Technical Data Sheet

LOCTITE® 4011 S

May 2025

PRODUCT DESCRIPTION

LOCTITE® 4011 S provides the following product characteristics:

Technology	Cyanoacrylate
Chemical type	Ethyl cyanoacrylate
Appearance (uncured)	Transparent, colorless to straw colored liquid
Components	One component – requires no mixing
Viscosity	Low
Cure	Humidity
Application	Bonding
Key substrates	Metals, plastics and rubbers

LOCTITE® 4011 S is designed for the assembly of difficult to-bond materials which require uniform stress distribution and strong tension and/or shear strength. LOCTITE® 4011 S is particularly suited for bonding acidic materials such as wood, paper, leather and fabric. Suitable for use in the assembly of **disposable medical devices.** The product provides rapid bonding of a wide range of materials, including metals, plastics and elastomers.

ISO-10993

LOCTITE® 4011 S 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 @ 25°C	1.1
Viscosity, Cone & Plate, @ 25°C, mPa·s (cP)	
Shear rate 3,000s^{-1}	70 to 110
Viscosity, Brookfield - LVF, 25°C, mPa·s (cP)	
Spindle 1, speed 30 rpm,	100 to 120
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	<5
Aluminum	<5
Neoprene	<5
Rubber, nitrile	<5
ABS	<5
PVC	<5
Polycarbonate	5 to 10
Phenolic	<5
Wood (balsa)	<5
Wood (oak)	15 to 30
Wood (pine)	15 to 30
Chipboard	<5
Fabric	10 to 20
Leather	15 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. Higher relative humidity levels result in more rapid speed 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 PERFORMANCE OF CURED MATERIAL

Adhesive properties

Cured for 10 seconds @ 22°C		
Tensile strength, ISO 6922		
Buna-N	N/mm^2 (psi)	≥6.9 (≥1,000)
Cured for 72 hours @ 22°C		
Tensile strength, ISO 6922		
Buna-N	N/mm^2 (psi)	13.7 (1,900)

Lap Shear Strength, ISO 4587:

Steel (grit blasted)	N/mm^2 (psi)	20 (2,900)
Aluminum (etched)	N/mm^2 (psi)	12.4 (1,800)
Zinc dichromate	N/mm^2 (psi)	2.5 (360)
ABS	N/mm^2 (psi)	7.5* (1,090*)
PVC	N/mm^2 (psi)	10* (1,450*)
Polycarbonate	N/mm^2 (psi)	9.6* (1,400*)
Phenolic	N/mm^2 (psi)	12.6* (1,820*)
Neoprene	N/mm^2 (psi)	1.1* (160*)
Nitrile	N/mm^2 (psi)	1.2* (170*)

Block Shear Strength, ISO 13445:

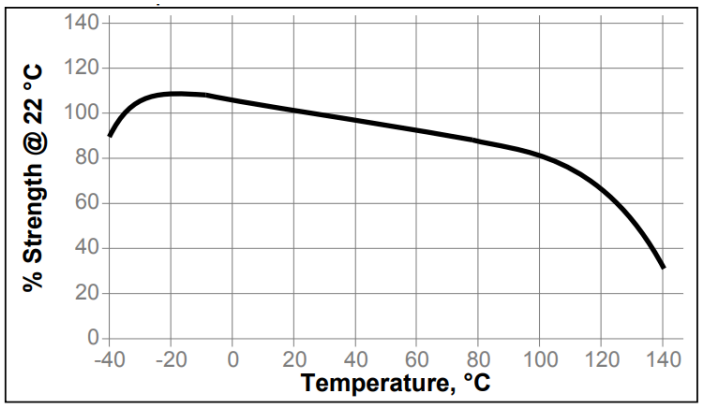
Polycarbonate	N/mm^2 (psi)	11 (1,600)
ABS	N/mm^2 (psi)	23* (3,340*)
PVC	N/mm^2 (psi)	2.6* (380*)
Phenolic	N/mm^2 (psi)	21.3* (3,090*)

* substrate failure

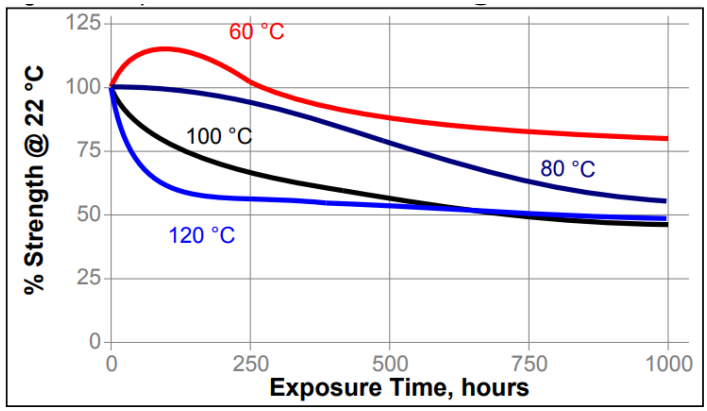
TYPICAL ENVIRONMENTAL RESISTANCE

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 @ 22°C.

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
Motor oil	40	115	85	85
Gasoline	22	85	90	95
Water	22	75	80	75
Water/glycol	22	85	75	65
Ethanol	22	100	110	130
Isopropanol	22	115	100	120
98% RH	40	80	65	65

Lap shear strength ISO 4587, Polycarbonate

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
Air	22	110	120	115
98% RH	40	110	120	105

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 products 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.

Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on the specifications of this product.

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 1