

LOCTITE® 2046™

November 2013

PRODUCT DESCRIPTION

LOCTITE® 2046™ provides the following product characteristics:

Technology	Acrylic/Reactive Urethane
Chemical Type	Acrylate/Urethane Hybrid
Components	Two-component
Appearance, Resin (Component A)	Transparent Clear to Light Yellow Liquid
Appearance, Hardener (Component B)	Blue liquid
Appearance (cured)	Blue solid ^{LMS}
Viscosity	Low
Cure	Anaerobic and Moisture cure
Mixing Ratio, by weight	100 : 85
Component A:	
Component B	
Mix Ratio, by volume - Part A: Part B	1 : 1
Application	Threadlocking

LOCTITE® 2046™ is an industrial grade, two-component, room temperature curing product that, when mixed, forms a medium strength threadlocker. LOCTITE® 2046™ is designed for the locking and sealing of threaded fasteners which require easy disassembly with standard hand tools. The product cures anaerobically when confined in the absence of air between close fitting metal surfaces and also cures outside the bondline to form a dry surface. LOCTITE® 2046™ prevents loosening and leakage of threaded fasteners due to shock and vibration.

Industry Certification:

LOCTITE® 2046™ may be used as a strengthening or coupling agent for joints on food processing equipment that may contact all types of food in full compliance with the Federal Food, Drug, and Cosmetic Act and all applicable food additives regulations, including 21 C.F.R. 175.300.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Part A:

Specific Gravity @ 25 °C	1.23
Flash Point - See SDS	

Part B:

Specific Gravity @ 25 °C	1.04
Flash Point - See SDS	

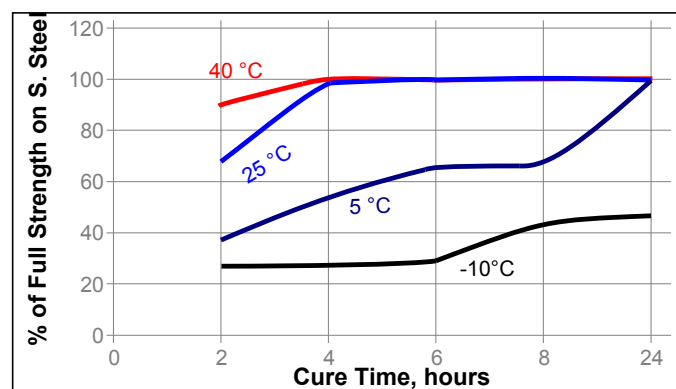
Mixed:

Gel Time @ 25 °C, minutes	≤60
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TYPICAL CURING PERFORMANCE

Cure Speed vs. Temperature

The rate of cure will depend on the ambient temperature. The graph below shows the breakloose strength developed with time at different temperatures on 3/8 x 16 stainless steel nuts & bolts and tested according to ISO 10964, pretorqued to 5 N·m.



TYPICAL PERFORMANCE OF CURED MATERIAL Adhesive Properties

After 1 hour @ 25 °C

Breakloose Torque, ISO 10964, Pre-torqued to 5 N·m:

3/8 x 16 stainless steel nuts and bolts	N·m	5.0
	(lb.in.)	(44)

Prevail Torque, ISO 10964, Pre-torqued to 5 N·m:

3/8 x 16 stainless steel nuts and bolts	N·m	1
	(lb.in.)	(9)

After 24 hours @ 25 °C

Breakloose Torque, ISO 10964, Pre-torqued to 5 N·m:

3/8 x 16 stainless steel nuts and bolts	N·m	13.6 to 38.6 ^{LMS}
	(lb.in.)	(120 to 341)

Prevail Torque, ISO 10964, Pre-torqued to 5 N·m:

3/8 x 16 stainless steel nuts and bolts	N·m	3.4 to 17.0 ^{LMS}
	(lb.in.)	(30 to 150)

After 72 hours @ 25 °C

Breakloose Torque, ISO 10964, Pre-torqued to 5 N·m:

3/8 x 16 stainless steel nuts and bolts	N·m	16
	(lb.in.)	(138)
3/8 x 16 steel nuts and bolts (degreased)	N·m	18
	(lb.in.)	(160)
3/8 x 16 steel nuts and bolts, as received	N·m	8
	(lb.in.)	(70)

Prevail Torque, ISO 10964, Pre-torqued to 5 N·m:

3/8 x 16 stainless steel nuts and bolts	N·m	5
	(lb.in.)	(45)
3/8 x 16 steel nuts and bolts (degreased)	N·m	7
	(lb.in.)	(60)
3/8 x 16 steel nuts and bolts, as received	N·m	4
	(lb.in.)	(35)

Breakaway Torque, ISO 10964:

3/8 x 16 stainless steel nuts and bolts	N·m	12.5
	(lb.in.)	(111)
3/8 x 16 steel nuts and bolts (degreased)	N·m	12.5
	(lb.in.)	(111)
3/8 x 16 steel nuts and bolts, as received	N·m	4
	(lb.in.)	(35)

Prevail Torque, ISO 10964:

3/8 x 16 stainless steel nuts and bolts	N·m	7
	(lb.in.)	(60)
3/8 x 16 steel nuts and bolts (degreased)	N·m	7
	(lb.in.)	(60)
3/8 x 16 steel nuts and bolts, as received	N·m	2
	(lb.in.)	(18)

