

An Emerald Performance Materials Company

**ERISYS® GE-11**  
**para-tertiary Butyl Phenyl**  
**Glycidyl Ether**  
**Aromatic Monofunctional Epoxy**  
**Reactive Diluent**  
**CAS NO. 3101-60-8**

**DESCRIPTION**

ERISYS GE-11, epoxidized para-tertiary butyl phenol, is an aromatic mono-epoxide. GE-11 is intended for use as a reactive diluent for high viscosity epoxy resins and it is compatible at all concentrations with those resins. Resin/diluent blends can be cured using any curing agent for epoxy resins.

GE-11, due to its aromatic structure, is not as efficient in viscosity reduction as aliphatic diluents ERISYS GE-5, GE-6, GE-7, or GE-8. However, performance properties of epoxy formulations diluted with GE-11 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-11 diluted formulation remain relatively unchanged compare to an undiluted resin. However, a decline in elevated temperature performance, as indicated by decreasing Tg with increasing GE-11 concentration occurs (see table and graphs below). Cured formulations containing GE-11 exhibit excellent moisture resistance. ERISYS GE-11's low vapor pressure, low odor and exceptionally low residual epichlorohydrin level make it ideally suited for environmentally difficult applications. Another feature of GE-11 is its ability to reduce the tendency of certain epoxy resins to crystallize, thereby producing formulations with improved homogeneity.

**APPLICATIONS**

- Potting & Encapsulation
- Electronics
- Flooring
- Concrete/Civil Engineering Adhesives
- General Purpose Adhesives
- Tooling
- Laminating

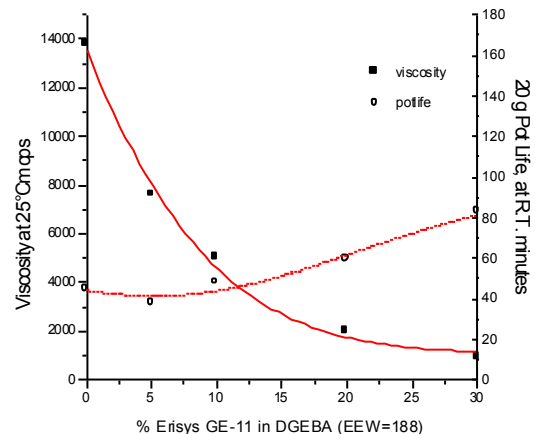
**TYPICAL PROPERTIES**

Appearance	Clear, Clean
Viscosity @ 25°C, cps	20 – 30
Epoxide Equivalent Weight, g/eq	215–240
Gardner Color, max	1
Residual Epichlorohydrin, max ppm	10
Hydrolyzable Chloride, max %	0.10
Weight per Gallon, @ 25°C, lbs.	8.5 ± 0.1
Water Content, max %	0.10
Flash Point, °C (°F)	121 (>250)

**HANDLING PROPERTIES**

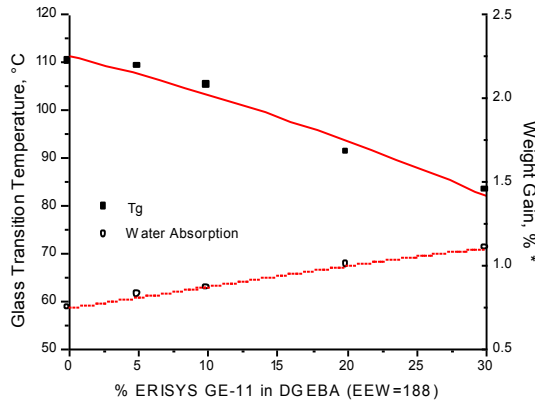
The use of ERISYS GE-11 will effect the handling and cured properties of resin formulations. The effects of these changes are shown below.

