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LOCTITE

Technical Data Sheet

LOCTITE® 2701

June 2004

PRODUCT DESCRIPTION

LOCTITE® 2701 provides the following product characteristics:

Technology	Acrylic
Chemical Type	Dimethacrylate ester
Appearance (uncured)	Green liquid
Fluorescence	Positive under UV light
Components	One component - requires no mixing
Viscosity	Low
Cure	Anaerobic
Secondary Cure	Activator
Application	Threadlocking
Strength	High

LOCTITE® 2701 is designed for the permanent locking and sealing of threaded fasteners. The product cures when confined in the absence of air between close fitting metal surfaces and prevents loosening and leakage from shock and vibration. This product is particularly suited for use on inactive substrates and/or where maximum resistance to hot oil is required.

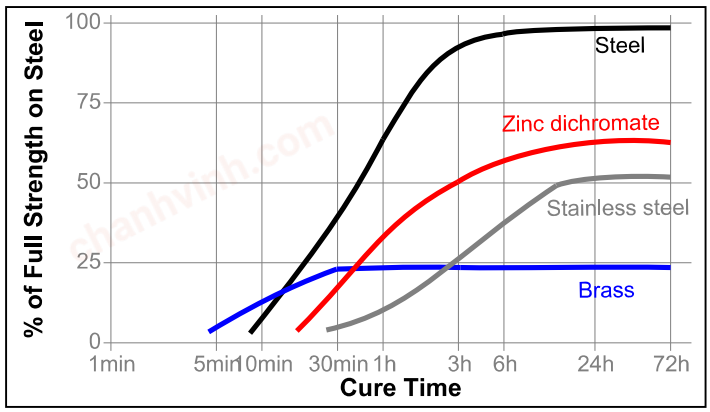
TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.08
Flash Point - See SDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 2, speed 20 rpm	500 to 900

TYPICAL CURING PERFORMANCE

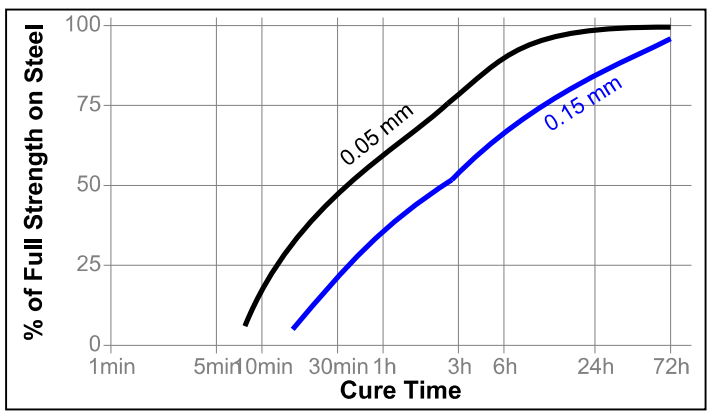
Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the shear strength developed with time on steel pins and collars compared to different materials and tested according to ISO 10123.



Cure Speed vs. Bond Gap

The rate of cure will depend on the bondline gap. The following graph shows shear strength developed with time on steel pins and collars at different controlled gaps and tested according to ISO 10123.



Cure Speed vs. Temperature

The rate of cure will depend on the temperature. The graph below shows the shear strength developed with time at different temperatures on steel pins and collars and tested according to ISO 10123.

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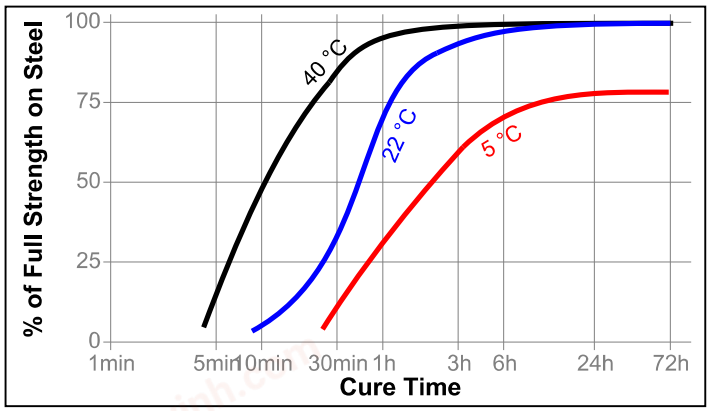
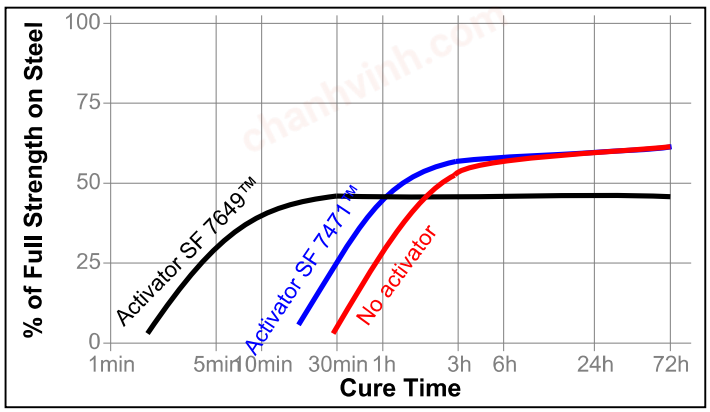


Cure Speed vs. Activator

Where cure speed is unacceptably long, or large gaps are present, applying activator to the surface will improve cure speed. The graph below shows the shear strength developed with time on zinc dichromate steel pins and collars using and tested according to ISO 10123.



