

An Emerald Performance Materials Company

ERISYS® GE-10
o-Cresyl Glycidyl Ether
Aromatic Monofunctional
Epoxy Diluent
CAS NO. 2210-79-9

DESCRIPTION

ERISYS GE-10, epoxidized ortho cresol, is a low viscosity, aromatic, mono-epoxide. It is intended for use as a reactive diluent for high viscosity epoxy resins. GE-10 is compatible at all concentrations with those resins and resin/diluent blends can be cured using any epoxy resins curing agents.

GE-10, due to its structure, is not as efficient in viscosity reduction as aliphatic diluents ERISYS GE-5, GE-6, GE-7 or GE-8. However, the performance properties of epoxy formulations diluted with GE-10 are modified less than those of systems containing the aliphatic monofunctional diluents. Depending on concentration, properties such as gel time, room temperature strength, and modulus of a GE-10 diluted formulation remain relatively unchanged compared to an undiluted mix. A decline in elevated temperature performance, as indicated by decreasing Tg with increasing GE-10 concentration, occurs (see table and graphs below).

A further feature of GE-10 is its ability to reduce the tendency of certain epoxy resins to crystallize, thereby producing formulations with improved homogeneity. ERISYS GE10' s low vapor pressure and exceptionally low residual epichlorohydrin level make it ideally suited for environmentally difficult applications such as floor coating and concrete repair.

APPLICATIONS

- Chemical Resistant Coatings
- Flooring
- Concrete/Civil Engineering Adhesives
- General Purpose Adhesives
- Tooling
- Specialized Curing Agent Adducts

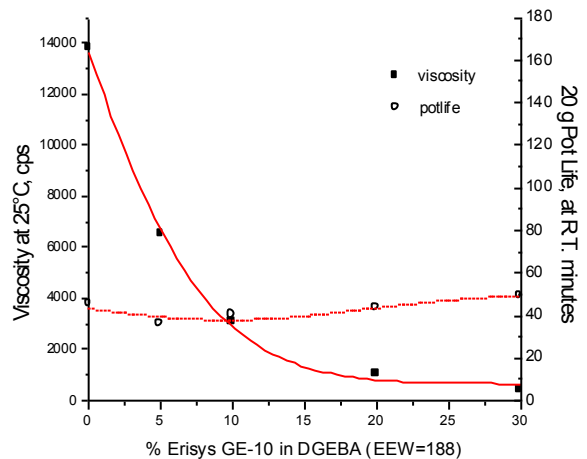
TYPICAL PROPERTIES

| | |
|-----------------------------------|--------------|
| Appearance | Clear, Clean |
| Viscosity @ 25°C, cps | 5 – 10 |
| Epoxide Equivalent Weight, g/eq | 170 – 195 |
| Gardner Color, max | 1 |
| Residual Epichlorohydrin, max ppm | 10 |
| Hydrolyzable Chloride, max % | 0.10 |
| Weight per Gallon, @ 25°C, lbs. | 9.0 ± 0.1 |
| Water Content, max % | 0.10 |
| Flash Point, °C (°F) | >121 (>250) |

HANDLING PROPERTIES

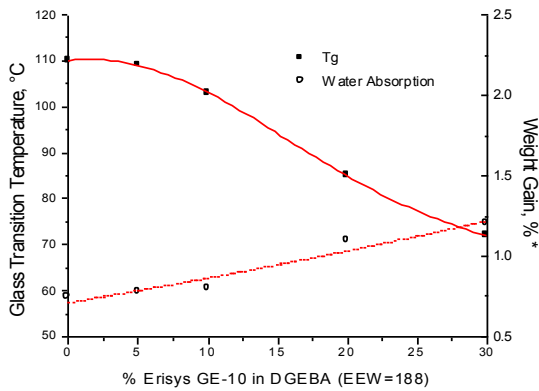
The use of ERISYS GE-10 will effect the handling and cured properties of resin formulations. The effects of these changes are shown below.

VISCOSITY AND POT LIFE

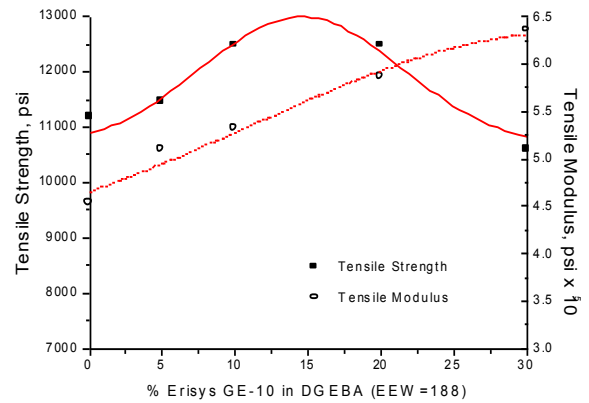


HANDLING PROPERTIES (Continued)

