specimen were conditioned in ambient lab conditions at 19-23°C / 40-60% RH for at least 24 hours." ASTM Methods: D638 Type IV, 5 mm/min, D790-B, 1.3 mm/min, D648, D256 Notched IZOD (Machine Notched), 6 mm x 12 mm, D570 0.125" x 2" Disc 24hr@ 25°C, D2240, Type "D" (3 seconds), D7867, D1475

Internal Data Sources:
[1] GEN685172, [2] FOR623072, [3] FOR610015, [4] FOR554095, [5] FOR644291, [6] FOR670853

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PROPERTIES

Biocompatibility	Method	Green	Post processed
Cytoxocity	ISO 10993-5	-	Comply [1]
Sensitization	ISO 10993-10	-	Comply [2]
Acute Systemic Toxicity	ISO 10993-11	-	Comply [2]
Irritation	ISO 10993-23	-	Comply [2]
USP Class VI	-	-	Comply [2]
Sterility via Autoclave	Internal	-	Comply [6]

Liquid Properties	Measure	Method	Value
Viscosity at 25°C (77°F)	cP	ASTM D7867	1100 - 1400 [3]
Liquid Density	g/cm³	ASTM D1475	1.09 [4]

Electrical Properties	Measure	Method	Green	Post Processed
Volume Resistivity	Ω·cm	ASTM D257	-	8.49E +15 [5]
AC Relative Permittivity (Dielectric Constant)[5]				
at 50 Hz (XY)	none	ASTM D150	-	3.9
at 1 kHz (XY)	none	ASTM D150	-	3.8
at 1 MHz (XY)	none	ASTM D150	-	3.5
AC Loss Characteristic (Dissipation Factor)[5]				
at 50 Hz (XY)	none	ASTM D150	-	0.009
at 1 kHz (XY)	none	ASTM D150	-	0.010
at 1 MHz (XY)	none	ASTM D150	-	0.031

Test parameters:
"All specimen are printed unless otherwise noted. All specimen were conditioned in ambient lab conditions at 19-23°C / 40-60% RH for at least 24 hours." ASTM Methods: D7867, D1475

Internal Data Sources:
[1] FOR6667411, [2]GEN747261, [3] GEN793168, [4]FOR623072, [5]FOR671965, [6] FOR679644

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WORKFLOW

Validated workflows need to be followed to achieve properties as provided in the TDS. Examples of validated workflow steps are listed below. Users should defer to the most current workflow information for best results which can be found at https://www.loctiteam.com/printer-validation-settings

PRINTER SETTINGS

LOCTITE 3D MED3394 WH is formulated to print optimally on an industrial DLP printer. Read the safety data sheet carefully to get details about health and safety instructions. Recommended print parameters:

- Shake resin bottle well before usage
- Temperature: 20°C to 35°C
- Intensity: 3 mW/cm² to 7 mW/cm²

Settings: 385 nm at 5 mW/cm²	Measure	Method	Value
Layer Thickness	µm	Internal	100
Burn-in Region	s	Internal	20
Transition Region	s	Internal	12
Model Region	s	Internal	6

Settings: 385 nm at 5 mW/cm²	Measure	Method	Value
E_C	mJ/cm2	Internal	6.0 [1]
D_P	mm	Internal	0.14 [1]

Settings: 385 nm at 5 mW/cm²	Measure	Method	Exposure time
D_C = 50 µm	s	Internal	1.7*
D_C = 100 µm	s	Internal	2.5*

Test parameters:
Exposure times are calculated without a safety factor

Internal data source:
[9] FOR623088

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CLEANING

LOCTITE 3D MED3394 WH requires post processing to achieve specified properties. Prior to post curing, support structures should be removed from the printed part, and the part should then be washed. Use compressed air to remove residual solvent from the surface of the material between intervals.

Post Process Step	Agent	Method	Duration	Intervals	Additional Info
Cleaning Step #1	IPA	Ultrasonic	2 min	2	Dry after each interval
Dry	n.a.	Compressed air	10 s to 60 s	1	Air pressure (50psi)
Wait before post curing	n.a.	Ambient condition	60 min	1	Room temperature

POST CURING

LOCTITE 3D MED3394 WH requires post curing to achieve specified properties. It is recommended that either an LED or wide spectrum lamp be used to post cure parts.

