Technical Data Sheet

LOCTITE® 407™

May 2009

PRODUCT DESCRIPTION

LOCTITE® 407™ provides the following product characteristics:

Technology	Cyanoacrylate
Chemical Type	Ethyl cyanoacrylate
Appearance (uncured)	Transparent, colorless to straw colored liquid[LMS]
Components	Onepart - requires no mixing
Viscosity	Low
Cure	Humidity
Application	Bonding
Key Substrates	Rubbers, Plasticsand Metals

LOCTITE® 407™ is ageneral purpose adhesive suitable for applications where heat resistance is required.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.05
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C, Shear Rate: 3,000 s^{-1}	20to 50[LMS]
Viscosity, Brookfield- LVF, 25 °C, mPa·s (cP):	
Spindle 1, speed 30 rpm,	25to 55
Vapour Pressure, hPa	≤1
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 :	
Mild Steel(degreased)	10to 30
Aluminum(degreased)	5to 15
Zinc dichromate	30to 90
Neoprene	≤5
Rubber, nitrile	≤5
ABS	10to 30
PVC	3to 10
Polycarbonate	20to 60
Phenolic	5to 20

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 24hours @ 22 °C

Physical Properties:

Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}	100×10^{-6}
Coefficient of Thermal Conductivity,ISO 8302, W/(m·K)	0.1
Softening Point, DIN EN 1427, °C	165

ElectricalProperties :

Dielectric Constant / Dissipation Factor, IEC 60250:	
0.1 kHz	2to 3.3 / <0.02
1 kHz	2to 3.5 / <0.02
10 kHz	2to 3.5 / <0.02
Volume Resistivity, IEC 60093, Ω·cm	2×10^{15} to 10×10^{15}
Surface Resistivity, IEC 60093, Ω	10×10^{15} to 80×10^{15}
Dielectric Breakdown Strength, IEC 60243-1, kV/mm	25

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 24hours @ 22 °C

Lap Shear Strength, ISO 4587:

Steel(grit blasted)	N/mm²	16to 26
	(psi)(	2,320to 3,770)
Aluminum	N/mm²	12to 19
	(psi)(	1,740to 2,755)
Zinc dichromate	N/mm²	6to 13
	(psi)(	870to 1,885)
ABS	N/mm²	6to 20
	(psi)(	870to 2,900)
PVC	N/mm²	6to 20
	(psi)(	870to 2,900)
Polycarbonate	N/mm²	5to 20
	(psi)(	725to 2,900)
Phenolic	N/mm²	5to 15
	(psi)(	725to 2,175)
Neoprene	N/mm²	5to 15
	(psi)(	725to 2,175)
Nitrile	N/mm²	5to 15
	(psi)(	725to 2,175)

Tensile Strength, ISO 6922:

Steel(grit blasted)	N/mm²	12to 25
	(psi)(	1,740to 3,625)
Buna-N	N/mm²	5to 15
	(psi)(	725to 2,175)

"T" Peel Strength, ISO 11339:

Steel (degreased)	N/mm	≤0.5
	(lb/in)(	≤2.8)

Cured for 24hours @ 22 °C,followed by 48hours @ 120 °C, tested @ 22 °C

Lap Shear Strength, ISO 4587:

Steel(grit blasted)	N/mm²	≥8.0[LMS]
	(psi)	(≥1,160)

Cured for 30seconds @ 22 °C

Tensile Strength, ISO 6922:

Buna-N	N/mm²	≥4.0[LMS]
	(psi)	(≥580)

TYPICAL ENVIRONMENTAL RESISTANCE

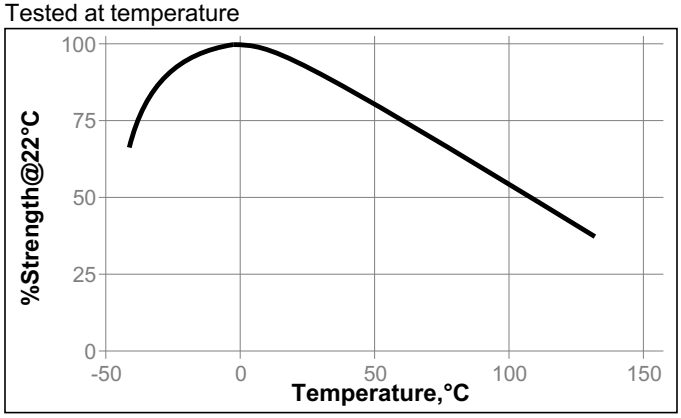
After 1week @ 22 °C

Lap Shear Strength, ISO 4587:

Mild steel(grit blasted)

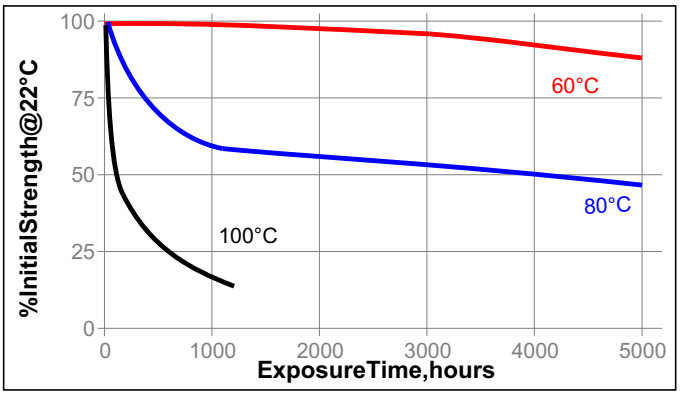
Hot Strength

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	100	100	100
Gasoline	22	100	100	100
Isopropanol	22	100	100	100
Ethanol	22	100	100	100
Freon TA	22	100	100	100
1,1,1 Trichloroethane	22	100	100	100
Heat/humidity 95% RH	40	100	100	95
Heat/humidity 95% RH on polycarbonate	40	100	100	95

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 oxidizingmaterials.

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 December 02, 2005. 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 HenkelQuality.

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·mx8.851 =lb·in
N·m x 0.738 = lb·ft
N·mmx 0.142 = oz·in
mPa·s = cP

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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Reference 1.2