Technical Data Sheet

LOCTITE® 402™

January 2024

PRODUCT DESCRIPTION

LOCTITE® 402™ provides the following product characteristics:

Technology	Cyanoacrylate
Chemical Type	Ethyl / allyl Cyanoacrylate
Appearance (uncured)	Transparent, colorless to straw colored liquid
Components	One part - requires no mixing
Viscosity	Low
Cure	Humidity
Application	Bonding
Specific Benefits	• Fast fixture time • Good thermal performance • High humidity resistance

LOCTITE® 402™ is an instant adhesive that provides rapid bonding of a wide range of materials, including metals, plastics and elastomers. LOCTITE® 402™ shows a good heat aging and hot strength performance, on all substrates, especially on stainless steel. LOCTITE® 402™ is also suited for bonding porous materials such as wood, paper, leather and fabric. Suitable for use in the assembly of **disposable medical devices**.

ISO-10993

LOCTITE® 402™ has been tested to Henkel's test protocols based on ISO-10993 biocompatibility standards, as a means to assist in the selection of products for use in the medical device industry.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 22 °C	1.1
Viscosity, Cone & Plate, 25 °C, mPa·s (cP):	110
Shear Rate: 3000 s^{-1}	

TYPICAL CURING PERFORMANCE

Under normal conditions, the atmospheric moisture initiates the curing process. Although full functional strength is developed in a relatively short time, curing continues for at least 24 hours before full chemical/solvent resistance is developed.

Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The table below shows the fixture time achieved on different materials at 23 °C / 50% relative humidity. This is defined as the time to develop a shear strength of 0.1 N/mm².

Fixture Time, seconds:

Mild Steel (Grit Blasted)	20
Aluminum	5
Stainless steel	45
Zinc dichromate	45
Neoprene	5
Rubber, nitrile	60
ABS	5
PVC	20
Polycarbonate	5
Phenolic	5
Leather – calf skin	45
Wood (oak)	45
Wood (pine)	30
Chipboard	20
Fabric	30
Paper	10
Balsa	5

Cure speed vs. Bond gap

The rate of cure will depend on the bondline gap. Thin bond lines result in high cure speeds, increasing the bond gap will decrease the rate of cure.

Cure speed vs. humidity

The rate of cure will depend on the ambient relative humidity. The best results are achieved when the relative humidity in the working environment is 50% at 23°C. Lower humidity leads to slower cure. Higher humidity accelerates it, but may impair the final strength of the bond.

Cure Speed vs. cctivator

Where cure speed is unacceptably long, or large gaps are present, applying activator to the surface will improve cure speed. However, this can reduce ultimate strength of the bond and therefore testing is recommended to confirm effect.

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

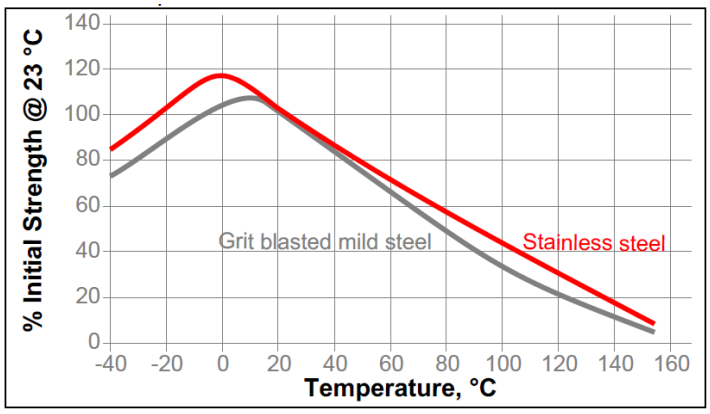
Cured for 10 seconds @ 23°C		
Tensile Strength, ISO ISO 6922, cord:	N/mm²	8.6
Buna-N	(psi)	(1,200)
Cured for 72 hours @ 23°C		
Tensile Strength, ISO 6922, cord:	N/mm²	9
Buna-N	(psi)	(1,300)
Tensile Strength, ISO 4587, pin:	N/mm²	33
Mild Steel (Grit Blasted)	(psi)	(4,800)
Lap Shear Strength ISO 4587:	N/mm²	22
Mild Steel (Grit Blasted)	(psi)	(3,200)
Aluminum (etched)	N/mm²	20
	(psi)	(2,900)
Zinc dichromate	N/mm²	4.5
	(psi)	(650)
ABS	N/mm²	8
	(psi)	(1,200)

