



Technical Data Sheet Product 2701

Research, Development & Engineering

Tallaght Business Park,
Dublin, Ireland

Worldwide Version, October 1998

PRODUCT DESCRIPTION

LOCTITE® 2701 is a one component, anaerobic material which has high strength. It cures rapidly at ambient temperature when confined in the absence of air between close fitting metal surfaces.

TYPICAL APPLICATIONS

Prevents loosening through vibration and leakage of threaded fasteners. This product is particularly suited for use on inactive substrates and/or where maximum resistance to hot oil is required.

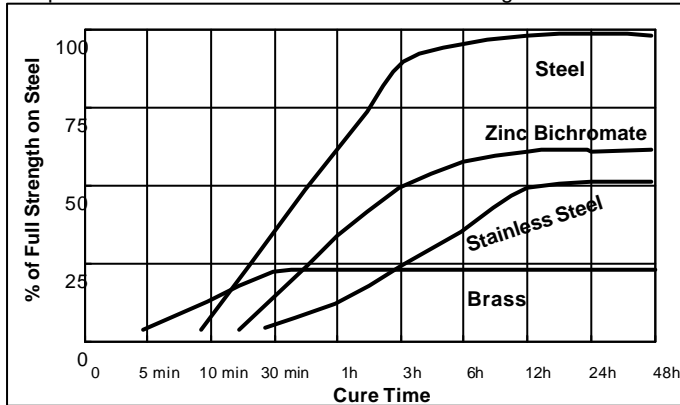
PROPERTIES OF UNCURED MATERIAL

	Value	Typical Range
Chemical Type:	Methacrylate Ester	
Appearance	Green, Flourescent	
Specific gravity, 25°C	1.08	
Viscosity @ 25°C mPa.s:		
Brookfield Falling Ball -		
Ball 'D'		400 to 600
DIN 54453, MV -:		
D=129 1/S		400 to 600
Flash point (COC), °C:	>80	
Vapour pressure, mbar	<2	

TYPICAL CURING PERFORMANCE

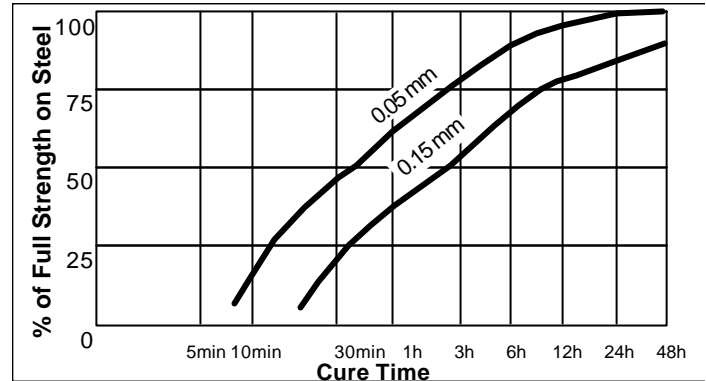
Cure speed vs. substrate

The rate of cure will depend on substrate used. The graph below shows 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.



NOT FOR PRODUCT SPECIFICATIONS.

THE TECHNICAL DATA CONTAINED HEREIN ARE INTENDED AS REFERENCE ONLY.

PLEASE CONTACT LOCTITE CORPORATION QUALITY DEPARTMENT FOR ASSISTANCE AND RECOMMENDATIONS ON SPECIFICATIONS FOR THIS PRODUCT.

