Technical Data Sheet

LOCTITE® 380

May 2004

PRODUCT DESCRIPTION

LOCTITE® 380 provides the following product characteristics:

Technology	Cyanoacrylate
Chemical Type	Ethyl cyanoacrylate
Appearance (uncured)	Black liquid[LMS]
Components	One part - requires no mixing
Viscosity	Medium
Cure	Humidity
Application	Bonding
Key Substrates	Metals , Plastics and Rubbers

LOCTITE® 380 is a rubber toughened adhesive with increased flexibility and peel strength along with enhanced resistance to shock.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.1
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 3, speed 50 rpm,	100 to 800[LMS]

Flash Point - See SDS

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 22 °C / 50 % relative humidity. This is defined as the time to develop a shear strength of 0.1 N/mm² .

Fixture Time, seconds:	
Steel (degreased)	60 to 120
Aluminum	10 to 30
Neoprene	15 to 25
Rubber, nitrile	15 to 25
ABS	20 to 50
PVC	50 to 100
Polycarbonate	30 to 90
Phenolic	20 to 60

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. Activator

Where cure speed is unacceptably long due to large gaps, 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 PROPERTIES OF CURED MATERIAL

After 24 hours @ 22 °C

Physical Properties:

Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}	80×10^{-6}
Coefficient of Thermal Conductivity, ISO 8302 , W/(m·K)	0.1
Glass Transition Temperature, ASTM E 228, °C	120

Electrical Properties:

Dielectric Constant / Dissipation Factor, IEC 60250:

0.05 kHz	2.65 / <0.02
1 kHz	2.75 / <0.02
1,000 kHz	2.75 / <0.02

Volume Resistivity, IEC 60093, Ω·cm	10×10^{15}
Dielectric Breakdown Strength, IEC 60243-1, kV/mm	25

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

After 24 hours @ 22 °C

Lap Shear Strength, ISO 4587:

Steel (grit blasted)	N/mm²	26
	(psi)	(3,770)
Aluminum (etched)	N/mm²	18
	(psi)	(2,610)
ABS	N/mm²	>6
	(psi)	(>870)
PVC	N/mm²	>4
	(psi)	(>580)
Polycarbonate	N/mm²	>5
	(psi)	(>725)
Phenolic	N/mm²	10
	(psi)	(1,450)
Neoprene	N/mm²	>10
	(psi)	(>1,450)
Nitrile	N/mm²	>10
	(psi)	(>1,450)

Tensile Strength, ISO 6922:

Steel (grit blasted)	N/mm²	18.5
	(psi)	(2,700)

After 48 hours @ 22 °C

Lap Shear Strength, ISO 4587:

Steel (grit blasted)	N/mm²	≥17.2[LMS]
	(psi)	(≥2,495)

Cured for 24 hours @ 22 °C, followed by 24 hours @ 121 °C, tested @ 121 °C
Lap Shear Strength, ISO 4587:

Steel (grit blasted)	N/mm²	≥6.9[LMS]
	(psi)	(≥1,000)

Cured for 24 hours @ 22 °C, followed by 24 hours @ 121 °C, tested @ 22 °C
Lap Shear Strength, ISO 4587:

Steel (grit blasted)	N/mm²	≥19.3[LMS]
	(psi)	(≥2,800)

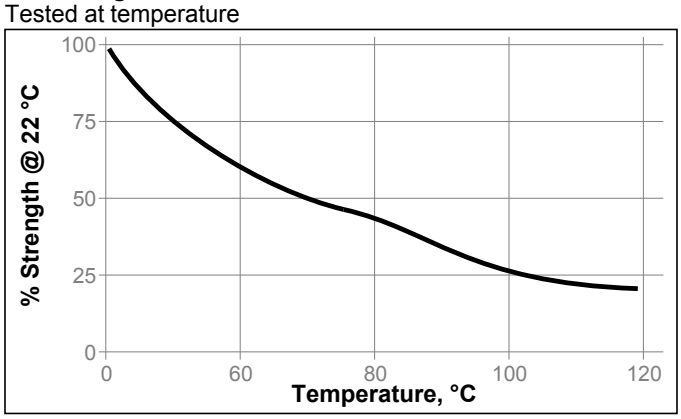
Cured for 24 hours @ 22 °C, followed by 4 hours @ 121 °C, tested @ 22 °C
180° Peel Strength, ISO 8510-2:

Steel (grit blasted)	N/mm	≥2.6[LMS]
	(lb/in)	(≥14.85)

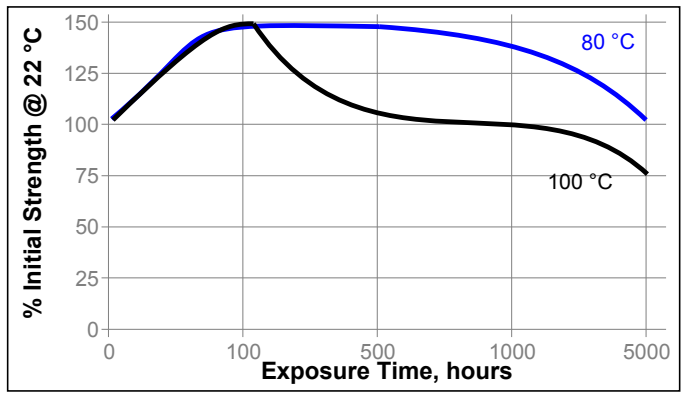
TYPICAL ENVIRONMENTAL RESISTANCE

After 1 week @ 22 °C
Lap Shear Strength, ISO 4587:
Mild steel (grit blasted)

Hot Strength
Tested at temperature



Heat Aging
Aged at temperature indicated and tested @ 22 °C



Chemical/Solvent Resistance
Aged under conditions indicated and tested @ 22 °C.

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
Motor oil (MIL-L-46152)	40	85	85	85
Gasoline	22	90	70	70
Isopropanol	22	75	75	75
Industrial methylated spirits	22	95	95	80
1,1,1 Trichloroethane	22	80	70	50
Freon TA	22	90	90	85
Heat/humidity 95% RH	40	80	80	65

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. For best performance bond surfaces should be clean and free from grease.
2. This product performs best in thin bond gaps (0.05 mm).
3. Excess adhesive can be dissolved with Loctite cleanup solvents, nitromethane or acetone.

Loctite Material Specification[LMS]
LMS dated September 01, 1995. Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Quality.

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 Technical Service Center or Customer Service Representative.

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

Note:
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Reference 2