

UR-322

Two Component, Room Temperature Curing Urethane Potting Compound

Description:

Lord UR-322 is a two component, room temperature curing urethane potting compound. The cured elastomer is soft, flexible and has a very low modulus at temperatures down to -80°C. Cured UR-322 also has excellent thermal shock resistance, electrical properties and adhesion to a variety of materials. The hydrophobic nature of this resin system imparts exceptional hydrolytic stability to the cured resin.

The low modulus over a wide temperature range makes this an ideal material for potting fragile, pressure sensitive components. Lord UR-322 gels very quickly at normal room temperature but full properties take several days to develop at 25°C.

Typical Properties:

The values listed below are averages and they are not intended for specification purposes. Contact Lord when establishing specifications. In the interest of achieving optimum properties in a minimal amount of time, the cured physical and electrical properties were developed by using a cure schedule of sixteen hours at 25°C plus two hours at 100°C. The choice of cure schedule will vary with the application and users must establish their own optimum cure schedules.

Handling Properties:

Mix Ratio (resin to hardener)	
By weight	100:107
By volume	1:1
Mixed Viscosity @ 25°C	
STM 1	750 cps

Working Life @ 25°C (minutes)	4-5
Typical Cure Schedule	
Initial @ 25°C	30 minutes
Full @ 25°C	4 days

Physical Properties:

Specific Gravity STM 2	0.95
Hardness (Shore A) STM 5 (ASTM D 2240)	12
Color	Clear
Temperature Rating Guide*	130°C
Thermal Shock	Excellent
Tensile Strength (ASTM D 638)	100 psi
Tensile Elongation (ASTM D 638)	>250%
Weight Loss (24 hours, @ 100°C)	0.05%
Water Absorption (168 hours, @ 25°C) (ASTM D 570)	0.30%
Glass Transition Temperature (Tg) Mettler DSC-30 (ASTM D 3418)	-72°C

Electrical Properties:

Dielectric Constant (1MHz @ 25°C) (ASTM D 150)	3.10
Dissipation Factor (1MHz @ 25°C) (ASTM D 150)	0.20
Volume Resistivity (ohm-cm)	
@ 25°C	2×10^{16}
@ 105°C	4×10^{14}
@ 130°C	5×10^{13}
ASTM D 257	

***Temperature Rating Guide:** Is based on average design requirements and the guide is not intended as a guarantee of suitability for all applications operating at that temperature. The guide is based on weight loss.

In most cases, STM (Lord Standard Test Methods) test methods correspond with standard ASTM tests. Copies are available upon request.

Proportioning and Mixing:

Lord UR-322 can be proportioned by weight or volume. These ratios are stoichiometrically calculated and should be closely followed. Automated meter-mix, dispensing equipment should be used for high volume production. (A list of dispensing equipment manufacturers is available from Lord.)

Deairing and Evacuation:

Unless a closed chamber, mechanical mixer is to be used, air will be introduced into the urethane system either during premixing or when catalyzing the mixture. The electrical properties of a urethane are best when air bubbles and voids are minimized. Therefore, in critical applications, vacuuming may be appropriate.

Clean-Up:

It is recommended that customers use disposable containers and utensils when working with urethanes. However, when disposable materials are impractical, uncured urethanes can be removed by cleaning equipment with solvent. Observe appropriate precautions when using flammable solvents. Solvent-cleaned utensils should be thoroughly dried before reuse. Any remaining solvent can contaminate the next mixture.

Shelf Life and Storage:

Lord UR-322 resin and hardener have shelf lives of approximately six months at room temperature (25°C) in closed containers.

Before resealing a partially used container of UR-322 resin or hardener, the user should spray dry nitrogen gas into the container for 15 seconds with the lid partially open. The inert gas will displace the moist atmospheric air which shortens the shelf life of UR-322.

Crystallization:

Lord UR-322 hardener should be stored between 70° and 95°F to prevent crystallization and dimerization. The first sign of freezing appears as slow crystal formation, usually on the container wall after extended exposure. In the event of crystallization it is best to promptly remelt it by loosening the lid, heating to 90° to 115°F and periodically stirring the hardener as it is reliquefying. The heating period should not be longer than two to three hours as excessive heating will cause dimerization.

Handling Precautions:

The labels on containers of Lord materials contain current information on the hazards associated with each particular product. Most urethane chemicals are skin and eye irritants and some may actually be corrosive to the skin and eyes. The isocyanate portion is irritating to the respiratory tract. Other problems, such as skin sensitization or serious health hazards, may exist. Further information on each product is contained in the Material Safety Data Sheet which will be sent upon request.

Container Disposal:

Empty containers of UR-322 hardener should be decontaminated before disposal by using a dilute solution, e.g. 5 to 10 percent sodium carbonate in water with a small quantity of detergent. If there is a chance of unauthorized reuse, holes should be made in the containers. Residual quantities of UR-322 hardener should not be burned out of the containers because fumes in highly toxic concentrations may result. For complete decontamination procedures see the Material Safety Data Sheet.

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