

### PRODUCT DESCRIPTION

LOCTITE® 350 is a one component adhesive which cures when exposed to ultra violet radiation.

### TYPICAL APPLICATIONS

Bonds glass to glass and metal, as in glass furniture and glass displays, where maximum strength and resistance is required.

### PROPERTIES OF UNCURED MATERIAL

	Value	Typical Range
Chemical Type:	Urethane methacrylate ester	
Appearance	Clear	
Specific gravity, 25°C	1.09	
Viscosity @ 25°C mPa.s:		
Brookfield RVT		
Spindle 4 @ 20 rev/min		4,000 to 7,000
DIN 54353, mPa.s:		3,000 to 6,000
D=36 1/S		
After t = 180 (thixotropic)		
Flash point (COC), °C:	>100	
Vapour pressure, mbar	<3	
Shelf life @ 5 to 28°C, months	12	
Secondary Cure System	None	

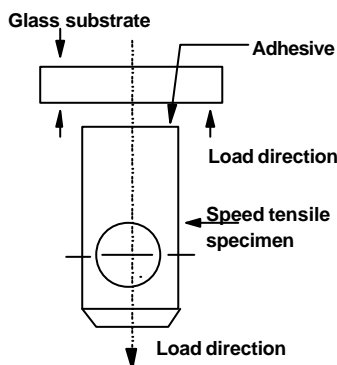
### TYPICAL CURING PERFORMANCE

LOCTITE 350 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 (φ 12.7 mm x 38 mm) was bonded to a 6 mm Pilkington glass (50 mm x 50 mm).



### UV Intensity

365nm	250nm	Dry surface time (number of seconds to achieve 'dry to touch' surface), seconds:	20
100mW/cm <sup>2</sup>	100mW/cm <sup>2</sup>	Depth of cure at same time,	1.9

mm:

Depth of cure at 4 times this 3.6

exposure, mm:

Fixture time, seconds 5

Dry surface Not Recommended time

Fixture time seconds 15

10mW/cm<sup>2</sup> -

**PROPERTIES OF CURED MATERIAL****Physical properties**

Full strength achieved after correct UV exposure.

Coefficient of thermal expansion, ASTM D696, 1/°K:	100 x 10 <sup>-6</sup>
Coefficient of thermal conductivity ASTM C177, W.m <sup>-1</sup> K <sup>-1</sup>	0.1
Recommended gap, mm;	0.05
Maximum gap, mm	0.5
Hardness (Shore D):	65 to 75

**Electrical properties**

Volume resistivity (ASTM D257, DIN 53482) Ω.cm:	5 x 10 <sup>5</sup>
Dielectric strength (ASTM D149, DIN 53481) kV/mm:	90
Dielectric constant	
(ASTM D150, DIN 53483, IEC 250, BC 4542)	
100 Hz:	3.55
1,000 Hz:	3.55
10,000 Hz:	3.55
Dielectric loss	
(ASTM D150, DIN 53483, IEC 250, BC 4542)	
100 Hz:	0.025
1,000 Hz:	0.025
10,000 Hz:	0.025

**PERFORMANCE OF CURED MATERIAL**Tensile strength, steel to glass, N/mm<sup>2</sup>  
(modified ASTM/DIN/modified DIN 53288)UV 365nm/100mW/cm<sup>2</sup>

100 seconds 6 to 15

Performance on plastics will vary depending on grade, e.g.

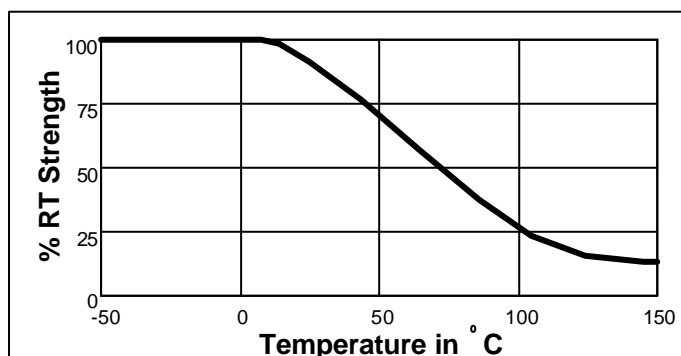
Tensile shear strength, N/mm<sup>2</sup>4 times fixture time @ 100mW/cm<sup>2</sup>

PVC/Glass	1 to 5
PC/Glass	1 to 5
ABS/Glass	1 to 5

**ENVIRONMENTAL RESISTANCE****Hot strength**

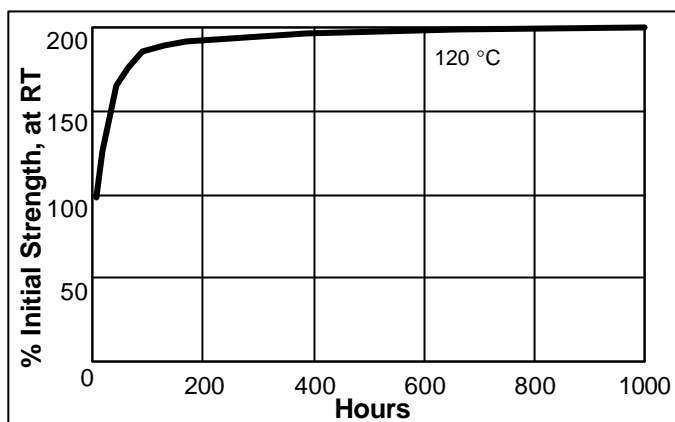
Strength test procedure: ASTM D2095 (modified), DIN 53288.

Substrate: Grit blasted mild steel pin to glass.

Cure procedure: 1 week at 22°C after exposure for 20 seconds at 100mW/cm<sup>2</sup>-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/cm<sup>2</sup>-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/cm<sup>2</sup>.

Solvent	Temperature	% Initial strength retained at, hours		
		100	500	1000
90% R.H.:	40°C	100	100	70
Petrol	22°C	100	100	100
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 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  $\pm 2$  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.