LOCTITE®

Technical Data Sheet

Product 3052

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PRODUCT DESCRIPTION

LOCTITE 3052 is a one component UV curing anaerobic adhesive, which cures rapidly in the absence of air on metal surfaces treated with PRIMER N. Excess product may also be cured to a solid by exposure to UV light.

TYPICAL APPLICATIONS

Bonding glass, plastic, metals, ceramics and most materials in motor housing and magnet assemblies, piezzo-buzzers and many other applications.

PROPERTIES OF UNCURED LIQUID MATERIAL

Chemical type:	Modified methacrylate
Colour:	Clear amber
Specific gravity:	1.0 to 1.1
Viscosity @25 °C, Cps:	3,000 to 4,000
Brookfield RTV-	
Spindle 4 @20 rev/min	
Flash point (TCC), °C:	>100

PROPERTIES OF CURED MATERIAL

Hardness (Shore D)	82
Thermal expansion ratio (30-60°C)	0.839×10^{-4} °C
Tensile strength (at fracture)	400 kgf/cm^2
Elongation (at fracture)	>15%
Water absorption 25 °C×24hr	3.57%
100 °C ×1hr	5.70%

ELECTRICAL PROPERTIES

Dielectric constant	1MHz	4.08
Dielectric strength	1MHz	0.04
Volume resistivity		1.6×10^{14} ohm. cm
Surface resistivity		4.7×10^{13} ohm

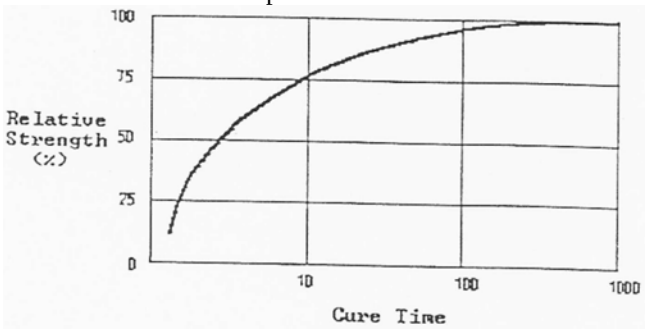
CURING PERFORMANCE

Anaerobic Cure Properties

Room Temperature Cure (with Primer N)

1) Fixture Time (0.05mm gap)
   15 to 20 sec (steel lap-shear)

2) Cure Speed
   Tensile shear strength measured on steel lap-shears
   Gap 0.05mm



NB) Relative strength determined taking ultimate strength to be 100%

3) Adhesion Properties
   Measured by tensile shear strength of lap shear test specimens

Tensile shear strength	Steel	250 kgf/cm^2
	Aluminium	150 kgf/cm^2

UV Cure Properties

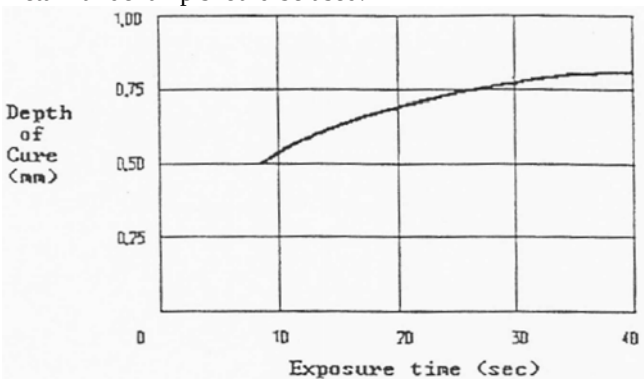
High intensity UV radiation is required to cure the surface to a tack-free condition in applications where the adhesive is in contact with air, such as potting or coating for example.

The data below was measured using a high intensity mercury vapor lamp at an intensity of 100mW/ cm^2.

1) Surface cure time (sec) 10 to 15
2) Depth Cure

Time required to completely cure the adhesive will increase with depth. Also, there is a maximum depth to which the adhesive can be cured. The graph below was compiled from data taken using a high-pressure mercury vapor lamp at an intensity of 100Mw/cm^2.

To cure deep sections of adhesive at lower intensity, a metal halide lamp should be used.



ADHESION PROPERTIES

Tensile shear strength*1	200 kgf/cm^2
Breakloose torque*2	1,500 kgf.cm

Cure conditions: UV exposure - 3min. @ 6mW/cm^2 measured after 48 hrs at room temperature
Gap 0.05 to 0.08 mm

*1) 25mm wide × 1.6mm thick sandblasted steel lapshear/10mm thick glass, 12.5mm overlap.
*2) 25.4mmm thick sandblasted aluminum hexagon nut/10mm thick glass.

ENVIRONMENTAL RESISTANCE

Hot Strength
Measured on tensile test lapshear specimens. The bonded test pieces were maintained at the temperatures below for 2 hours and then tested at that temperature.

temp.	80 ℃	100 ℃	120 ℃	150 ℃
%age RT strength	79	55	45	26

Cure Condition: Primer N, 24 hour RT cure.

Heat Aging
Measured on tensile test lapshear specimens. The bonded test pieces were tested at room temperature after being exposed to the condition below.

Time (hours)

Temp.(℃)	150	500	1000
80	127	129	129
100	131	126	120
120	91	88	84
150	69	66	67

The values indicated are a %age of RT strength.
Cure Condition: Primer N, 24 hour RT cure.

Humidity Resistance
Measured on tensile test lapshear specimens. The bonded test pieces were maintained at 60℃×95%RH for the times shown below and then tested at room temperature.

Time	1 week	2 weeks	3 weeks	4 weeks
%age of RT strength	88	73	67	72

Cure Condition: Primer N, 24 hour RT cure.

SURFACE PRETREATMENT
Loctite structural adhesives perform best on surfaces that have been cleaned before bonding. Glass should be wiped with alcohol or an organic solvent; plastic surfaces should be lightly abraded with sandpaper. After degreasing with an organic solvent metal, surfaces should be lightly etched or abraded with sandpaper. In applications where high strength is required sandblasting with a fine grit is recommended.

Loctite adhesives have excellent environmental resistance. However, in cases where greater resistance is required, coat the surface to be bonded (glass/ceramic/metal) with silane couplant before bonding.

SAFE HANDLING
Remove adhesive from the skin with soap and water. In case of eye contact, flush with water and seek medical attention.

Materials of this type are not common allergenic (sensitizing) agents. However, when used under conditions in which the skin is continuously bruised or micro lacerated, sensitization has been known to occur. Contact with skin in such condition should be avoided.

STORAGE
Material should be shored in original sealed containers, in a cool dry place. Protect from all sources of UV radiation, including normal daylight. When stored, unopened, under these conditions, the material will retain its performance and properties.

SPECIFICATIONS
The technical data contained herein are intended for reference and should not be used for preparing specifications. Please contact the Loctite Technical Service Department or local representative for assistance and recommendations on specification limits for these materials.

NOTE
The data contained herein are furnished for information only and are believed to be reliable. We can't assume responsibility for the results obtained by others over whose methods we have no control. It is the users responsibility to determine suitability to determine suitability for the users purpose of any production methods mentioned herein and not 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. 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 license under any Loctite Corporation patents, which may cover such processes or compositions. We recommend that each prospective user test his proposed applications before repetitive use, using this date as a guide. This product may be covered by one or more patents or patents applications.

Some corrosion protection chemicals,e.g. Sodium Nitrite, contained in aqueous cleaning systems for metal components can inhibit the cure of this anaerobic product. This product is not recommended for use on plastics (particularly thermo plastic materials where stress cracking of the plastic could result). Users are recommended to confirm compatibility of the product with such substrates.