An additional heat cure at 100°C for one hour is recommended for most workflows to realize highest HDT performance. Allow the parts to rest one hour between UV cure and heat cure. To minimize risk of warpage place parts in cold oven before ramping up temperature to target value and cool down parts slowly in switched off oven after reaching the heat curing conditions.

UV Curing Unit	UV Source	Intensity	Cure time per side	Additional Settings (Shelf, Output Energy)
Dymax 5000 EC Flood	Mercury Arc Bulb (broad spectrum)	150 mW/cm² at 380 nm	20 min	400W, Shelf K
Loctite CL36	405nm LED	80 mW/cm² at 405 nm	20 min	100% top & side

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STORAGE

Store LOCTITE 3D MED3394 WH in the unopened container in a dry location. Optimal Storage: 8°C to 30°C. Storage below 8°C or above 30°C can adversely affect product properties. Material removed from containers may be contaminated during use. For this reason, filter used resin with 190 µm mesh filter before placing back into proper storage container.

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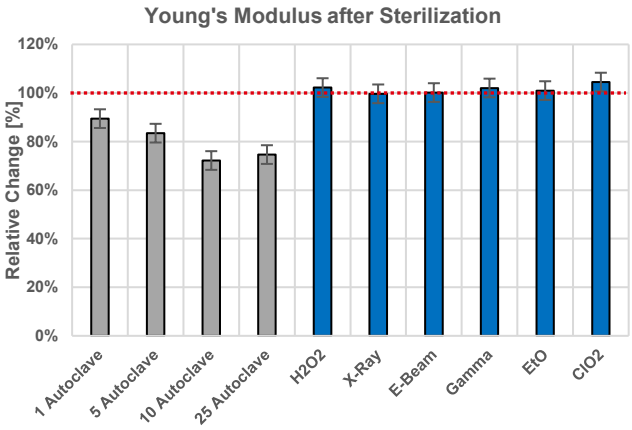
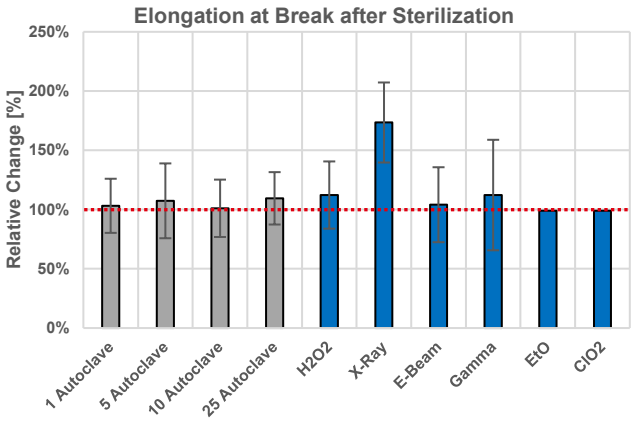
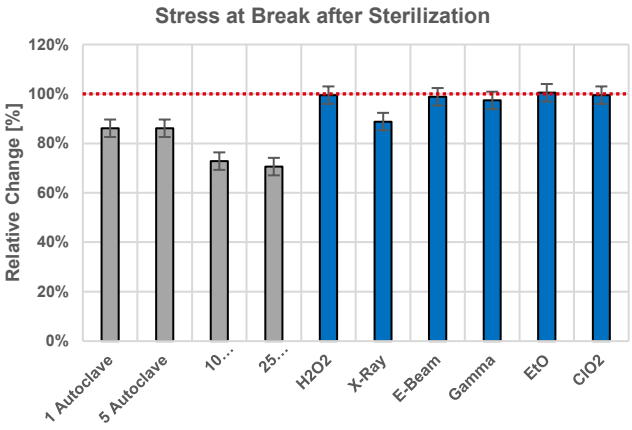
AGEING AND ENVIRONMENTAL EFFECTS – STERILIZATOIN