TYPICAL PROPERTIES OF CURED MATERIAL

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
Specific Heat, kJ/(kg·K)	0.3

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

After 24 hours @ 22 °C

Breakaway Torque, ISO 10964:

M10 black oxide steel nuts and bolts	N·m	26 to 50
	(lb.in)	(230 to 440)

Prevail Torque, ISO 10964:

M10 black oxide steel nuts and bolts	N·m	≥15
	(lb.in)	(≥132)

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

M10 black oxide steel nuts and bolts	N·m	30 to 60
	(lb.in)	(265 to 530)

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

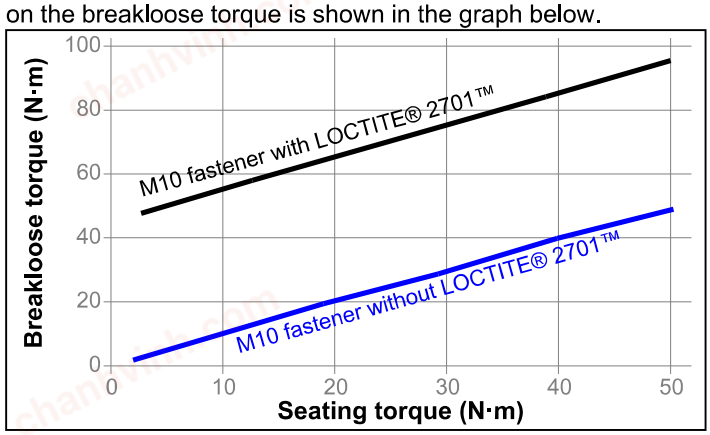
M10 black oxide steel nuts and bolts	N·m	36 to 60
	(lb.in)	(320 to 530)

Compressive Shear Strength, ISO 10123:

Steel pins and collars	N/mm²	18 to 30
	(psi)	(2,610 to 4,350)

Torque Augmentation

Breakloose torque of an uncoated fastener will normally be 15 to 30% less than the on-torque. The effect of LOCTITE® 2701 on the breakloose torque is shown in the graph below.



TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 1 week @ 22 °C

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

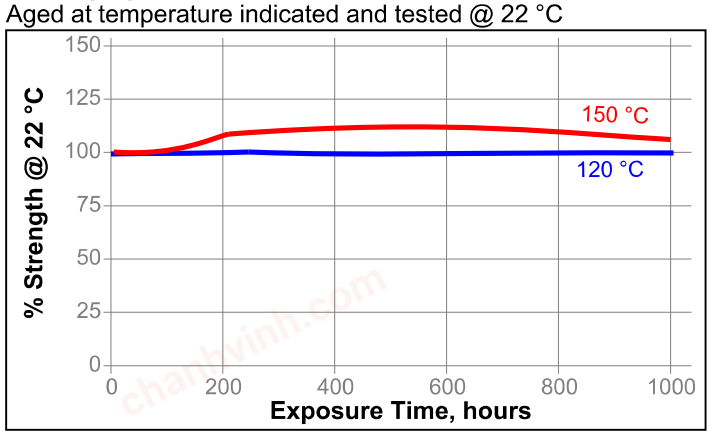
M10 zinc phosphate steel nuts and bolts

Hot Strength

Tested at temperature

Heat Aging

Aged at temperature indicated and tested @ 22 °C



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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)	125	95	100	110
Gasoline	22	100	110	115
Brake fluid	22	100	100	105
Ethanol	22	95	95	95
Acetone	22	100	100	100
1,1,1 Trichloroethane	22	100	110	110
Water/glycol 50/50	87	100	100	100

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).

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

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. If the material is an inactive metal or the cure speed is too slow, spray all threads with primer and allow to dry.
3. To prevent the product from clogging in the nozzle, do not allow the tip to touch metal surfaces during application.
4. **For Thru Holes**, apply several drops of the product onto the bolt at the nut engagement area.
5. **For Blind Holes**, apply several drops of the product down the internal threads to the bottom of the hole.
6. **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.
7. Assemble and tighten as required.

For Disassembly

1. Apply localized heat to nut or bolt to approximately 250 °C. Disassemble while hot.

Clean-up

1. Cured product can be removed with a combination of soaking in a LOCTITE® solvent and mechanical abrasion such as a wire brush.

Loctite Material Specification[LMS]
LMS dated February 27, 1998. 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 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

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Disclaimer

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Reference N/A

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