

Technical Data Sheet

EPON™ Resin 58006

Product Description

EPON Resin 58006™ is an elastomer modified epoxy functional adduct formed from the reaction of the diglycidyl ether of bisphenol A and a carboxyl terminated butadiene-acrylonitrile elastomer. Elastomer content is approximately 40% by weight. Primary use of EPON Resin 58006 is the modification of conventional epoxy systems to increase flexibility, adhesion properties and fatigue resistance.

Application Areas/Suggested Uses

- High performance adhesives featuring:
 - Higher peel and shear strengths
 - Thermal shock resistance
 - Greater fatigue resistance
- Fatigue resistant composite structures

Benefits

- High elastomer content – convenient adjustment of elastomer content
- Compatible with conventional bisphenol A epoxies
- Imparts improved peel strength and fatigue resistance with minimal reduction of stiffness and maximum operating temperature
- Lower viscosity than EPON Resin 58005

Sales Specifications

Property	Value	Unit	Test Method
Appearance	Clear to Slightly Hazy		
Color	11 max.	Gardner	ASTMD1544
Epoxide Equivalent Weight	330 - 360	g/eq	ASTMD1652
Viscosity at 25°C	1500 - 3000	P	ASTMD2196

Typical Properties

Property	Value	Unit	Test Method
Density at 25°C	8.9	lb/gal	ASTMD1475

General Information

EPON Resin 58006 is compatible with conventional bisphenol A based epoxy resins within the typically used range of concentrations (<50% by weight). When formulating modifications of more specialized epoxy resin systems such as those based on bisphenol F epoxies or high functionality types, use of EPON 58005 is usually preferred due to its broader range of compatibility.

Concentration of this modifier required for optimum performance is dependent upon factors of resin type, curing agent type, and specific performance requirements, but is generally found to be within the 20-50% by weight range. Effect of EPON Resin 58006 concentration on the working characteristics and adhesive properties of an EPON Resin 828/EPIKURE™ 3072 Curing Agent model system is illustrated by Figure 1 and data listed in Table 1. Being epoxy functional, EPON Resin 58006 can be cured with converters commonly used in conventional epoxy systems. Due to its higher weight per epoxide, adjustment of curing agent level should normally coincide with incorporation of this modifier resin. Effect of EPON Resin 58006 incorporation on the properties of standard systems cured with a representative aliphatic amine, aromatic amine, and a catalytic curative is indicated by Table 2 data. The high viscosity of EPON Resin 58006 will normally necessitate that this resin be heated in order to facilitate pumping or blending operations. Figure 2 provides guidance as to the reduction in product viscosity resulting from increasing temperatures within the 75-190 °F range.

EPON Resin 58006

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Figure 1 /Viscosity of EPON™ Resin 58006/EPON Resin 828 blends

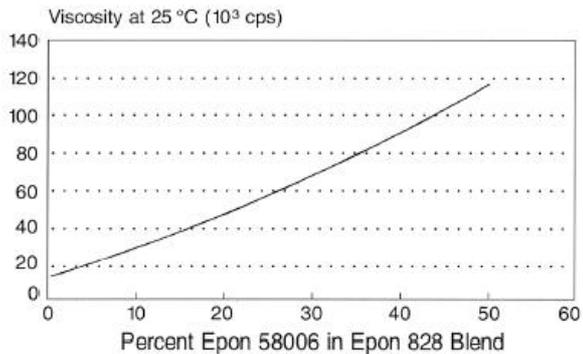


Figure 2 /EPON™ Resin 58006 viscosity vs. temperature

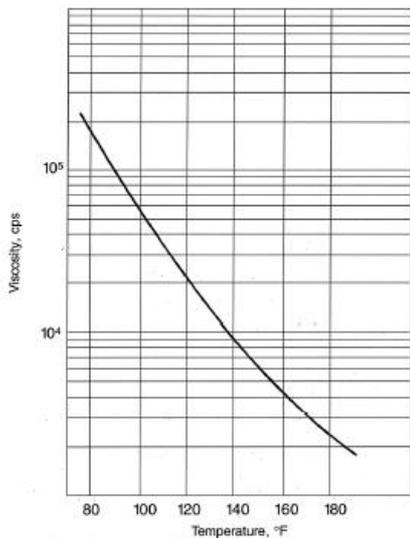


Table 1 /Effect of EPON™ Resin 58006 concentration on properties of an epoxy system

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	Method	Units	A	B	C	D	E
EPON Resin 58006		pbw	---	12.5	25	37.5	50
EPON Resin 828		pbw	100	87.5	75	62.5	50
EPIKURE™ Curing Agent 3072		pbw	35	33	31	29	27
Handling Properties @ 25°C							
System Viscosity		cP	4,000	7,440	11,200	17,200	26,000
Gel Time, 100 gram mass		minutes	43	48	49	57	71
Cure Schedule		wk/°C	1/25	1/25	1/25	1/25	1/25
Cured State Properties ¹							
Tensile Strength	ASTM D638						
Aluminum/Aluminum		psi	2,000	2,780	4,360	4,140	3,150
Steel/Steel		psi	2,600	4,120	4,060	4,000	2,900
90° Peel Strength							
Aluminum/Aluminum		lbs/inch	2-3	12	20	15-16	10-11
Hardness		Shore D	86	85	83	81	75

¹ Determined at 23 °C following one week cure at 25 °C.

Table 2 / Effect of EPON™ Resin 58006 on adhesive properties of various systems

	Method	Units	A	B	C ¹	D ¹
EPON Resin 828		pbw	100	75	100	75
EPON Resin 58006		pbw	---	25	---	25
EPIKURE™ Curing Agent 3234		pbw	13	12	---	---
Dicyandiamide		pbw	---	---	6	6

Handling Properties @ 25°C

System Viscosity		cP				
Gel Time, 100 gram mass		minutes				
Cure Schedule		wk/°C	1/25	1/25	2 hrs/93 + 2 hrs/150	2 hrs/93 + 2 hrs/150

Cured State Properties²

Tensile Strength	ASTM D638					
Aluminum/Aluminum		psi	1,520	2,760	2,530	4,140
Steel/Steel		psi	2,610	4,380	5,100	5,410
90° Peel Strength						
Aluminum/Aluminum		lbs/inch	0.5-1.0	7-8	---	---
Hardness		Shore D	88	83	---	---

¹ System modified with 2 phr Cab-O-Sil* M-5 to retain suspension of dicyandiamide through gelation.

² Determined at 23 °C. Systems 1 and 2 cured one week at 25 °C. Systems 3 and 4 cured two hours at 93 °C plus two hours at 150 °C.

* Cab-O-Sil is a registered trademark of Cabot Corporation.

** Opacity of System 2 suggests heterogeneous cured state.

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.

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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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