PVC	N/mm² (psi)	6 (870)
Phenolic	N/mm² (psi)	10 (1,500)
Polycarbonate	N/mm² (psi)	10 (1,500)
Nitrile	N/mm² (psi)	7.6 (1,100)
Neoprene	N/mm² (psi)	1.3 (190)
Stainless Steel	N/mm² (psi)	17.5 (2,500)
Block Shear Strength, ISO 13445: ABS	N/mm² (psi)	20 (2,900)
Polycarbonate	N/mm² (psi)	13.5 (2,000)
Phenolic	N/mm² (psi)	12 (1,800)

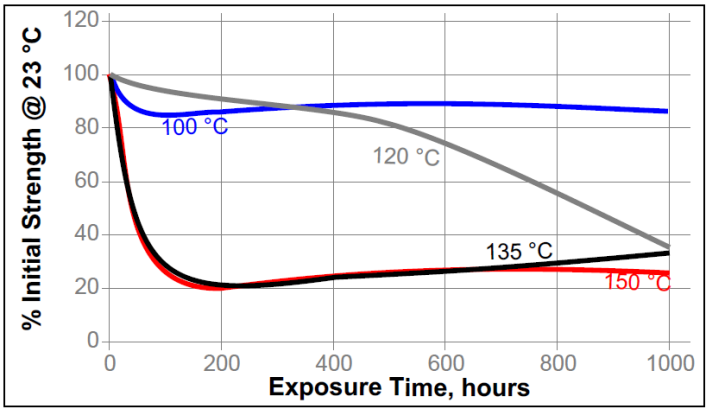
TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 1 week @ 23 °C, 50% RH
Lap Shear Strength ISO 4587:
Mild steel (grit blasted)

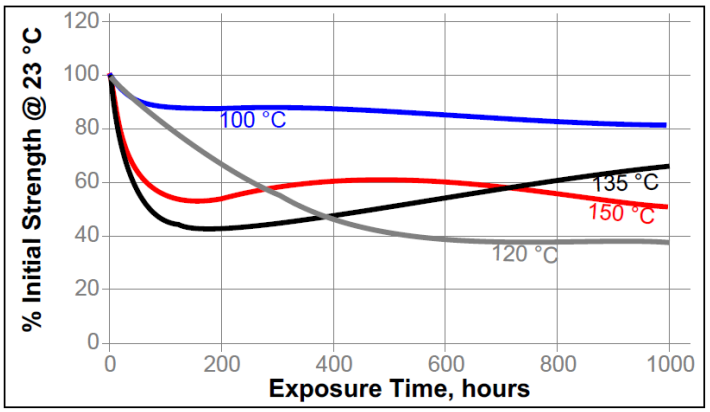
Hot strength
Tested at temperature



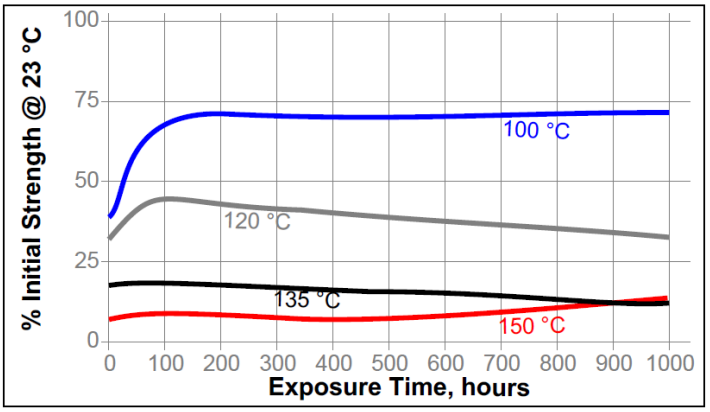
Heat Aging
Aged at temperature indicated and tested @ 23 °C.



