



## Technical Data Sheet

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### EPON™ Resin 58005

#### Product Description

EPON™ Resin 58005 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 58005 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 a wide range of liquid epoxy resins
- Imparts improved peel strength and fatigue resistance with minimal reduction of stiffness and maximum operating temperature

#### Sales Specification

Property	Units	Value	Test Method/Standard
Epoxide Equivalent Weight	g/eq	325 – 375	ASTM D1652
Viscosity at 25°C	P	3,000 – 8,000	ASTM D2196
Color	Gardner	11 max.	ASTM D1544
Appearance		Clear to Slight Hazy Liquid	

#### Typical Properties

Property	Units	Value	Test Method/Standard
Density at 25°C	lb/gal	9.0	ASTM D1475

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### General Information

As a result of a relatively high acrylonitrile content, EPON 58005 is compatible with most epoxy resin types, including bisphenol F and novolac epoxies, within the typically used range of concentrations (<50% by weight). 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 58005 concentration on the working characteristics and adhesive properties of an EPON Resin 828/EPI-CURE™ 3072 Curing Agent model system is illustrated by Figure 1 and data listed in Table 1.

Figure 1 / **Viscosity of EPON™ Resin 58005/EPON Resin 828 Blends**

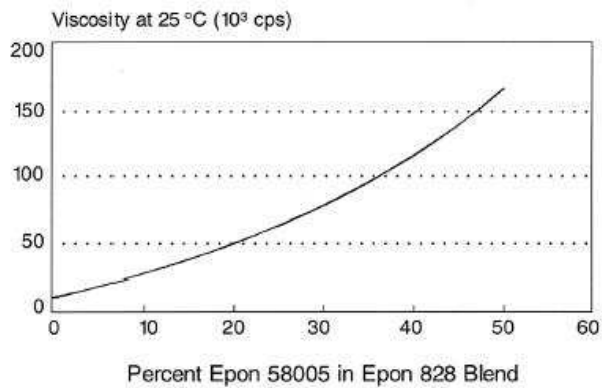


Table 1 / **Effect of EPON™ Resin 58005 concentration on properties of an epoxy system**

	<u>Method</u>	<u>Units</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
EPON Resin 58005		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	30	29	27
Handling Properties @ 25°C							
Initial viscosity		cP	4,000	7,720	13,700	21,200	32,200
Gel Time, 100 gram mass		minutes	43	48	51	61	73
Cure Schedule		wk/°C	1/25	1/25	1/25	1/25	1/25
Cured State Properties <sup>1</sup>							
Tensile Strength	ASTM D638						
Aluminum/Aluminum		psi	2,000	2,060	2,760	4,020	3,960

Steel/Steel	psi	2,600	3,700	3,880	4,290	3,910
90° Peel Strength						
Aluminum/Aluminum	lbs/inch	2-3	4-6	10-12	14-16	20-22
Hardness	Shore D	86	85	84	81	80

<sup>1</sup> Determined at 23 °C following one week cure at 25 °C.

Being epoxy functional, EPON 58005 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 58005 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 58005 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.

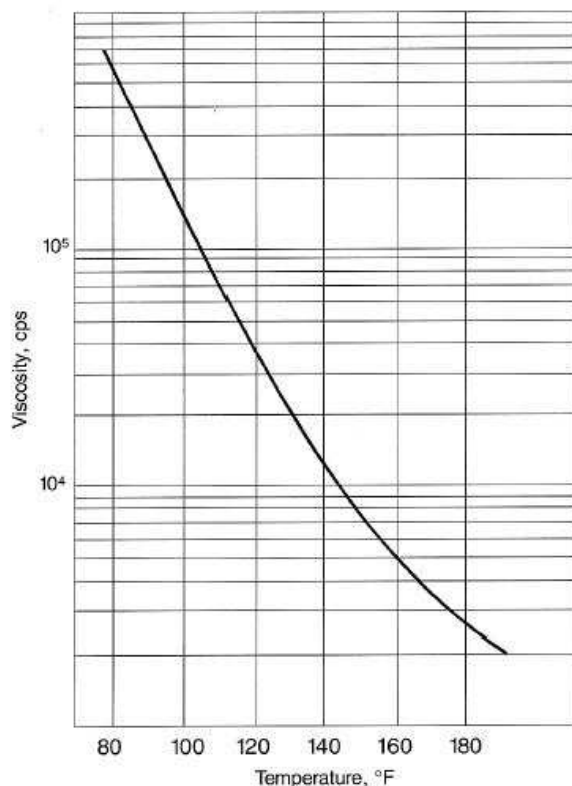
**Table 2 / Effect of EPON™ Resin 58005 on adhesive properties of various systems**

	<u>Method</u>	<u>Units</u>	<u>A</u>	<u>B</u>	<u>C</u> <sup>1</sup>	<u>D</u>
EPON Resin 828		pbw	100	62.5	100	75
EPON Resin 58005		pbw	---	37.5	---	25
EPIKURE™ Curing Agent 3234		pbw	13	11	---	---
Dicyandiamide		pbw	---	---	6	6
Cure Schedule		wk/°C	1/25	1/25	2hrs/93 + 2hrs/150	2hrs/93 + 2hrs/150
Cured State Properties <sup>2</sup>						
Tensile Strength	ASTM D638					
Aluminum/Aluminum		psi	1,520	3,270	2,530	4,150
Steel/Steel		psi	2,610	4,100	5,100	5,230
90° Peel Strength						
Aluminum/Aluminum		lbs/inch	0.5-1.0	5.0	---	---
Hardness		Shore D	88	70	---	---

<sup>1</sup> System modified with 2 phr Cab-O-Sil M-5 to retain suspension of dicyandiamide through gelation. Cab-O-Sil is a registered trademark of Cabot Corporation.

<sup>2</sup> Determined at 23 °C. Systems A and B cured one week at 25 °C. Systems C and D cured two hours at 93 °C plus two hours at 150 °C.

**Figure 2 / EPON™ Resin 58005 Viscosity vs. Temperature**



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