

Technical Data Sheet

Re-issued September 2001

EPON™ Resin SU-8 (a.k.a. EPIKOTE™ 157)

Product Description

EPON™ Resin SU-8 is a polymeric solid epoxy novolac resin possessing an average epoxide group functionality around eight. EPON SU-8 is compatible with bisphenol A-based epoxy resins, imparting improved high temperature strength, thermal stability, reactivity and chemical resistance. Prepreg laminates and graphite or boron reinforced composites with EPON SU-8 attain the maximum strength retention and thermal stability possible for an epoxy matrix system at elevated temperatures. Epoxy molding powders prepared with EPON SU-8 are characterized by an outstanding combination of flow stability and short press cycles.

Application Areas/Suggested Uses

- Prepreg
- Electrical laminating
- Adhesives

Benefits

- Long shelf life
- Micropulverized at ambient temperatures
- Rapid development of hot hardness
- Maximum elevated temperature strength retention
- Improved tack qualities and lateral cohesiveness of unidirectional tapes

Sales Specification

Property	Units	Value	Test Method/Standard
Epoxide Equivalent Weight	g/eq	195 – 230	ASTM D1652
Viscosity at 130°C	P	10 – 60	ASTM D2196
Color ¹	Gardner	6 max.	ASTM D1544

¹ 40% weight in Butyl Carbitol

Typical Properties

Property	Units	Value	Test Method/Standard
Melting Point	°C	82	ASTM D3104
Density at 25°C	lb/gal	10.0	ASTM D1475
Flash Point	°F	>200	ASTM D93

General Information

EPON Resin SU-8 can be used as a modifier for upgrading the elevated temperature properties and the reactivity of bisphenol A epoxy resin systems for molding powders or powder coatings. The high molecular weight of EPON SU-8 improves the tack qualities and lateral cohesiveness of unidirectional fiber reinforced tapes prepared with many epoxy matrix systems.

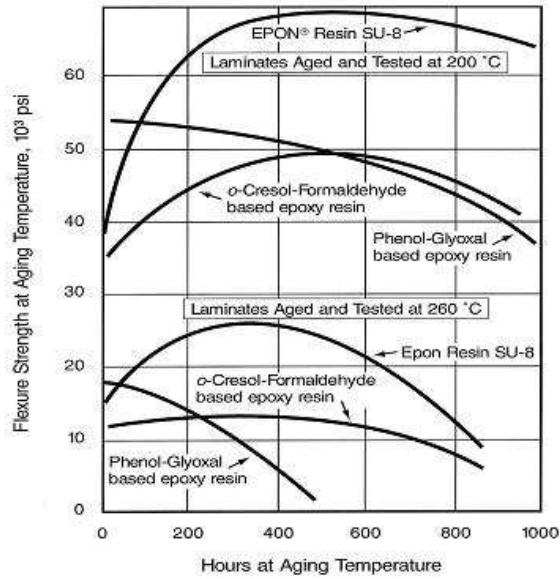
For prepreg applications, EPON SU-8 can be dissolved in numerous solvents such as most ketones, toluene, and diacetone alcohol.

Suggested formulations are available illustrating the use of EPON SU-8 in transfer and compression molding powders, high temperature adhesives, NEMA G-11 and FR-5 circuit boards of both conventional thickness and MLC types, advanced engineering composites, and other high temperature reinforced plastics applications such as those requiring MILRS-9300A, Type II properties.

EPON SU-8 may be processed and cured with a variety of epoxy resin curing agents. Table 1 lists a number of curing agents for several different types of applications.

Table 2 and Figure 1 profile the excellent performance of EPON SU-8 relative to other commercially available high functionality resins.

Figure 1 / **Thermal stability of glass laminates¹ prepared with high functionality solid epoxy resin/anhydride/catalyst/EMI-24 binder systems**



1 12-ply laminates prepared with 181 Style glass cloth (I-550 finish). All binder systems consist of the designated epoxy resin cured with methylenedimethylene tetrahydrophthalic anhydride at 90 percent stoichiometric level and accelerated with 2-ethyl-4-methyl imidazole at 0.22 phr concentration. Laminates were press-cured 1 hour at 150 °C, then post-cured 16 hours at 200 °C prior to initiating aging test in forced-air ovens.

Table 1 / Curing agents for several applications

Molding Powders	Reinforced Plastics	Powder Coatings
Phenolics	Phenolics	Phenolics
Dicyandiamide	Dicyandiamide	Dicyandiamide
Phthalic anhydride	Methyl endomethylene	Trimellitic anhydride
Tetrachlorophthalic anhydride	Tetrahydrophthalic anhydride	Melamine
4,4'-Methylenedianiline	BF ₃ MEA ¹	
	Imidazoles	
	4,4'-Diaminodiphenyl sulfone	

¹ BF₃MEA is boron trifluoride monoethylamine

Performance Properties

Table 2 / Contribution of various high functionality solid epoxy resins to properties of a phenolic cured molding powder compound

Method Units A B

EPON Resin SU-8 82°C melting point	pbw	100	---
o-Cresol-Formaldehyde Novolac type, 80 °C melting point	pbw	---	100
Phenolic Curing Agent	pbw	52	48
Pigment	pbw	5	5
Candelilla wax	pbw	3	3
325-Mesh silica filter	pbw	250	240
Spiral Flow, 1 inches	pbw	31	42

Cured State Properties ¹

Heat Deflection Temperature	ASTM D648	°C	192	175
Tg by DSC	ASTM 3418	°C	194	158
Tensile Strength	ASTM D638	psi	7,400	7,200
Tensile Elongation		%	---	---
Flexural Strength	ASTM D790	psi	15,000	14,000
Flexural Modulus		ksi	---	---
Compressive Strength, Yield		psi	26,000	27,000
Hardness		Shore D	92	84
Linear Shrinkage		inch/inch	0.0068	0.0070

Electrical Properties

Dielectric constant, 1 MHz	ASTM D150	5.07	5.13
Dissipation factor, 1 MHz		0.0070	0.0068

¹ Determined at 1,000 psi and 150 °C per EMMI 1-66.

² Determined on bars molded from dielectrically heated preforms in a transfer press at 1,000 psi and 150 °C for 3 minutes.

³ Determined immediately upon ejection from 150 °C mold.

Safety, Storage & Handling

Please refer to the MSDS for the most current Safety and Handling information.

Please refer to the Hexion web site for Shelf Life and recommended Storage information.

This product is prone to "blocking" or "sintering", i.e., softening of the particles and agglomeration to a semi-solid mass, when stored at slightly elevated temperatures. Blocking does not affect the performance of the resin. This product should be stored in a cool dry place to minimize handling problems due to blocking.

Exposure to these materials should be minimized and avoided, if feasible, through the observance of proper precautions, use of appropriate engineering controls and proper personal protective clothing and equipment, and adherence to proper handling procedures. **None of these materials should be used, stored, or transported until the handling precautions and recommendations as stated in the Material Safety Data Sheet (MSDS) for these and all other products being used are understood by all persons who will work with them.** Questions and requests for information on Hexion Inc. ("Hexion") products should be directed to your Hexion sales representative, or the nearest Hexion sales office. Information and MSDSs on non-Hexion products should be obtained from the respective manufacturer.

Packaging

Available in bulk and drum quantities.

Contact Information

For product prices, availability, or order placement, please contact customer service:

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For literature and technical assistance, visit our website at: www.hexion.com

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