

CoolTherm™ UR-288 Flame Retardant Urethane Encapsulant

Description

LORD CoolTherm™ UR-288 encapsulant is a two-component urethane system designed for encapsulating and casting applications. CoolTherm UR-288 encapsulant cures at room temperature to produce a flame retardant, semi-flexible material. This material meets UL 94 HB rating at 3.0 mm thickness when the 100:20 mix ratio is utilized.

Features and Benefits

Low Stress – exhibits low shrinkage and stress on components as it cures.

Low Viscosity – maintains low viscosity for complete and void-free encapsulation.

Room Temperature Cure – suitable for curing at room temperature; may be mildly heat cured (60°C) to expedite cure.

Low Exotherm – exhibits low exothermic heat rise during room temperature cure.

Environmentally Resistant – provides excellent thermal shock resistance and flame retardancy.

Broad Temperature Range – can be used on parts and devices that experience operating temperatures from -55°C to +130°C.

Application

Mixing – Thoroughly mix each component prior to combining resin and hardener. Mix CoolTherm UR-288 resin with CoolTherm UR-288 hardener at either a 100:20 ratio or a 100:12.5 ratio, by weight. Automatic meter/mix/dispense equipment may be used for high volume production.

Applying – Apply encapsulant using handheld cartridges or automatic meter/mix/dispense equipment.

Curing – Allow encapsulant to initially cure for 24 hours at 25°C, or for 6 hours at 60°C. Complete cure will be achieved after 7 days at 25°C.

This time-at-temperature profile refers to the time the material should be allowed to cure once it reaches the target temperature. Allowance should be made for oven ramp rates, parts with large thermal mass and other circumstances that may delay material reaching the target temperature.

Typical Properties*

	UR-288 Resin	UR-288 Hardener	Mixed
Appearance	Black Liquid	Amber Liquid	Black Liquid
Viscosity, cps @ 25°C	5500	70	–
Specific Gravity	1.40	1.24	1.37
Gel Time, min @ 25°C	–	–	85
Working Life, min @ 25°C	–	–	30

*Data is typical and not to be used for specification purposes.

LORD TECHNICAL DATA

Shelf Life/Storage

Shelf life of each component is six months from date of manufacture when stored at 25°C in original, unopened container. CoolTherm UR-288 resin container must be periodically inverted to prevent settling.

After opening, protect each component from excessive moisture by using dry nitrogen as an inert cover.

If stored or shipped at cooler temperatures, CoolTherm UR-288 hardener may crystallize. If crystals appear, gently warm hardener at 30-50°C to melt crystals before mixing with resin. Limit heating period to less than three hours as excessive heating will cause dimerization.

Cautionary Information

Before using this or any LORD product, refer to the Safety Data Sheet (SDS) and label for safe use and handling instructions.

For industrial/commercial use only. Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

Typical Cured Properties*

	100:20 Mix Ratio	100:12.5 Mix Ratio
Volume Resistivity, ohm-cm @ 25°C ASTM D 257	>1 x 10 ¹⁵	>1 x 10 ¹⁵
Thermal Conductivity, W/mK	0.4	0.4
Hardness ASTM D 2240		
Shore A	90	50
Shore D	35	10
Tensile Strength, psi ASTM D 638	1204	203
Elongation at Break, % ASTM D 638	45	68
Dielectric Constant @ 25°C 60 Hz, ASTM D 150	3.3	3.9
Dissipation Factor @ 25°C 60 Hz, ASTM D 150	0.013	0.05

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Values stated in this technical data sheet represent typical values as not all tests are run on each lot of material produced. For formalized product specifications for specific product end uses, contact the Customer Support Center.

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