

Technical Data Sheet

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EPON™ Resin 58034

Product Description

EPON™ Resin 58034 is an elastomer modified epoxy functional adduct formed from the reaction of HELOXY™ 68 Modifier and a carboxyl terminated butadiene-acrylonitrile elastomer. Elastomer content is approximately 50 percent by weight. The primary use of EPON 58034 is in the modification of conventional epoxy systems to increase flexibility, adhesion properties and fatigue resistance.

Application Areas/Suggested Uses

- Adhesives

Benefits

- High elastomer content provides compounding flexibility to incorporate desired levels of elastomer into finished formulation
- Compatible with conventional bisphenol A epoxies
- Low viscosity
- Imparts improved peel strength and fatigue resistance into adhesive systems

Sales Specification

| Property | Units | Value | Test Method/Standard |
|---------------------------|---------|-----------|----------------------|
| Epoxide Equivalent Weight | g/eq | 275 – 305 | ASTM D1652 |
| Viscosity at 25°C | P | 40 – 80 | ASTM D2196 |
| Color | Gardner | 10 max. | ASTM D1544 |
| | | | |

Typical Properties

| Property | Units | Value | Test Method/Standard |
|-----------------|--------|-------|----------------------|
| Density at 25°C | lb/gal | 8.4 | ASTM D1475 |
| | | | |

General Information

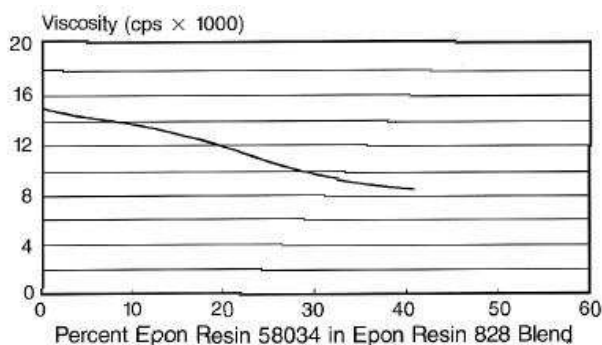
EPON 58034 is compatible with conventional bisphenol A based epoxy resins within the typically used

range of concentrations (<40% by weight).

Concentration of this modifier required for optimum performance is dependent upon such factors as resin type, curing agent type, and specific performance requirements, but is generally found to be within the weight range of 10-40%. Characterization of EPON 58034 in combination with EPON Resin 828 is shown in Figure 1.

Typical physical and adhesive properties, when cured with a representative aliphatic amine and accelerated amidoamine are listed in Tables 1 and 2.

Figure 1 / **EPON™ Resin 828/EPON Resin 58034 Blends**



Performance Properties

Table 1 / **Effect of EPON™ Resin 58034 Concentration on Physical 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 58034 | | pbw | --- | 10 | 20 | 30 | 40 |
| EPON Resin 828 | | pbw | 100 | 90 | 80 | 70 | 60 |
| EPIKURE™ Curing Agent 3234 | | pbw | 13 | 12.4 | 12 | 11.6 | 11.1 |
| Handling Properties @ 25°C | | | | | | | |
| System Viscosity | | cP | 3,000 | 2,720 | 3,000 | 3,600 | 3,680 |
| Gel Time, 100 gram mass | | minutes | 37 | 35 | 45 | 52 | 54 |
| Cure Schedule | | wk/°C | 1/25 | 1/25 | 1/25 | 1/25 | 1/25 |
| Cured State Properties ¹ | | | | | | | |
| Heat Deflection Temperature | ASTM D648 | °C | 70 | 64 | 62 | 62 | 60 |
| Tensile Strength, ultimate | ASTM D638 | psi | 10,300 | 8,320 | 5,860 | 4,940 | 3,450 |

EPON Resin 58034

| | | | | | | | |
|--------------------------------|-----------|----------|---------|--------|--------|-------|-------|
| Tensile Elongation at break | | % | 4.9 | 2.2 | 2.3 | 4.2 | 1.6 |
| Flexural Strength | ASTM D790 | psi | 13,075 | 13,075 | 11,285 | 9,505 | 7,925 |
| Flexural Modulus | | ksi | 480 | 480 | 400 | 320 | 2800 |
| Compressive Strength, Ultimate | | psi | 11,500 | 11,500 | 12,600 | 5,450 | 5,046 |
| Compressive Strength, Yield | | psi | 8,315 | 8,400 | 7,250 | 5,450 | 4,575 |
| Hardness | | Shore D | 80 | 81 | 79 | 72 | 69 |
| Tensile Shear Strength | ASTM D638 | | | | | | |
| Aluminum/Aluminum ² | | psi | 1,550 | 2,550 | 2,703 | 3,889 | 2,895 |
| Steel/Steel ³ | | psi | 2,600 | 3,400 | 3,929 | 4,078 | 2,922 |
| 90° Peel Strength | | | | | | | |
| Aluminum/Aluminum | | lbs/inch | 1.0-1.5 | 14-16 | 14-16 | 16-18 | 13-15 |
| Chemical Resistance | | | | | | | |
| Water absorption ³ | | | | | | | |
| 1 Day | | % | 0.14 | 0.14 | 0.17 | 0.22 | 0.26 |
| 3 Days | | % | 0.21 | 0.26 | 0.31 | 0.40 | 0.46 |
| 2 Weeks | | % | 0.55 | 0.57 | 0.63 | 0.86 | 1.01 |

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

² Acid etched 2024-T3 aluminum coupons.

³ Sandblasted cold-rolled steel coupons

⁴ 5-Mil aluminum foil bonded to 2024-T3 backing – both acid etched.

* Opacity of Systems 2 through 5 suggests heterogeneous cured state.

Table 2 / **Effect of EPON Resin 58034 on Adhesive Properties of Various Systems**

| | <u>Method</u> | <u>Units</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>D</u> |
|-------------------------------------|---------------|--------------|----------|----------|----------|----------|
| EPON Resin 828 | | pbw | 100 | 80 | 100 | 80 |
| EPON Resin 58034 | | pbw | --- | 20 | --- | 20 |
| EPIKURE Curing Agent 3234 | | pbw | 13 | 12 | --- | --- |
| EPIKURE Curing Agent 3072 | | pbw | --- | --- | 35 | 32 |
| Cured State Properties ¹ | | | | | | |
| Hardness | | Shore D | 88 | 79 | 88 | 77 |
| Tensile Shear Strength | ASTM D638 | | | | | |
| Aluminum/Aluminum ² | | psi | 1,520 | 2,703 | 1,690 | 3,490 |
| Steel/Steel ³ | | psi | 2,610 | 3,929 | 2,700 | 4,050 |
| 90° Peel Strength | | | | | | |

| | | | | | |
|-------------------|----------|---------|-------|-----|-------|
| Aluminum/Aluminum | lbs/inch | 0.5-1.0 | 14-16 | 4-5 | 15-16 |
|-------------------|----------|---------|-------|-----|-------|

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

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