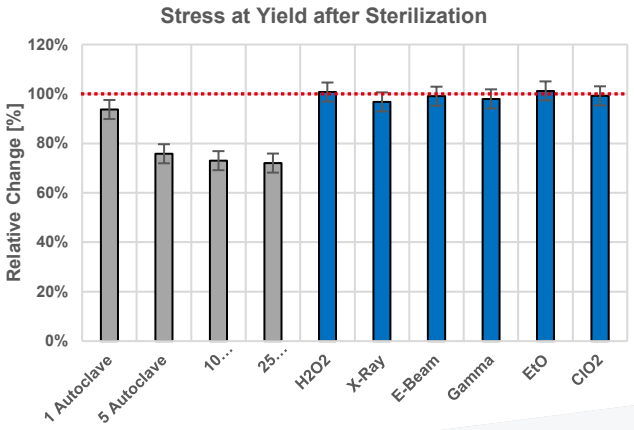
LOCTITE 3D MED3394 WH was sterilized via a variety of sterilization methods. Sterilized samples were conditioned for a minimum of 24 hours before mechanical testing. Control samples were stored at a constant 22°C. All samples were printed using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C).

Data represents mechanical properties shortly after sterilization and are not indicative of long-term shelf-aged performance.









Test parameters:
ASTM D638: Type IV, Pull speed: 5 mm/min, Young's modulus measured at 0.1-1.0% (regression), 22°C. Stereilization Information: Autocalve – 134°C for 18 minutes at 2.1 bar, H2O2 – 4 injection sterilization cycle of 59% H2O2, X-Ray – 11kGy nominal dose, E-Beam – 11kGy nominal dose, Gamma – 40kGy nominal dose, EtO – 3 cycles, ClO2 – under vacuum conditions.

Internal Data Sources:
GEN685128

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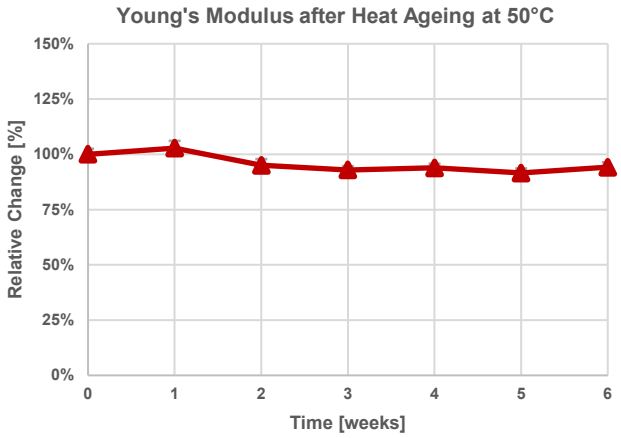
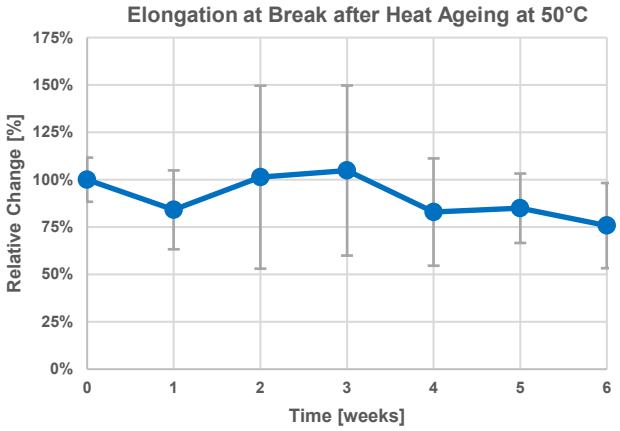
AGEING AND ENVIRONMENTAL EFFECTS – HEAT AGEING

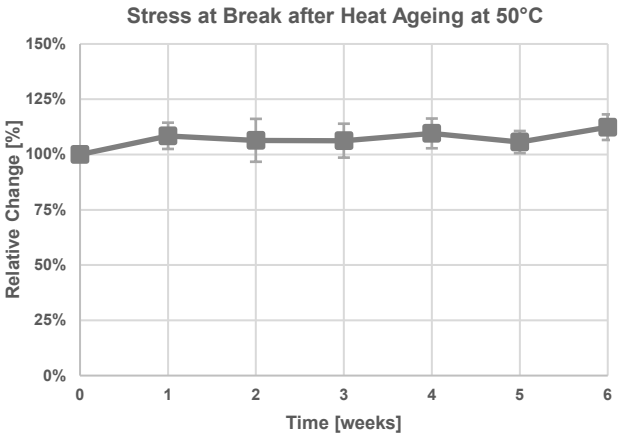
LOCTITE 3D MED3394 WH was heat aged without load according to ASTM D3045. Test samples were exposed for a defined time at 50°C and conditioned for 24 hours at 22°C before mechanical testing. Control samples were stored at a constant 22°C. All samples were printed in the same print job using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C).