Tg and MOISTURE PICKUP



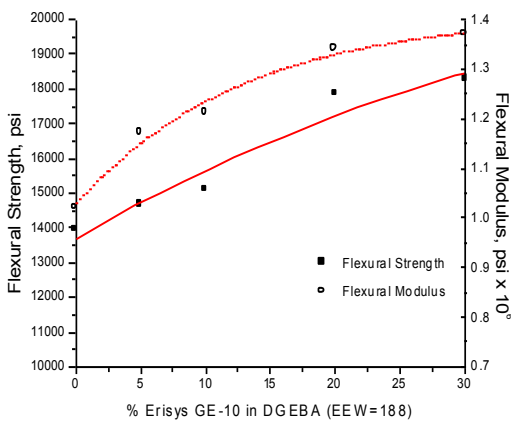
TENSILE PROPERTIES



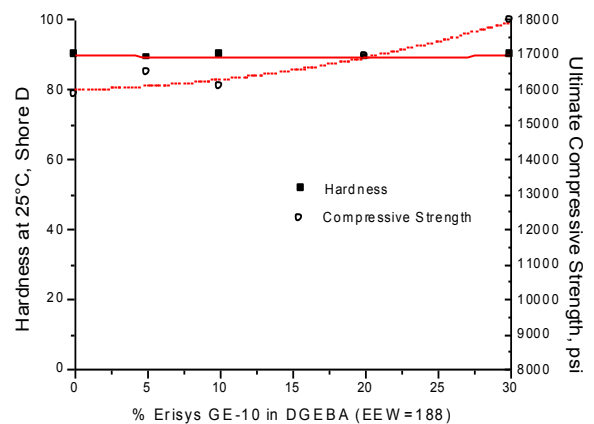
*After 2 hours in boiling water

THE EFFECT OF ERISYS GE-10 ON THE CURED PROPERTIES OF LIQUID EPOXY RESIN (EEW 188) CURED WITH TETA

FLEXURAL PROPERTIES



HARDNESS and COMPRESSIVE STRENGTH



PROPERTIES OF DGEBA/GE-10/TETA SYSTEMS

| FORMULATION, pbw | A | B | C | D | E |
|---|------------|------------|------------|------------|------------|
| DGEBA (EEW-188) | 100.0 | 95.0 | 90.0 | 80.0 | 70.0 |
| ERISYS GE-10 | - | 5.0 | 10.0 | 20.0 | 30.0 |
| Triethylenetetramine | 13.0 | 13.0 | 13.1 | 13.1 | 13.2 |
| RESULTS | | | | | |
| HANDLING PROPERTIES | | | | | |
| Viscosity @ 25° C of resin | | | | | |
| portion only, cps | 13,800 | 6,500 | 3,068 | 1,036 | 386 |
| 20 g Pot Life, hours:minutes | 0:45 | 0:36 | 0:40 | 0:43 | 0:49 |
| CURED PROPERTIES* | | | | | |
| TENSILE | | | | | |
| Strength, psi | 11,165 | 11,455 | 12,470 | 12,470 | 10,585 |
| MPa | 77 | 79 | 86 | 86 | 73 |
| Elongation, % | 4.2 | 4.6 | 4.1 | 2.9 | 2 |
| Modulus, psi | 4.53E + 05 | 5.09E + 05 | 5.31E + 05 | 5.85E + 05 | 6.35E + 05 |
| MPa | 3,127 | 3,508 | 3,664 | 4,033 | 4,379 |
| FLEXURAL | | | | | |
| Strength, psi | 13,920 | 14,645 | 15,080 | 17,835 | 18,270 |
| MPa | 96 | 101 | 104 | 123 | 126 |
| Modulus, psi | 1.02E + 06 | 1.17E + 06 | 1.21E + 06 | 1.34E+06 | 1.37E + 06 |
| MPa | 7,063 | 8,094 | 8,377 | 9,217 | 9,460 |
| COMPRESSIVE | | | | | |
| Strength at yield, psi | 7,067 | 9,133 | 9,400 | 10,833 | 12,033 |
| MPa | 49 | 63 | 65 | 75 | 83 |
| Ultimate strength, psi | 15,833 | 16,467 | 16,100 | 16,967 | 17,967 |
| MPa | 109 | 114 | 111 | 117 | 124 |
| HARDNESS @ 25°C, | | | | | |
| D durometer | 90 | 90 | 90 | 90 | 90 |
| GLASS TRANSITION TEMPERATURE, | | | | | |
| °C | 110 | 109 | 103 | 85 | 72 |
| °F | 230 | 228 | 217 | 185 | 162 |
| WATER ABSORPTION, WEIGHT GAIN AFTER: | | | | | |
| 28 Days in 25°C water, % | 0.77 | 0.71 | 0.65 | 0.59 | 0.57 |
| 2 Hours in boiling water, % | 0.74 | 0.78 | 0.80 | 1.1 | 1.2 |

*Cure: gel at R.T. + 2 hours at 100°C

HEALTH & SAFETY PRECAUTIONS

ERISYS GE-10 is not a primary skin irritant and sensitizer. However, as with any epoxy material, irritation can result from repeated or prolonged contact. The symptoms of this irritation may appear as a mild reddening or a more pronounced rash. It is, therefore, important to avoid skin contact where possible. Rubber gloves, full eye protection, and protective clothing are recommended.

Refer to the **CVC Thermoset Specialties** Material Safety Data Sheet on ERISYS GE-10 for additional safety and handling information. The MSDS is revised as new data becomes available.

PACKAGING & AVAILABILITY

ERISYS GE-10 is available in 55 gallon steel non-returnable drums (490 lbs. net) and 5 gallon plastic pails (40 lbs. net). Bulk deliveries are available on special request.

DISCLAIMER

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