ELANTAS

Technical Data Sheet

Electronic Coating Materials

Epoxylite® E 813-9 DP Hi Temp

Two-Component Epoxy Potting Compound

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Epoxylite ® E 813-9 DP Hi Temp Epoxy

Product Description

Epoxylite® E 813-9 DP Hi Temp Epoxy is a heat-cured, two-component system consisting of a viscous liquid resin and a finely divided powder hardener. It is provided in pre-measured kits.

Areas of Application

Potting and sealing of electrical and electronic components requiring resistance to high temperatures

Features and Benefits

- Maintains excellent electrical and physical properties to at least 260°C / 500°F
- Withstands temperatures in excess of 316°C / 600°F for short periods
- Excellent adhesion to metals, ceramics and most plastics
- Resistant to acids, alkalis and solvents.
- "Low outgassing" per NASA reference GSC 16562

Application Methods

- Bench casting
- Vacuum casting

Transportation / Storage

Store below 25°C / 77°F in a dry controlled environment out of direct sunlight. This material should be suitable for use stored under these conditions in the original sealed containers for six (6) months from the date of shipment.

Failure to store the product as recommended above may lead to deterioration in product performance.

This product is sensitive to moisture and atmospheric humidity. Containers, once opened, should be used immediately or blanketed with dry nitrogen before resealing.

Mix individual components thoroughly before use.

Health / Safety

Refer to the Safety Data Sheet.

See ELANTAS PDG Technical Bulletins *TI-100 - Handling Precautions for Epoxy Resins*

Typical Properties of Material as Supplied

Property	Conditions	Value		Units
		Epoxylite® E 813-9 DP Hi Temp Resin	**Epoxylite® C 813-9 DP Hi Temp Hardener**	
Viscosity	25°C / 77°F	30,000 - 60,000	powder	cP
Weight per Gallon	25°C / 77°F	11.4 - 11.8	16.6 - 17.0	pounds
Flash Point	ASTM D93	> 94 > 201	> 94 > 201	°C °F
Mix Ratio	Parts by weight	100	40	
Volatile Organic Content	ASTM D6053	0.2 [1]		lbs. / gal.

[1] VOC test methods and limits vary widely by regulatory jurisdiction and product application. The value above was obtained by curing a thin film of the mixed system under specific laboratory conditions.

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Mixing / Application

Best results will be obtained by warming the Resin to 65 – 85°C / 150 – 185°F before addition of the Hardener. This will lower the viscosity and facilitate release of bubbles.

Do not use less than the pre-packaged amounts as the powdered Hardener may vary in composition within the container.

Mix the Hardener into the warm Resin with mechanical agitation until homogeneous (approximately three minutes). Pot life of the mixture is 8 - 12 hours at room temperature, less at elevated temperature.

Mixed material that is not used immediately must be stored in a container free of air or blanketed with nitrogen. Pot life can be extended with refrigeration (5°C / 41°F) to several days or with freezing (-40°C / -40°F) to several months.

Refrigerated or frozen containers should be thawed to 16°C / 60°F or higher before opening to avoid moisture condensation.

NOTE: Proper surface preparation is critical to obtaining optimum product performance. See ELANTAS PDG Technical Bulletin TI-3000 *Surface Preparation Recommendations*.

Epoxylite® E 813-9 DP Hi Temp Epoxy is highly adhesive. Surfaces that may come into accidental contact with it during processing should be pretreated with a suitable release agent.

Curing Schedule

Cure as follows:

16 hours at 93°C / 200°F – or –
4 hours at 121°C / 250°F – or –
1 hour at 177°C / 350°F – or –
30 minutes at 204°C / 400°F

Higher temperatures cures will exhibit higher shrinkage and should be avoided if this is a critical concern.

A post-cure of one hour at 204°C / 400°F should be used when the highest possible heat resistance is required.

The cure schedules above are based on time after the unit reaches the specified temperature and are recommendations only. The user is responsible for determining the optimum cure conditions for their application.

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Typical Mechanical Properties

Property	Method	Conditions	Value	Units
Shore Hardness	ASTM D2240	25°C / 77°F	D 95	
Glass Transition Temp. (T_g)	ASTM E831		200	°C
Coefficient of Thermal Expansion	ASTM E831	Below T_g Above T_g	45 200	ppm / °C ppm / °C
Linear Shrinkage	ASTM D2566	100°C cure	< 1	%
Thermal Conductivity	ASTM C518		0.3	w/m·K
Weight Loss	ASTM D3377	1000 h at 180°C / 356°F	0.3	%
Flexural Strength	ASTM D790	25°C / 77°F	10,000	psi
Compressive Strength	ASTM D695	25°C / 77°F	42,000	psi
Water Absorption	ASTM D570	2 h @ 100°C / 212°F	< 0.3	%

Typical Electrical Properties

Property	Method	Conditions	Value	Units
Dielectric Strength	ASTM D149	25°C / 77°F – 125 mils	> 600	volts/mil
Dielectric Constant	ASTM D150	60 Hz - 180°C / 356°F	4.75	
Dissipation Factor	ASTM D150	60 Hz - 180°C / 356°F	0.09	
Volume Resistivity	ASTM D257	180°C / 356°F	$> 10^{12}$	ohm-cm
Surface Resistivity	ASTM D257	175°C / 347°F	2.9×10^{12}	ohms / sq.

The above properties are typical values and are not intended for specification use.

ELANTAS PDG, Inc. warrants the chemical composition of its products within stated tolerances, but does not guarantee that a product will be appropriate for any particular application. Any recommendation, performance of tests or suggestion is offered merely as a guide and is not a substitute for a thorough evaluation by the user. No representative of ELANTAS PDG, Inc. has the authority to offer a warranty that a product will perform satisfactorily in manufacturing a product and no such representation should be relied upon.