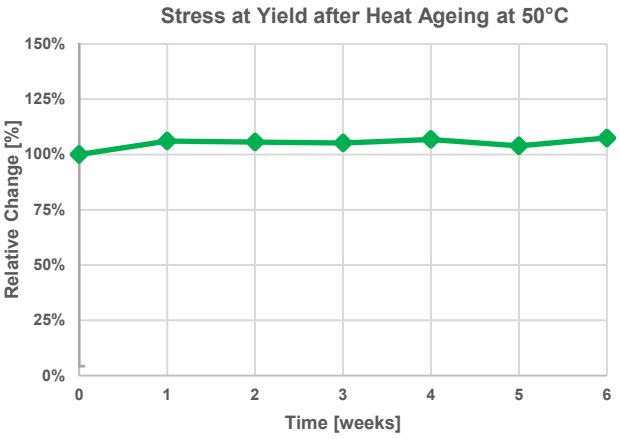
"0 weeks" represents non-aged samples stored at 22°C and tested 24 hours after post-processing.

Based on temperature dependence of reaction rates a test time of 6 weeks at 50°C can be interpreted as approximately 12 months at ambient temperature.









Test parameters:
ASTM D638: Type IV, Pull speed: 5 mm/min, Young's modulus measured at 0.1-1.0% (regression), 22°C

Internal Data Sources:
FOR704660, FOR704662

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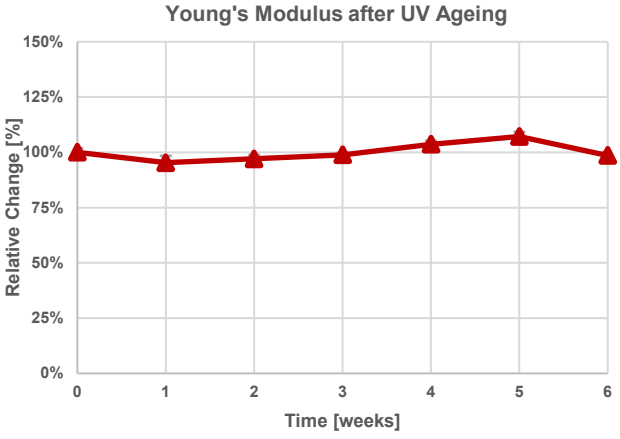
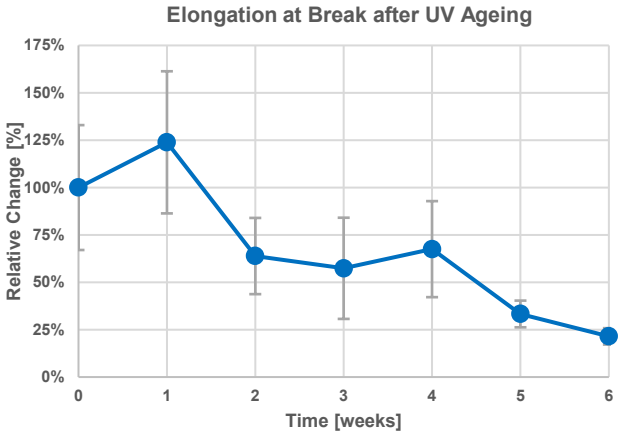
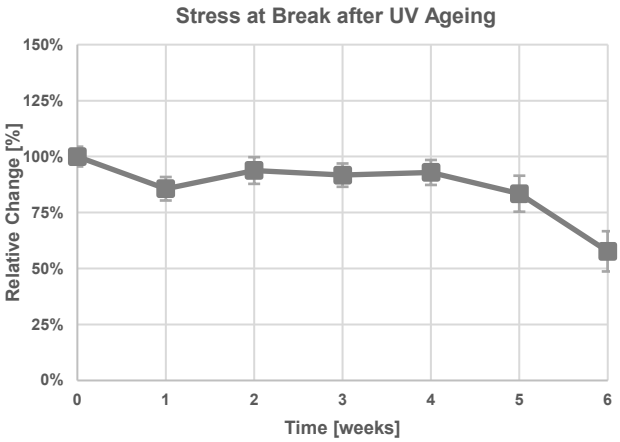
AGEING AND ENVIRONMENTAL EFFECTS – ACCELERATED WEATHERING (UV AGEING)