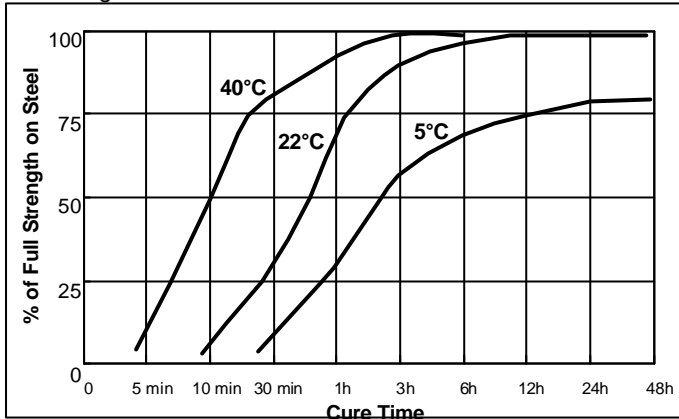
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A Company

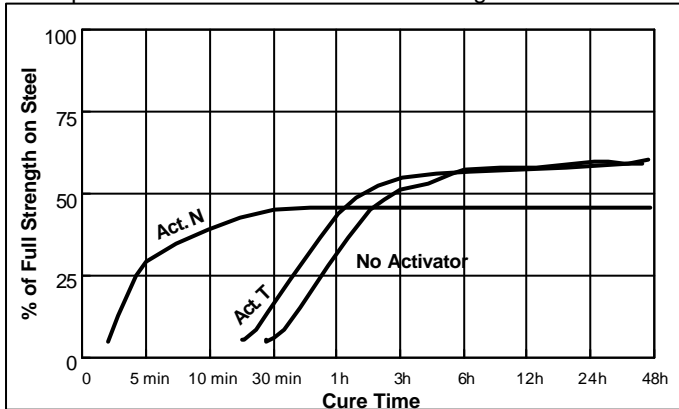
Cure speed vs. temperature

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



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 shear strength developed with time using ACTIVATOR N and T on zinc dichromated steel pins and collars and tested according to ISO 10123.



PHYSICAL PROPERTIES OF CURED MATERIAL AND OPERATING PARAMETERS

Time to achieve full strength on steel @ 22°C (0.05mm gap), hours:	24
Coefficient of thermal expansion, ASTM D696, 1°C	100x10E ⁻⁶
Coefficient of thermal conductivity, ASTM C177, W.m ⁻¹ K ⁻¹	0.1
Specific heat, kJ.kg ⁻¹ K ⁻¹	0.3
Recommended gap, mm:	0.05
Maximum recommended bolt size:	M20

PERFORMANCE OF CURED MATERIAL

(After 24 hours at 22°C on M10 black oxide bolts and steel nuts)

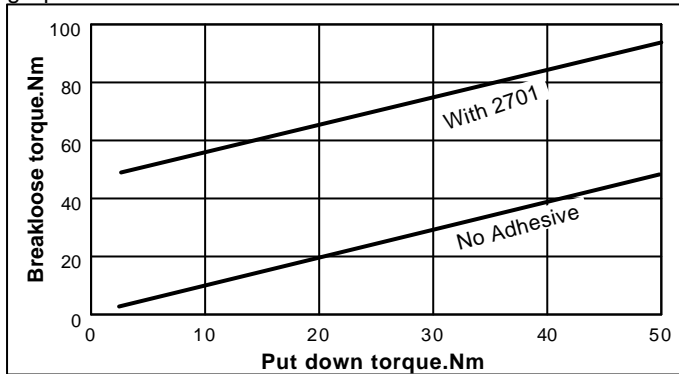
Estimated ranges (see notes overleaf)

Breakaway torque, MIL-S-46163, N.m.:	26 to 50
Prevail torque, MIL-S-46163, N.m.:	33 to 65
Breakloose torque, DIN 54454, N.m.	30 to 60
Maximum prevail torque, DIN 54454, N.m.:	36 to 60
Static shear strength, MIL-R-46082, N/mm ² :	25 to 38
Static shear strength, DIN 54452, N/mm ² :	18 to 30

Torque augmentation

Breakloose torque of an untreated threaded 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.