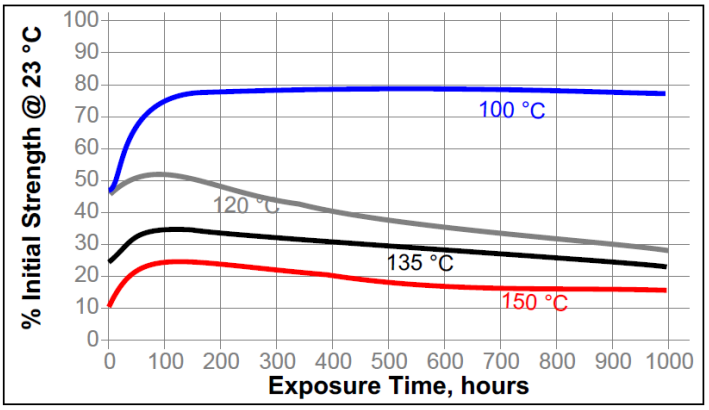
Stainless Steel



Heat Aging/Hot Strength
Aged under conditions indicated and tested at temperature.



Stainless Steel



Chemical/Solvent Resistance
Aged under conditions indicated and tested @ 23 °C.

		% of initial strength		
Environment	°C	100 h	500 h	1000 h
Motor oil	40	130	140	130
Unleaded gasoline	23	110	110	110
Ethanol	23	115	115	120
Isopropanol	23	110	120	130
Water	23	80	70	65
Water/glycol 50/50	23	95	80	80
98% RH	40	70	70	70
95% RH	65	70	45	45

Polycarbonate

		% of initial strength		
Environment	°C	100 h	500 h	1000 h
Air	23	90	115	120
98% RH	40	135	115	120

Stainless Steel

		% of initial strength		
Environment	°C	100 h	500 h	1000 h
Motor oil	40	115	120	130
Unleaded gasoline	23	110	110	110
Ethanol	23	100	110	95
Isopropanol	23	115	110	115
Water	23	75	50	30
Water/glycol 50/50	23	90	60	40
98% RH	40	50	40	35
95% RH	65	40	25	20

GENERAL INFORMATION
This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Safety Data Sheet (SDS).

Directions for use
1. Bond areas should be clean and free from grease. Clean all surfaces with a LOCTITE® cleaning solvent and allow to dry.
2. To improve bonding on low energy plastic surfaces, LOCTITE® Primer may be applied to the bond area. Avoid applying excess Primer. Allow the Primer to dry.
3. LOCTITE® Activator may be used if necessary. Apply it to one bond surface (do not apply activator to the primed surface where Primer is also used). Allow the Activator to dry.
4. Apply adhesive to one of the bond surfaces (do not apply the adhesive to the activated surface). Do not use items like tissue or a brush to spread the adhesive. Assemble the parts within a few seconds. The parts should be accurately located, as the short fixture time leaves little opportunity for adjustment.
5. LOCTITE® Activator can be used to cure fillets of product outside the bond area. Spray or drop the activator on the excess product.
6. Bonds should be held fixed or clamped until adhesive has fixtured.
7. Product should be allowed to develop full strength before subjecting to any service loads (typically 24 to 72 hours after assembly, depending on bond gap, materials and ambient conditions).

Storage
Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.
Optimal Storage: 2°C to 8°C. Storage below 2°C or greater than 8°C can adversely affect product properties.
Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Henkel representative.

Product specification
The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

Approval and Certificate
Please contact Henkel representative for related approval or certificate of this product.

Data ranges
The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.
Temperature/Humidity Ranges: 23°C / 50% RH = 23±2°C / 50±5% RH

Conversions
(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Disclaimer
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Reference 0.1

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