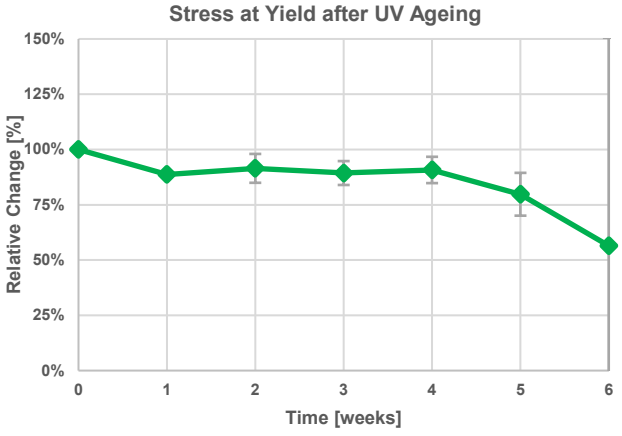
LOCTITE 3D MED3394 WH has been tested after accelerated outdoor weathering according to ASTM D4329 (Cycle A). Test samples were exposed to defined conditions of heat, water condensation and UV light. Exposed samples were conditioned for 24 hours at 22°C before mechanical testing. Control samples were stored at a constant 22°C. All samples were printed in the same print job using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C). "0 weeks" represents non-aged samples stored at 22°C and tested 24 hours after post-processing.

Please note, accelerated weathering testing can never fully represent real outdoor conditions and complexity. It is therefore recommended to conduct additional (outdoor) testing relevant for your specific application needs.









Test parameters:
ASTM D638: Type IV, Pull speed: 5 mm/min, Young's modulus measured at 0.1-1% (regression), 22 °C
ASTM D4329: Cycle A for general applications, QUV/se, UVA 340 nm, 0.89 W/m²·nm, 8 hours UV light at 60°C followed by 4 hours at 50°C condensation in the dark. To reduce any sample warpage during test time samples were placed in tailor-made holders without any fixation clamps or mechanical load. Exposed samples were always removed from QUV before next condensation cycle to avoid samples that are soaked excessively with water before testing.

Internal Data Sources:
FOR685557, FOR685558

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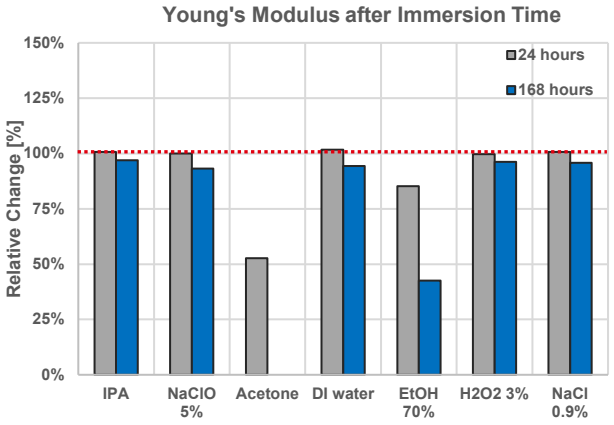
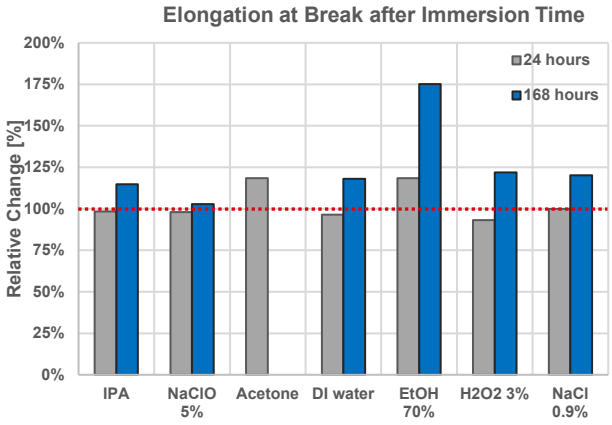
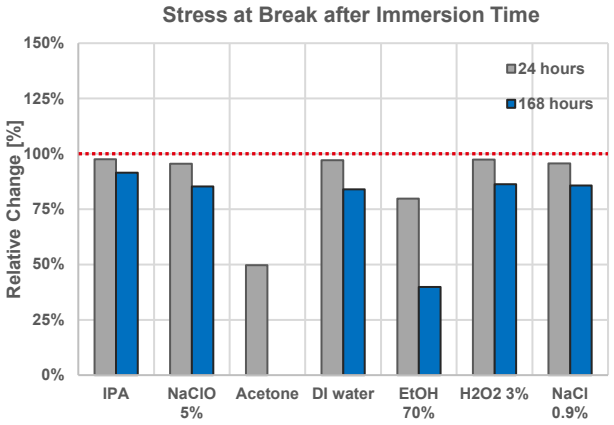
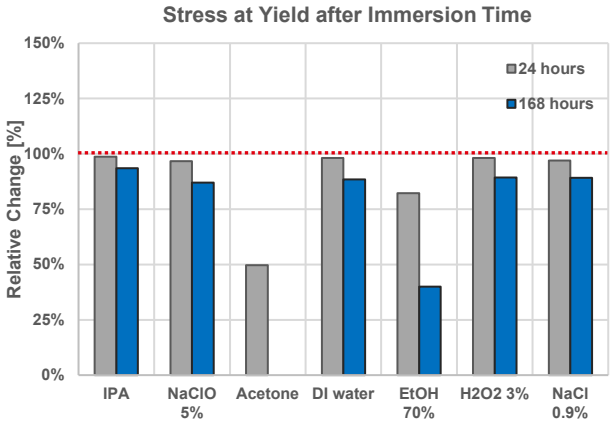
AGEING AND ENVIRONMENTAL EFFECTS – CHEMICAL RESISTANCE MEDICAL