**VISCOSITY AND POT LIFE**

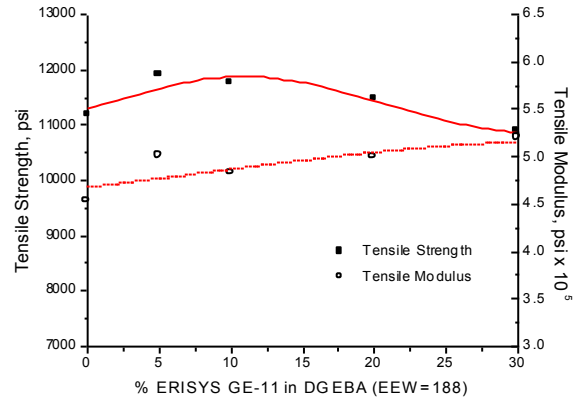


**HANDLING PROPERTIES (Continued)**

**Tg and MOISTURE PICKUP**



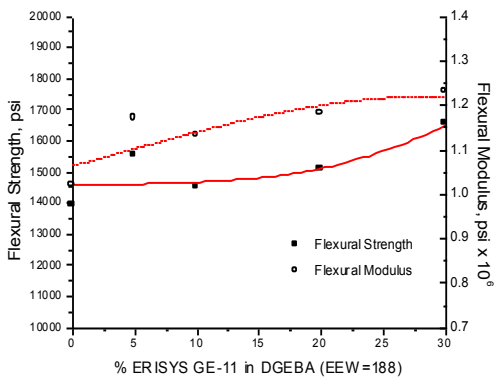
**TENSILE PROPERTIES**



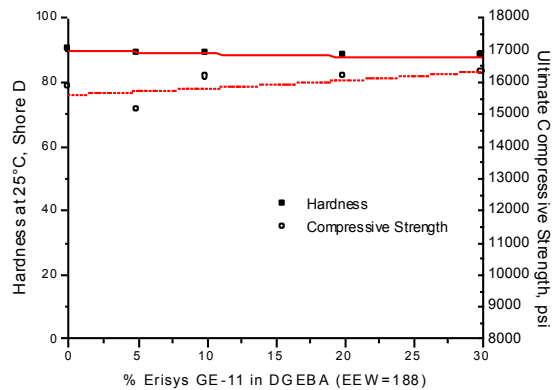
\*After 2 hours in boiling water

**THE EFFECT OF ERISYS GE-11 ON THE CURED PROPERTIES OF LIQUID EPOXY RESIN (EEW 188) CURED WITH TETA**

**FLEXURAL PROPERTIES**



**HARDNESS and COMPRESSIVE STRENGTH**



**PROPERTIES OF DGEBA/GE-11/TETA SYSTEMS**

FORMULATION, pbw	A	B	C	D	E
DGEBA (EEW-188)	100.0	95.0	90.0	80.0	70.0
ERISYS GE-11	0	5.0	10.0	20.0	30.0
Triethylenetetramine	13.0	12.8	12.7	12.4	12.1
<b>RESULTS</b>					
<b>HANDLING PROPERTIES</b>					
Viscosity @ 25° C of resin portion only, cps	13,800	7,600	5,000	2,000	900
20 g Pot Life, hours:minutes	0:45	0:38	0:48	0:59	1:23
<b>CURED PROPERTIES*</b>					
<b>TENSILE</b>					
Strength, psi	11,165	11,890	11,745	11,455	10,875
MPa	77	82	81	79	75
Elongation, %	4.2	4.6	5.2	3.4	2.7
Modulus, psi	4.53E + 05	5.00E + 05	4.82E + 05	4.99E + 05	5.19E + 05
MPa	3,127	3,449	3,324	3,440	3,580
<b>FLEXURAL</b>					
Strength, psi	13,920	15,515	14,500	15,080	16,530
MPa	96	107	100	104	114
Modulus, psi	1.02E + 06	1.17E + 06	1.13E + 06	1.18E+06	1.23E + 06
MPa	7,063	8,097	7,781	8,108	8,453
<b>COMPRESSIVE</b>					
Strength at yield, psi	7,067	7,200	7,267	7,700	8,100
MPa	49	50	50	53	56
Ultimate strength, psi	15,833	15,133	16,133	16,167	16,267
MPa	109	104	111	111	112
<b>HARDNESS @ 25°C,</b>					
D durometer	90	89	89	88	88
<b>GLASS TRANSITION TEMPERATURE,</b>					
° C	110	109	105	91	83
° F	230	228	221	196	181
<b>WATER ABSORPTION, WEIGHT GAIN AFTER:</b>					
28 Days in 25°C water, %	0.77	0.78	0.79	0.80	0.86
2 Hours in boiling water, %	0.74	0.82	0.86	1.0	1.1

\*Cure: gel at R.T. + 2 hours at 100°C

**CVC Thermoset Specialties**

844 North Lenola Road / Moorestown, NJ 08057 / Phone: 856-533-3000 / Fax: 856-533-3003 / [www.cvcthermoset.com](http://www.cvcthermoset.com)

## **HEALTH & SAFETY PRECAUTIONS**

ERISYS GE-11 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-11 for additional safety and handling information. The MSDS is revised as new data becomes available.

## **PACKAGING & AVAILABILITY**

ERISYS GE-11 is available in 55 gallon steel non-returnable drums (470 lbs. net) and 5 gallon plastic pails (40 lbs. net). Bulk deliveries are available on special request.

## **DISCLAIMER**

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