LOCTITE®

Technical Data Sheet
Product 158350

Research, Development & Engineering
Tallaght Business Park,
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PRELIMINARY

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PRODUCT DESCRIPTION

LOCTITE® 158350 is a one component adhesive which cures rapidly when exposed to ultra violet radiation.

TYPICAL APPLICATIONS

Bonds glass to glass and glass to metal, as in decorative glassware, jewellery, etc.

PROPERTIES OF UNCURED MATERIAL

	Typical Value	Range
Chemical Type:	Urethane methalcrylate ester	
Appearance	Clear, amber	
Specific gravity, 25°C	1.09	
Viscosity @ 25°C mPa.s:		
Brookfield RVT		
Spindle 4@ 20 rev/min		1,500 -3,500
DIN 54353, mPa.s:		
D=36 s^{-1}		
After t = 180 (thixotropic)		1,200 -4,000
Flash point (COC), °C:	>100	
Vapour pressure, mbar	<3	
Secondary Cure System	None	

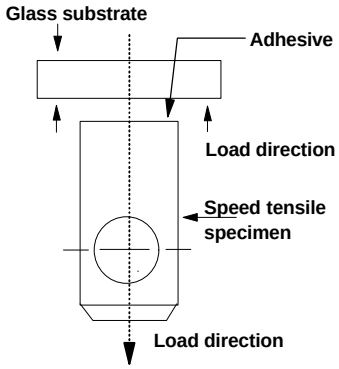
TYPICAL CURING PERFORMANCE

LOCTITE 158350 cures when exposed to UV radiation of 365nm wavelength. To obtain a full cure on surfaces exposed to air, radiation at 250nm is required. Both of these wavelengths are emitted by medium pressure mercury vapour lamps as incorporated, for example, in the LOCTITE UVALOC 1000.

The following information refers to the bonding of a steel pin to 6mm thick float glass as illustrated in figure 1.

Figure 1 - Tensile Strength Evaluation

The diagram opposite describes the test method ASTM D 2095-69 (MOD) which was used to measure the tensile strength. A grit blasted mild steel rod (Ø 12.7 mm x 38 mm) was bonded to a 6 mm Pilkington glass (50 mm x 50 mm).



UV Intensity

365nm 100mW/cm²	250nm 100mW/cm²		
		Dry surface time (number of seconds to achieve 'dry to touch' surface), seconds:	17
		Depth of cure at same time, mm:	1.7
		Depth of cure at 4 times this exposure, mm:	2.8
5mW/cm²	-	**Dry surface time**	Not Recommended
		Fixture time, seconds	5

PROPERTIES OF CURED MATERIAL

Physical properties

Full strength achieved after correct UV exposure.

Coefficient of thermal expansion, ASTM D696, 1/°K:	100 x10^{-6}
Coefficient of thermal conductivity ASTM C177, W.m^{-1} K^{-1}	0.1
Recommended gap, mm;	0.05
Maximum gap, mm	0.5

Electrical properties

Volume resistivity (ASTM D257, DIN 53482) Ω.cm		2 x 10^{15}
Dielectric strength (ASTM D149, DIN 53481)kV/mm		50
Dielectric constant & loss (ASTMD150, DIN 53483, IEC 250, BC 4542)	**Constant**	**Loss**
100 Hz	3.4	0.03
1,000 Hz	3.4	0.03
10,000 Hz	3.4	0.03

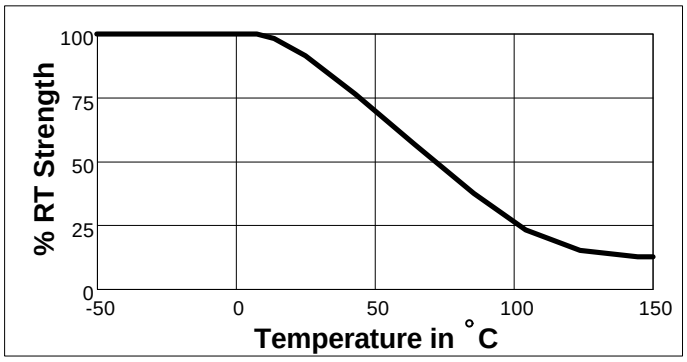
PERFORMANCE OF CURED MATERIAL

Tensile strength, steel to glass, N/mm²
(modified ASTM/DIN/modified DIN 53288)
UV 365nm/100mW/cm²
100 seconds 6 to 15

ENVIRONMENTAL RESISTANCE

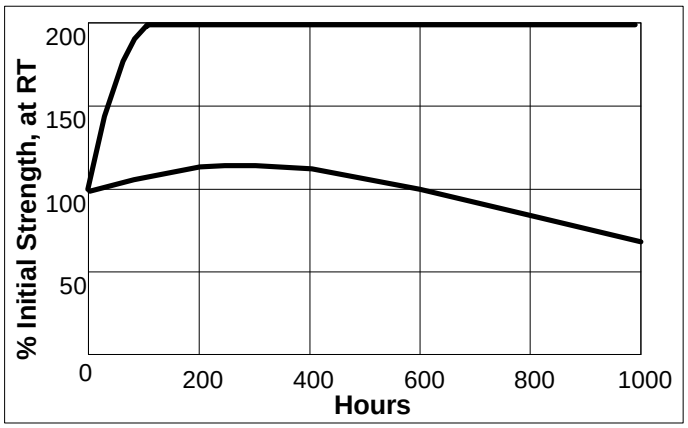
Hot strength

Strength test procedure: ASTM D2095 (modified), DIN 53288 (modified)
Substrate: Grit blasted mild steel pin to glass
Cure procedure: 1 week 22°C after exposure for 10 seconds at 100mW/cm² - 365nm UV



Heat ageing

Strength test procedure: ASTM D2095 (modified), DIN 53288 (modified)
Substrate: Grit blasted mild steel pin to glass
Cure procedure: 1 week 22°C after exposure for 10 seconds at 100mW/cm² - 365nm UV



CHEMICAL/SOLVENT RESISTANCE

Strength test procedure: ASTM D2095 (modified), DIN 53288 (modified)
Substrate: Grit blasted mild steel pin to glass
Cure procedure: 1 week 22°C after exposure for 10 seconds at 100mW/cm² - 365nm UV

Solvent	Temperature	% Initial strength retained at		
		100hrs	500hrs	1000hrs
90% R.H.:	40°C	50	35	25
Petrol	22°C	100	100	85
1.1.1.Trichloroethane	22°C	100	100	100
Freon TA	22°C	100	100	100
Industrial Methylated spirit	22°C	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 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 21°C (46°F to 70°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 prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.