

Technical Data Sheet

EPI-REZ™ Resin WD-512

Product Description

EPI-REZ Resin WD-512 water dispersible resin is a liquid epoxy resin that is specifically designed for convenient water dilution. Water dilution under agitation forms a fine particle dispersion of liquid epoxy resin in water. This dilution can be accomplished at all solids levels to meet the desired viscosity and handling characteristic. EPI-REZ Resin WD-512 is particularly attractive for two-package high solids water-based formulations. It can also be used in highly crosslinked onepackage baked formulations. Typical end uses include modifiers for Portland Cement, concrete, mortars, stuccos, grouts, as a binder for trowel applied floor toppings, as bond coats, base coats, membrane coatings, sealers, and in two-package adhesives.

Sales Specifications

| Property | Value | Unit | Test Method |
|---------------------------|-----------|---------|-------------|
| Color | 2 | Gardner | ASTMD1544 |
| Epoxide Equivalent Weight | 195 - 210 | g/eq | ASTMD1652 |
| Viscosity at 25°C | Z6-Z8 | cP | |

Typical Properties

| Property | Value | Unit | Test Method |
|----------|-------|---------|-------------|
| Density | 9.71 | lbs/gal | ASTMD1475 |

Performance Properties

Handling and Performance Properties

Some of the same amine curing agents can be used with EPI-REZ Resin WD-512 as with conventional liquid epoxy resins. Table 1 compares EPI-REZ Resin WD-512 and EPON Resin 828 cured with a typical amido-amine curing agent. The system was prepared without water dilution to show the negligible effect the incorporated surfactant has on cured state properties. In Table 2 the cured state properties of EPI-REZ Resin WD-512 after water dilution are shown with the same curing agent.

In addition, water reducible amine curing agents can also be used with EPI-REZ Resin WD-512. Table 3 outlines the handling and cured state properties of EPI-REZ Resin WD-512 and a water dispersed amine curing agent, EPIKURE Curing Agent 8535-W-50. This combination yields a mix that has no organic solvent present. This system can be air dried up to 5 mils dry film thickness or it can be used in baked systems at higher film builds.

Substitution of up to 20 percent of EPI-REZ Resin WD-512 with a flexibilizer or reactive diluent retains the water reducible feature in combination with amine curing agents. Flattening agents such as colloidal silica may be incorporated at levels of to 15 phr in the dispersions without building excessive thixotropy.

Table 1/Handling and performance properties of EPI-REZ Resin WD-512 and EPON™ Resin 828 when cured with EPIKURE™ Curing Agent 3072

EPI-REZ Resin WD-512

<https://www.hexion.com/en-US/product/epi-rez-resin-wd-512>

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| Composition | Units | A | B |
|--------------------------------------|-------|---------|---------|
| EPI-REZ Resin WD-512 | | 100 | – |
| EPON Resin 828 | | – | 100 |
| EPIKURE Curing Agent 3072 | | 33 | 35 |
| Cured state properties, 1/8" casting | | 398 | 468 |
| Flexural modulus | ksi | 12,338 | 14,511 |
| Ultimate flexural strength | psi | 3.5 | 3.3 |
| % strain at break | | 402,600 | 465,500 |
| Tensile modulus | | 7,373 | 7,162 |
| Ultimate tensile strength | psi | 2.1 | 1.8 |
| % strain at break | | 51 | 52 |
| Heat distortion temperature | °C | 398 | 468 |

Table 2 / Cured state properties of EPI-REZ Resin WD-512 after water dilution

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| Composition | Units | Value |
|---------------------------|-------|-------|
| EPI-REZ Resin WD-512 | | 100 |
| EPIKURE Curing Agent 3072 | | 33 |
| Water | | 133 |

| Cured State Properties | | |
|------------------------|-----|-----|
| Dry Time, Tack-free | hrs | 1.0 |
| Cotton-free | hrs | 8 |
| Dry through | | 18 |

Properties of Films @ 250 °F

| | | |
|----------------------|--------|------|
| Film thickness | mils | 1.0 |
| Pencil hardness | | H |
| MEK double rubs | | >100 |
| Izod impact, direct | in/lbs | >160 |
| Izod impact, reverse | in/lbs | >160 |

