

Technical Data Sheet

EPON™ Resin 8281

Product Description

EPON™ Resin 8281 was developed for use in formulating highly filled compounds, particularly those with high levels of silica-type fillers. This resin allows the formulator to compound materials suitable for use in a wide variety of products, including adhesives, electrical encapsulants and molding compounds, tooling compounds, and most construction end uses

Application Areas/Suggested Uses

- Electrical encapsulation
- High solids coatings

Benefits

- Excellent resistance to pigment and filler settling
- Low saponifiable chlorine level
- Superior resistance to foaming under vacuum
- Viscosity stability comparable to other conventional liquid EPON Resins

Sales Specifications

Property	Value	Unit	Test Method
Color	1 max	Gardner	ASTMD1544
Viscosity at 25°C	110 - 140	P	ASTMD445
Weight per Epoxide	182 - 195	g/eq	ASTMD1652

Typical Properties

Property	Value	Unit	Test Method
Density at 25°C	9.7	lb/gal	ASTMD1475
Epichlorohydrin Content	1 max	ppm	
Iron Content	<0.1	ppm	
Potassium Content	0.6	ppm	
Saponifiable Chloride	0.027	% wt.	
Sodium Content	0.1	ppm	
Water Content	0.034	% wt.	

Processing/How to use

General Information

Formulations using EPON Resin 8281 meet the requirements of the electronics industry for electrical and dimensional stability, high physical

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strength, excellent chemical resistance and good electrical properties

Filler Settling Characteristics

EPON Resin 8281 exhibits superior resistance to filler settling. In the most severe test, 72 hours at 60 °C, EPON Resin 8281 exhibited no settling of filler. This was measured by incorporating 50% by weight silica filler, under high shear conditions, into EPON Resin 8281. After evacuating the entrapped air, the mixture was placed in a 60 °C oven for 72 hours. The mixture was removed from the oven and by use of a metal stirring rod, tested for any filler build-up on the bottom or sides of the container.

Performance Properties

Table 1 /EPON Resin 8281 – Properties of Cured Castings¹

	Method	Units	A	B	C
EPON Resin 8281		pbw	100	100	100
EPIKURE™ Curing Agent 3234 (TETA)		pbw	14	---	---
ANCAMINE™ Y ²		pbw	---	25	---
Methyl tetrahydrophthalic anhydride (MTHPA)		pbw	---	---	80
2-ethyl-4-methylimidazole (EMI-24)		pbw	---	---	0.5
Cure Schedule		hr/°C	24 / 23 + 2 / 150	2 / 80 + 4 / 150	2 / 105 + 4 / 150
Cured State Properties					
Tg by DSC – midpoint	ASTM D648	°C	140	172	153
Tensile Strength	ASTM D638				
at 25°C		psi	10,200	12,300	11,700
at 100°C		psi	4,100	7,600	6,000
Tensile Elongation					
at 25°C		%	6.0	7.9	7.9
at 100°C		%	8.4	8.3	6.4
Tensile Modulus					
at 25°C		ksi	41	41	45

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	Method	Units	A	B	C
at 100°C		ksi	27	31	41
Flexural Strength	ASTM D790	psi	16,600	18,500	19,800
Flexural Modulus		ksi	48	46	49
Compressive Strength		psi	15,300	17,400	15,900
Compressive Deformation		psi	19.0	19.1	19.1
Compressive Modulus		ksi	30	27	32.6
Coefficient of Thermal Expansion	TMA				
at -25 to 75°C		ppm/°C	66	61	69
at 150 to 200°C		ppm/°C	171	158	181
Density @ 22°C		g/ml	1.18	1.19	1.20
Chemical Resistance ³					
24 hr - water boil		%	0.44	1.0	2.3
3 hr - acetone boil		%	1.2	0.93	0.73
Electrical Properties					
Dielectric Constant, 1 MHz	ASTM D150		3.5	3.9	3.4
Dissipation Factor, 1 MHz			0.029	0.033	0.015
Volume Resistivity @23°C		ohm•cm	2 x 10 ¹⁶	4 x 10 ¹⁶	3 x 10 ¹⁶
Surface Resistivity @23°C		ohm•cm	13 x 10 ¹⁶	19 x 10 ¹⁶	26 x 10 ¹⁶

¹ Typical for unfilled, 1/8 inch castings prepared with amine and anhydride curing agents.

² Available through Air Products.

³ Percent weight gain after immersion

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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 particular resin is quite stable and does not exhibit increased viscosity if stored at or below 120 °F. However, it is recommended that this resin be stored in a cool place in tight, sturdy containers away from sparks and open flames

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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