COOLTHERM® UR-388 FLAME RETARDANT URETHANE ENCAPSULANT

Technical Data Sheet

CoolTherm® UR-388 encapsulant is a two-component urethane system designed for encapsulating and casting applications. CoolTherm UR-388 encapsulant cures at room temperature to produce a flame retardant, semi-flexible material.

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.

UL Rated: provides excellent flame retardancy; UL 94 V-0 certified.

Low Outgassing: exhibits low gassing properties in high vacuum environments.

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-388 resin with CoolTherm UR-388 hardener at a 100:20 ratio, by weight (100:24, by volume). 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-388 Resin	UR-388 Hardener	Mixed
Appearance	Black Liquid	Amber Liquid	Black Liquid
Viscosity, cP @ 25°C	15,000	70	6000
Specific Gravity	1.53	1.24	1.47
Working Life, minutes @ 25°C	–	–	30
Gel Time, minutes @ 25°C	–	–	77

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

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Typical Cured Properties*

Thermal Conductivity, W/m·K Hot Disc Transient Method, ISO 22007-2	0.7
Hardness Shore A, ASTM D 2240	90
Tensile Strength, MPa (psi) ASTM D 638	15.58 (2260)
Elongation at Break, % ASTM D 638	50
Volume Resistivity, ohm-cm @ 25°C ASTM D 257	7×10^{15}
Dielectric Strength, kV/mm (V/mil) ASTM D 149	15.0 (388)
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	6.2
Dissipation Factor @ 25°C 1 MHz, ASTM D 150	0.013
Outgassing ASTM E 595-77	
Total Mass Loss (TML), %	0.32
Collected Volatile Condensable Materials (CVCM), %	0.02

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Shelf Life/Storage

Shelf life of each component is six months when stored at 25°C in original, unopened container. CoolTherm UR-388 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-388 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 Parker Lord product, refer to the Safety Data Sheet (SDS) and label for safe use and handling instructions.

Verify Volatile Organic Compounds (VOC) requirements with the applicable local, regional and state air quality authorities before importing, selling or using this product. VOC rules, thresholds and reporting obligations vary by jurisdiction; compliance is the responsibility of the importer/seller/owner.

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

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