Table 3 /Performance of formulation of EPI-REZ Resin WD-512 with water dispersed curing agent

| MATERIAL | Units | Pounds | Gallons |
|---------------------------------------|-------|--------|---------|
| EPI-REZ Resin WD-512 waterborne resin | | 2,967 | 305.55 |
| Water | | 2,967 | 356.16 |
| EPIKURE Curing Agent 8535-W-50 | | 2,967 | 338.29 |
| Total Part A + B | | 8,901 | 1,000 |
| PROPERTIES | | | |

Brookfield viscosity, cP, 25 °C

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| MATERIAL | Units | Pounds | Gallons |
|---|--------|----------------------|---------|
| Initial, 100 gram mass | | 10,800 | |
| 30 minutes | | 41,800 | |
| 60 minutes | | 118,000 | |
| 90 minutes | | 552,000 | |
| 180 minutes | | Too thick to measure | |
| Pot life, time to gel, 100 g mass | mins. | 77 | |
| FILMS CAST WITH 2 MIL METERING BAR ON COLD ROLLED STEEL | | | |
| Cure schedule, temperature | °F | 77 | 250 |
| Cure schedule, time @ temperature | | 14 days | 20 min. |
| Gardner dry-time | hr. | | |
| Cotton-free | | 2.5 | — |
| Through-dry | | 5.0 | 0.9 |
| Film thickness | | 0.8 | 2H |
| Pencil hardness | | F | >100 |
| MEK double rubs | | >100 | >160 |
| Impact, direct | in/lb. | 124 | >160 |
| Impact, reverse | | 116 | 5B |
| Adhesion, 120 sq. method | | 5B | — |
| Effect of chemical spottest, 96 hr. | | | |
| 10% Acetic acid | | Fail | Fail |
| 10% HCl | | Fail | 5F |
| 10% NaOH | | NE | NE |

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General Information

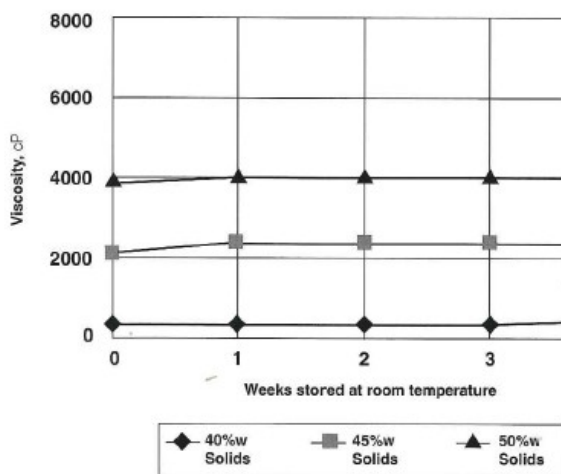
EPI-REZ Resin WD-512 is supplied as a high viscosity liquid at 100 percent weight solids as shown in the "Typical Properties" table. In general, EPI-REZ Resin WD-512 can be handled and formulated in much the same ways as conventional liquid epoxy resins, like EPON™ Resin 828.

In formulation of water diluted systems, EPI-REZ Resin WD-512 is usually diluted by adding the water slowly with agitation. A stable dispersion is formed within 1 to 5 minutes with agitation by hand or with a power mixer. This diluted resin can be used as a stable epoxy package or the curing agent can be added to the mix to form a one-package formulation. The surfactant in EPI-REZ Resin WD-512 is effective enough to emulsify some non-water soluble curatives.

As with other waterborne resin systems, formulations based on dispersed EPI-REZ Resin WD-512 exhibit extended usable application pot life. Depending on the curative used, this application pot life may not reflect performance pot life. The actual usable working life of a specific formulation should be determined in a laboratory by studying performance related properties as a function of time elapsed from mixing to application. Figure 1 illustrates the viscosity of dispersed EPI-REZ Resin WD-512 at varying solids levels. A wide range of viscosity is attainable by water reduction, and all are stable over time at room temperature.

Stable dispersions using fillers are also easily prepared using EPI-REZ Resin WD-512. These dispersions exhibit a high level of stability with no separation, loss of puff or creamy consistency after 1- 1/2 months at room temperature.

Figure 1 / Viscosity of dispersed EPI-REZ Resin WD-512 with prolonged storage



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.

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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