TYPICAL ENVIRONMENTAL RESISTANCE

After 24 hours @ 22 °C

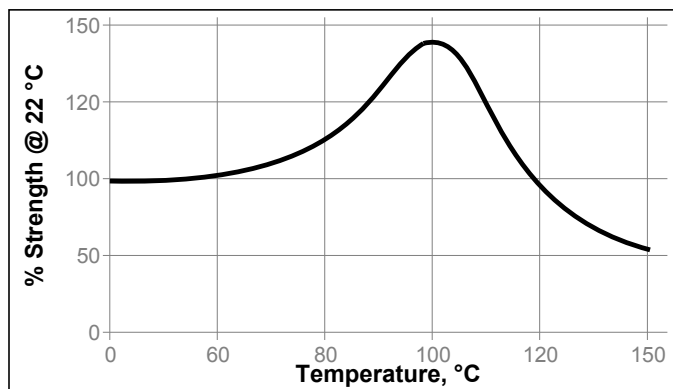
Breakloose Torque, ISO 10964, Pre-torqued to 5 N·m:

3/8 x 16 stainless steel nuts and bolts

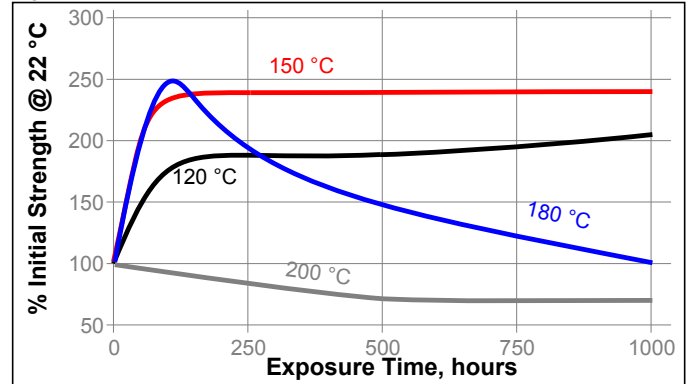
Hot Strength

Tested at temperature

Cured @ 22 °C and aged 24 hours @ test temperature

**Heat Aging**

Aged at temperature indicated and tested @ 22 °C

**Chemical Resistance**

Cured @ 22 °C for 24 hours and then immersed in the fluid listed at the indicated temperature for 24 hours

Chemical	@80°C	@100°C	@120°C	@150°C	@204°C
3% Alkaline Detergent Solution	155%	95%	85%	160%	
2.2% Acidic Liquid Sanitizer	115%	50%	40%	175%	
1.5% Acidic Detergent Solution	145%	75%	110%	110%	
6% Loctite® Natural Blue® Cleaner Solution	125%	80%	80%	105%	
Distilled Water	145%	100%	70%	180%	
Viperlube® 10W Lube Lubricant	255%	165%	165%	165%	
Vegetable Oil	250%	175%	175%	175%	
Peanut Oil	285%	170%	170%	170%	200%

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).

This product is not normally recommended for use on plastics (particularly thermoplastic materials where stress cracking of the plastic could result). Users are recommended to confirm compatibility of the product with such substrates.

Directions for use:**For Assembly**

1. For best results, clean all surfaces (external and internal) with a LOCTITE® cleaning solvent and allow to dry.
2. Install plunger and then remove the cartridge cap and expel a small amount of adhesive to be sure both sides are flowing evenly and freely.
3. Install mix tip.
4. Point tip upward at a 45° angle and dispense product until all air bubbles are removed from the cartridge and well mixed material flows freely from the mix tip.
5. **For Thru Holes**, apply several drops of the product onto the bolt at the nut engagement area.
6. **For Blind Holes**, apply several drops of the product down the internal threads to the bottom of the hole.
7. **For Sealing Applications**, apply a 360° bead of product to the leading threads of the male fitting, leaving the first thread free. Force the material into the threads to thoroughly fill the voids. For bigger threads and voids, adjust product amount accordingly and apply a 360° bead of product on the female threads also.
8. Using accepted trade practices, assemble and wrench tighten fittings.
9. Properly tightened fittings will seal instantly to moderate pressures. For maximum pressure resistance and solvent resistance allow full cure.
10. If product in mix tip gels, replace the mix tip.
11. When done using the product, the mix tip may be left on package to serve as a cap or the mix tip can be removed and the original cap replaced on the package.

NOTE: If the product freezes after being exposed to extremely cold temperatures, it will return to its original liquid state within 1 hour at room temperature. There is no negative impact to performance or compliance

For Disassembly

1. Remove with standard hand tools.
2. Where hand tools do not work because of excessive engagement length or large diameters (over 25 mm), apply localized heat and disassemble while hot.

For Cleanup

1. Cured product is most easily removed with mechanical abrasion such as a wire brush and wiped clean with a cotton cloth.
2. Fittings if mechanically acceptable can normally be reused once cleaned.

Loctite Material Specification^{LMS}

LMS dated October 05, 2009. 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: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °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

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\mu\text{m} / 25.4 = \text{mil}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{N/mm}^2 \times 145 = \text{psi}$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

Disclaimer**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 0.2