



EMEROX® Polyols Improve Your Potting Formulation's Cost and Sustainability

EMEROX Polyols are engineered for performance and sustainable by nature due to their high bio-based content. These hydrophobic polyol esters are designed to work in a range of polyurethane applications to offer chemical and hydrolytic resistance, reduce system cost, and meet environmental and supply chain sustainability objectives.

The EMEROX Polyols listed below are effective alternatives to hydroxyl functional polybutadiene for use in polyurethane potting compounds. They offer superior low temperature performance, low water solubility and moisture vapor transmission, excellent thermal stability, and good electrical properties.

EMEROX 14801 and EMEROX 14803 are engineered polyols that provide a flexible hydrophobic backbone with a low glass transition temperature for applications where increased hydrophobicity and low temperature performance is required. EMEROX 14511 is an engineered polyol with lower functionality that provides a slightly softer cured product where flexibility is advantageous.

PRODUCT NAME	HYDROXYL NUMBER	SPECIFIC GRAVITY	VISCOSITY cP @25°C	Tg (°C)	FN (Calc.)	BIO-BASED CONTENT (%)*	APPLICATION DESCRIPTION
EMEROX® 14511	110	1.14	1,500	-58	2.0	78	1 000 MW azelate linear diol for general purpose prepolymer CASE applications. PPG 1 000 alternative.
EMEROX® 14801	105	0.96	3,750	-59	2.2	94	1 000 MW for superior hydrophobic performance in CASE applications. Hydroxy-terminated polybutadiene alternative.
EMEROX® 14803	55	0.96	16,000	-54	2.2	95	2 000 MW for superior hydrophobic performance in CASE applications. Hydroxy-terminated polybutadiene alternative.

*USDA Certified Bio-based Product

Key Benefits

- Superior low and high temperature performance
- Hydrophobic structure with good chemical and moisture resistance
- Very low moisture vapor transmission rates
- Good electrical properties
- Comparable performance to petrochemical polyols, but with high renewable content
- Produced from well-established, readily available natural feedstocks
- Certified by the USDA BioPreferred® Program

Performance attributes of a potting compound utilizing EMEROX® I 45 I I or EMEROX® I 480 I with pMDI and butane diol in an unpigmented system which has been cured for 7 days at 25°C.

EMEROX® Polyol only

	EMEROX® I 45 I I	EMEROX® I 480 I
Viscosity, cP @ 25°C (ASTM D 2393)		
Polyol	1500	3750
Polyisocyanate	18	18
Initial Mixed	958	1560

Density (Lbs./Gal. (g/ml) @ 25°C)

Polyol	9.51 (1.14)	8.01 (0.96)
Polyisocyanate	10.10 (1.21)	10.10 (1.21)
Mixed	9.68 (1.16)	8.51 (1.02)

Rheology (@ 25°C)

Low shear	20 s ⁻¹ , cP	1435	2596
High shear	120 s ⁻¹ , cP	1422	2584

Compatibility with other Polyol Resins

PolyBD	Partial	Partial
Castor Oil	Incompatible	Compatible
Azelates	Compatible	Compatible
Adipates	Compatible	Incompatible

Mixed System/Cured Elastomer Physical Properties

Mix Ratio (Parts polyol to one Part polyisocyanate)

By Weight	1.89	1.62
By Volume	2	2

Gel Time (min.)

175 g @ 25°C	1.53	3.67
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Tg, °C (ASTM D3418)

	-14	-28
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Coefficient of Thermal Expansion(CTE), $\mu\text{m/m}^\circ\text{C}$, (ASTM E831)

$\alpha 1$ (below Tg)	79	110
$\alpha 2$ (above Tg)	224	209

Tensile Properties at 25°C (ASTM D638)

Tensile Strength (psi)	1190	3047
Tensile Modulus (psi)	1052	1690
% Elongation	343	142
Tear (pli)	301	561

Mixed System/Cured Elastomer (cont.)

	EMEROX® I 45 I I	EMEROX® I 480 I
Water Absorption & Transmission		
1 week (wt. % @ 75°C)	3.66	2.43
4 weeks (wt. % @ 75°C)	6.33	3.32
MVTR (g/m ² /day)	59.4	24.6

Hardness Development (Shore)

Cured 24 hours @ 70°C	83A / 38D	97A / 55D
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Electrical Properties

Dielectric Constant (ASTM D 150)

20 Hz	6.72	3.70
1 kHz	5.94	3.36
10 kHz	5.33	3.19
100 kHz	3.03	4.67
1 MHz	4.13	2.91
10 MHz	5.09	3.81

Dissipation Factor (ASTM D 150)

20 Hz	0.106	0.025
1 kHz	0.064	0.036
10 kHz	0.083	0.037
100 kHz	0.090	0.034
1 MHz	0.084	0.028
10 MHz	0.089	0.029

Resistivity (ASTM D257)

Surface Resistivity, Ohm	1.0×10^{12}	2.6×10^{12}
Volume Resistivity, Ohm-cm	1.2×10^{14}	3.6×10^{13}

Dielectric Strength (V/mil)

	111.5	117.0
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To request a sample or to find out more about our EMEROX® Polyols, contact polyols@emeryoleo.com or visit www.emeryoleo.com/polyols

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