Technical Data Sheet

LOCTITE® 403™

(TDS for new formulation of Loctite® 403™) August 2012

PRODUCT DESCRIPTION

LOCTITE® 403™ provides the following product characteristics:

Technology	Cyanoacrylate
Chemical Type	Alkoxyethyl cyanoacrylate
Appearance (uncured)	Transparent, colorless to pale yellow liquid[LMS]
Components	One part - requires no mixing
Viscosity	High
Cure	Humidity
Application	Bonding
Key Substrates	Metals , Plastics and Elastomers

This Technical Data Sheet is valid for LOCTITE® 403™ manufactured from the dates outlined in the "Manufacturing Date Reference" section.

LOCTITE® 403™ has low odor and low blooming properties and is particularly suitable for applications where vapor control is difficult. The product provides rapid bonding of a wide range of materials, including metals, plastics and elastomers. LOCTITE® 403™ is particularly suited for bonding porous or absorbent materials such as wood, paper, leather and fabric.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.1
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C, Shear Rate: 100 s^{-1}	900 to 1,500[LMS]
Viscosity, Brookfield - LVF, 25 °C, mPa·s (cP):	
Spindle 2, speed 12 rpm	1,100 to 1,650

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	20 to 45
Aluminum	5 to 20
Zinc dichromate	30 to 60
Neoprene	20 to 40
Rubber, nitrile	5 to 10
ABS	5 to 10
PVC	45 to 75
Polycarbonate	10 to 20
Phenolic	5 to 10
Leather	10 to 20
Wood (pine)	20 to 30
Paper	<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 40% to 60% at 22°C. Lower humidity leads to slower cure. Higher humidity accelerates it, but may impair the final strength of the bond.

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 PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 10seconds @ 22°C

Tensile Strength, ISO 6922:

Buna-N	N/mm²	≥4.5[LMS]
	(psi)	(≥652)

Cured for 24 hours @ 22°C

Tensile Strength, ISO 6922:

Steel pin to steel pin	N/mm²	30
	(psi)	(4,340)

Cured for 72 hours @ 22°C

Shear Strength

Lap Shear Strength :

Steel (grit blasted)	N/mm²	20.3
	(psi)	(2,940)
Aluminum (etched)	N/mm²	14.1
	(psi)	(2,050)
Zinc dichromate	N/mm²	2.2
	(psi)	(320)
ABS	N/mm²	8.6
	(psi)	(1,250)
PVC	N/mm²	2.7
	(psi)	(400)
Phenolic	N/mm²	1.3
	(psi)	(195)
Polycarbonate	N/mm²	6
	(psi)	(870)
Nitrile	* N/mm²	0.5
	* (psi)	(75)
Neoprene	* N/mm²	0.7
	* (psi)	(100)

* substrate failure

Block Shear Strength, ISO 13445:

Polycarbonate	N/mm²	16.1
	(psi)	(2,340)
PVC	N/mm²	2.2
	(psi)	(320)

TYPICAL ENVIRONMENTAL RESISTANCE

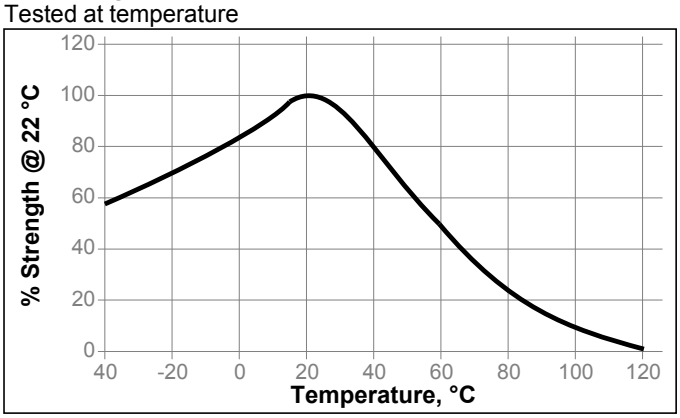
Cured for 1 week @ 22°C

Lap Shear Strength :

Steel (grit blasted):

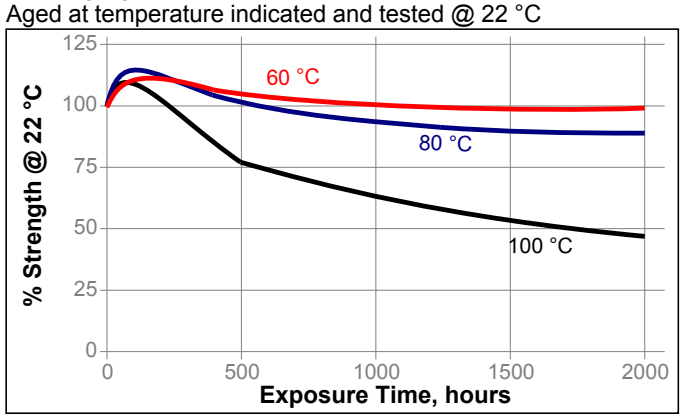
Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested @ 22 °C



Chemical/Solvent Resistance

Aged under conditions indicated and tested @ °C

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
Motor oil	40	105	50	105
Unleaded gasoline	22	115	90	85
Ethanol	22	105	105	100
Isopropanol	22	110	110	125
Water	22	90	45	50
98% RH	40	60	45	75
Water/glycol	22	100	90	95

Lap Shear Strength :

Polycarbonate

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
Air	22	85	130	155
98% RH	40	75	75	75

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).

Loctite Material Specification[LMS]

LMS dated December 22, 2011. 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 Henkel 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

Manufacturing Date Reference

This Technical Data Sheet is valid for LOCTITE® 403™ manufactured from the dates below:

Made in:	**First manufacturing date**:
EU	Pending
China	April 2012
U.S.A.	February 2012

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Reference 2.6