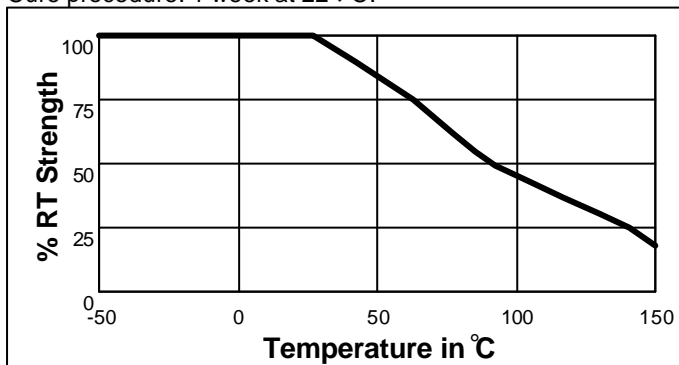
Brake fluid	22↓C	100	100	100
Ethanol	22↓C	95	95	95
Acetone	22↓C	100	100	100
1.1.1. trichloroethane	22↓C	100	110	110
Water/glycol (50%/50%)	87↓C	100	100	100



ENVIRONMENTAL RESISTANCE

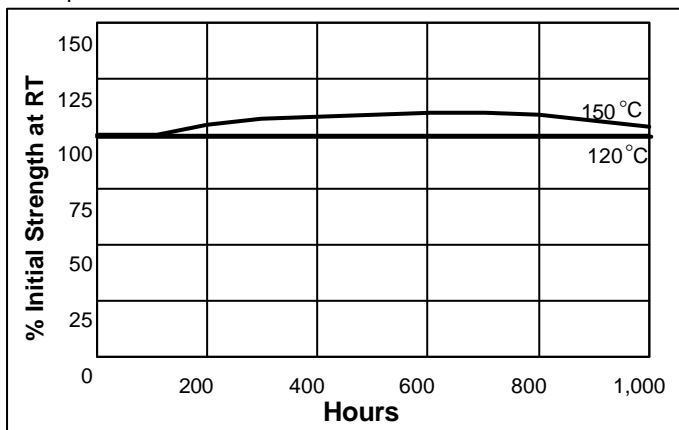
Hot strength

Strength test procedure: DIN 54454 breakloose torque.
 Substrate: Zinc phosphate M10 nuts and bolts.
 Cure procedure: 1 week at 22↓C.



Heat Ageing

Strength test procedure: DIN 54454 breakloose torque.
 Substrate: Zinc phosphate M10 nuts and bolts.
 Cure procedure: 1 week at 22↓C.



CHEMICAL/SOLVENT RESISTANCE

Strength test procedure: Breakloose torque DIN 54454.
 Substrate: Zinc phosphate M10 nuts and bolts.
 Cure procedure: 1 week at 22↓C

Solvent	Temp	% Initial strength retained at		
		100hrs	1000hrs	500hrs
Motor Oil (MIL-I-46152)	125↓C	95	100	110
Unleaded petrol:	22↓C	100	110	115
Leaded petrol	22↓C	100	110	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 oxidising materials.

For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).

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 best performance surfaces should be clean and free of grease. Product should be applied to the bolt in sufficient quantity to fill all engaged threads. This product performs best in thin bond gaps, (0.05mm). Very large thread sizes may create large gaps which will affect cure speed and strength. This product is designed to give controlled friction, (torque/tension ratio), during assembly. In critical tightening applications this ratio should be confirmed.

Storage

Product shall be ideally stored in a cool, dry location, in unopened containers at a temperature between 8↓C to 28↓C (46↓F to 82↓F) unless otherwise labelled. Optimal storage is at the lower half of this temperature range. To prevent contamination of unused product, do not return any material to it's original container. For further specific shelf life information contact your local Technical Service Centre.

Data Ranges

The data contained herein may be reported as a typical value and/or range (based on the mean value ± 2 standard deviations). Values are based on actual test data and are verified on a periodic basis.

Note

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, Loctite Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Loctite Corporation's products. Loctite Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits. The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a licence under any Loctite Corporation patents that may cover such processes or compositions. We recommend that each

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