LOCTITE 3D MED3394 WH has been tested after chemical ageing according to ASTM D543. The influence of chemicals was tested by measuring mechanical properties after different test times (Immersion test for 24 and 168 hours). Exposed samples were stored in containers and fully immersed in different chemicals. Samples were stirred every 24 hours using a shaker. After removal, exposed samples were washed and conditioned for 24 hours at 22°C before mechanical testing. All samples were printed using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C). "100%" represents non-aged samples stored at 22°C and tested 24 hours after post-processing.









Test parameters:
ASTM D638: Type IV, Pull speed: 5 mm/min, Young's modulus measured at 0.1-1.0% (regression), 22°C
ASTM D543: Samples immersed in different chemicals were stored at 22°C.

Internal Data Sources:
FOR672243, FOR672244, FOR672246, FOR672248, FOR676357, FOR676355, FOR676358

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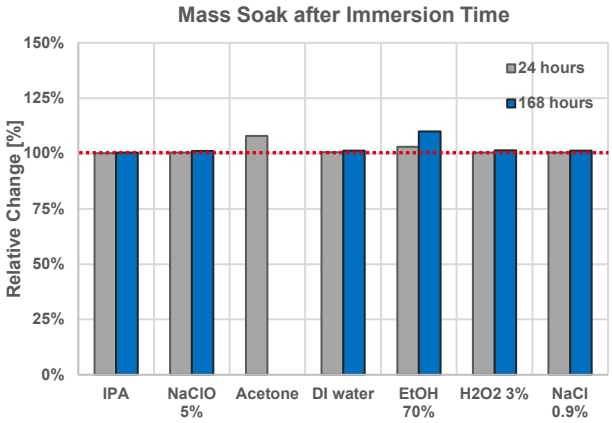
AGEING AND ENVIRONMENTAL EFFECTS – CHEMICAL RESISTANCE MASS SOAK

LOCTITE 3D MED3394 SHR BK has been tested after chemical ageing according to ASTM D543. The influence of chemicals was tested by measuring the mass change after different test times (Immersion test for 24 and 168 hours). Exposed samples were stored in containers and fully immersed in different chemicals. Samples were stirred every 24 hours using a shaker. After removal exposed samples were washed, dried and immediately weighed. All samples were printed using a validated workflow.

"100%" represents the initial weight 24 hours after post-processing.



Test parameters:
ASTM D543: Samples immersed in different chemicals were stored at 22°C.

Internal Data Sources:
FOR672243, FOR672244, FOR672246, FOR672248, FOR676357, FOR676355, FOR676358

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NOTE

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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