

CoolTherm™ EP-340 Epoxy Resin

Description

LORD CoolTherm™ EP-340 epoxy resin is a filled epoxy resin formulated for use with several Thermostat™ hardeners to obtain a variety of handling and cured properties. CoolTherm EP-340 epoxy resin is designed to provide maximum thermal conductivity and outstanding mechanical properties. CoolTherm EP-340 resin offers a very low coefficient of thermal expansion and is appropriate for applications where the expansion and contraction of an epoxy encapsulation system must be maintained.

Features and Benefits

Handling and cured properties of the two-component epoxy system are dependent on the hardener used with CoolTherm EP-340 epoxy resin.

Thermostat Hardener No. 18

- **Heat Resistant** – provides excellent heat resistance for a room temperature cured system.

Thermostat Hardener No. 67

- **Elevated Temperature Cure** – requires an elevated temperature cure to obtain a rigid bond.
- **High Temperature Resistant** – provides good resistance for cured system that experiences continuous operating temperature up to 155°C.
- **Non-Pigmented** – light color prevents staining of work environment.

Thermostat Hardener No. 70

- **Low Viscosity** – provides low viscosity and surface tension, enabling void-free casting without a vacuum step.
- **Convenient** – provides a working life of over one hour; appropriate for cured system that experiences operating temperature of 130°C or below.
- **UL Rated** – cured system is UL 94 HB certified.

Application

Mixing – Thoroughly stir CoolTherm EP-340 resin within its shipping container to ensure uniform dispersion. Transfer amount of resin needed to a clean container and add proper amount of hardener by weight. Thoroughly mix resin and hardener together. Automatic meter/mix/dispense equipment may be used for high volume production.

Unless a closed-chamber mechanical mixer is used, air may be introduced into epoxy system either during premixing or when catalyzing the mixture. Electrical properties of the epoxy are best when air bubbles and voids are minimized. Therefore, in extremely high voltage or other critical applications, vacuuming may be appropriate.

Applying – Apply epoxy system using automatic meter/mix/dispense equipment.

Typical Properties*

Appearance	Black Liquid
Viscosity, cps @ 25°C	300,000
Specific Gravity	2.4

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

LORD TECHNICAL DATA

Curing – Cure time will vary depending on hardener used. Refer to cure schedule indicated below. 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.

Cleanup - Disposable containers and utensils are recommended when working with epoxies. However, when disposable materials are impractical, uncured epoxy can be removed by cleaning equipment with solvent. Solvent-cleaned utensils should be thoroughly dried before reuse; any remaining solvent can contaminate the next mixture.

Typical Properties* of Resin Mixed with Hardener

	Thermoset Hardener No. 18	Thermoset Hardener No. 67	Thermoset Hardener No. 70
Mix Ratio, Resin to Hardener			
by Weight	100:3.5	100:6.0	100:7.0
by Volume	100:8.5	100:15.5	100:16.5
Mixed Viscosity, cps @ 25°C	60,000	7000	10,000
Working Life, min @ 25°C	40	60-120	100
Cure Time, hr			
@ 25°C	24	–	24
@ 100°C	–	2**	–

Typical Cured Properties*

	Thermoset Hardener No. 18	Thermoset Hardener No. 67	Thermoset Hardener No. 70
Volume Resistivity, ohm-cm @ 25°C	2×10^{16}	5×10^{16}	6×10^{15}
Thermal Conductivity, W/mK	1.5	1.5	1.4
Coefficient of Linear Thermal Expansion, ppm/°C	28	28	31
Hardness	92	95	90
Shore D			
Tensile Strength, psi @ 25°C	6300	7300	9400
Elongation at Break, %	2.2	2.7	4.1
Moisture Absorption, %	0.10	0.08	0.17
24 hours @ 25°C			
Dielectric Strength, V/mil	410	410	430
Dielectric Constant	4.2	4.4	3.4
1 MHz @ 25°C			
Dissipation Factor	0.028	0.031	0.034
1 MHz @ 25°C			

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

** Optional post cure - 2 hrs @ 150°C.

Shelf Life/Storage

Shelf life is six months from date of manufacture when stored at 25°C in original, unopened container. The material must be periodically rotated within its container to minimize settling.

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.

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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