

Technical Data Sheet

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EPON™ Resin 8161

Product Description

EPON™ Resin 8161 is a moderate viscosity resin containing both epoxide and reactive unsaturation functionality. Reactivity of this resin with aliphatic and cycloaliphatic amine curing agents closely parallels that of unmodified liquid bisphenol A/epichlorohydrin epoxy resins. This unique feature allows the substitution of EPON 8161 for the basic epoxy in many systems without adversely affecting cure rates

Application Areas/Suggested Uses

- Floor topping and repair compounds
- General purpose adhesives
- Laminating binders
- Casting and encapsulation compounds
- Solventless or high solids/low VOC coatings

Benefits

- Excellent substrate wetting
- Light color
- Low vapor pressure
- High reactivity and good cured property profile with specific amine types

Sales Specification

Property	Units	Value	Test Method/Standard
Weight per Epoxide	g/eq	200 – 214	ASTM D1652
Viscosity at 25°C	cP	1,800 – 2,400	ASTM D2196
Color	Gardner	1 max.	ASTM D1544

Typical Properties

Property	Units	Value	Test Method/Standard
Density at 25°C	lb/gal	9.56	ASTM D1475
Combining Equivalent Weight	g/eq	177	

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Processing/How to use

General Information

Although conventional epoxy functional diluents are widely employed to control viscosity, their use often results in compromises in reactivity, combining ratios, or cured state physical strength and chemical resistance properties. EPON 8161 provides a lower application viscosity with a minimum of variation in these important properties when crosslinked with appropriate converters. EPON 8161 was developed for use with aliphatic and cycloaliphatic polyamine curing agents, examples of which are EPIKURE™ 3295, 3072, 3271, 3370 Curing Agents and triethylenetetramine. Curing will occur at ambient room temperatures or may be accelerated by application of moderately elevated temperatures in the usual manner associated with conventional liquid epoxy systems. The cure response of EPON 8161 to both unmodified and accelerated aliphatic polyamines is generally equivalent to that of undiluted EPON 828, but is more sluggish with amidoamine types. Cure progression of the amidoamine system can be accelerated through addition of small levels of a catalyzed converter such as EPIKURE 3271.

Curing agents other than polyamines may be utilized with EPON 8161, but evaluation should be conducted on an individual basis for effects on reactivity and matrix properties since the response of this product may vary from more conventional systems.

Since EPON 8161 contains both reactive unsaturation and epoxide groups, a combining equivalent weight different from weight per epoxide must be observed when calculating proper stoichiometry. In most applications, optimum cured state properties will be achieved at a ratio of one amine hydrogen per equivalent weight rather than epoxide equivalent

Performance Properties

Data illustrating the properties of EPON 8161 cured with several selected polyamine curing agents are listed in Table 1. As previously noted, direct comparisons of these properties with those developed by counterpart systems based on undiluted bisphenol A epoxy resins (e.g., EPON 828) reveal that benefits of reduced viscosity with minimal sacrifice in most mechanical and chemical resistance performance can be achieved by proper formulation of EPON 8161.

Table 1 / **EPON Resin 8161 cured with amine curing agents**

	<u>Method</u>	<u>Units</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
EPON Resin 8161		pbw	100	100	100	100
EPIKURE™ Curing Agent 3295		pbw	25	---	---	---
EPIKURE Curing Agent 3271		pbw	---	18	---	---
EPIKURE Curing Agent 3072		pbw	---	---	37	---
EPIKURE Curing Agent 3370		pbw	---	---	---	40

Handling Properties @ 25°C

Viscosity		cP	1,260	880	1,280	1,780
Gel Time, 100 gram mass		minutes	15	7	40	23
Peak Exotherm, 100 gram mass		°C	199	159	133	---
Cure Schedule		wks/°C	1/25	1/25	1/25	1/25

Cured State Properties ¹

Heat Deflection Temperature	ASTM D648	°C	65	69	68	59
Tensile Strength	ASTM D638	psi	9,900	9,700	7,400	7,600
Tensile Elongation at break		%	4.0	2.2	2.2	2.5
Flexural Strength	ASTM D790	psi	15,400	16,800	13,200	---
Flexural Modulus, initial		ksi	470	490	390	---
Compressive Strength, ultimate		psi	22,300	30,200	16,300	---
Compressive Strength, yield		psi	13,800	14,100	16,300	---
Izod Impact, notched	ASTM D256	ft. • lb./in.	0.49	0.56	0.33	0.49
Hardness	Shore D		87	87	85	82

Chemical Resistance ²

Water						
24 hrs		%	0.16	0.16	0.21	0.16
1 week		%	0.45	0.48	0.6	0.38
5% acetic acid						
24 hrs		%	1.70	1.30	1.32	0.19

¹ Determined on 1/8" thick specimens at 23 °C following a one week cure at 25 °C.

² Percent weight gain of 3" x 1" x 0.125" specimens.

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.

EPON Resin 8161 should be stored in tightly sealed glass, stainless steel, or phenolic-lined containers at normal room temperature. Storage in unlined steel containers should be avoided. Care should be taken to avoid storage above 50 °C. As with most epoxy resins, prolonged storage may result in some crystallization of the pure bisphenol A diglycidyl ether component. Potential for crystallization of EPON 8161 is greatly

increased when storage temperatures fall below 0 °C. Should crystallization occur, it may be converted to liquid by opening the drum bung and gently warming to temperatures not to exceed 50 °C (122 °F)

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:

www.hexion.com/Contacts/

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

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