

BOOST FORMULATION PERFORMANCE WITH NEW TOUGHENING TECHNOLOGIES

HYPRO® ETBN 1300X63 and HYPRO® ETBN 1300X68 reactive liquid polymers can help enable higher impact resistance and improved toughness in your formulations, while minimizing Tg and viscosity.

Our newest HYPRO® tougheners are 100% solid liquid rubbers used by formulators to improve the toughness, flexibility, adhesion, and impact resistance of thermoset resin systems, while maintaining compatibility with both standard epoxy resins and curing agents.

As a result of the products' unique design, formulators can utilize less of the HYPRO® tougheners within a formulation, versus traditional tougheners, which can make for greater efficiency in 1K and 2K industrial adhesives, 1K automotive adhesives, and composite prepreg applications.

PRODUCT BENEFITS

- Increase adhesive strength, fracture toughness and impact resistance
- Flexibility of formulation with lower viscosity
- Improve adhesion to oily surfaces
- Low loss of thermal resistance and modulus
- Low impact on formulation Tg
- Improved processability

MADE POSSIBLE



What makes HYPRO® ETBN tougheners different?

HYPRO® ETBN tougheners can help enhance toughness and impact resistance, while also offering greater flexibility in formulation design.

KEY PERFORMANCE FEATURES

100%

Elastomer Content

↑10%

Improvement in T_g compared to traditional RLP

↓30%

Reduction in viscosity

↓10%

Utilize 10% less RLP in formulation with improved results vs. traditional tougheners

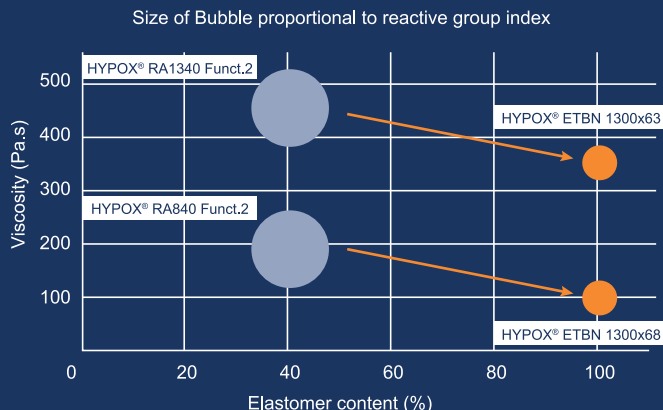
PRODUCT PROPERTIES

HYPRO® 1300X68 ETBN

Key data Epoxy index (Titration, ISO 3001) 0.37 -0.50 [Eq/kg]
 Viscosity at 52 °C (Falling-ball, ISO 12058-1) 10 000 - 20 000 [mPa.s]

HYPRO® 1300X63 ETBN

Key data Epoxy index (Titration, ISO 3001) 0.40 -0.55 [Eq/kg]
 Viscosity at 52 °C (Falling-ball, ISO 12058-1) 10 000 - 50 000 [mPa.s]



Properties*	Baseline formulation Untoughened**	Toughened with 7.5% of HYPRO® ETBN1300x68***	Toughened with 7.5% of HYPRO® ETBN1300x63***
Lap Shear Strength - Aluminium L165	3262.5 ± 275.5 psi 22.5 ± 1.9 MPa	3465.5 ± 261.0 psi 23.9 ± 1.8 MPa	3523.5 ± 101.5 psi 24.3 ± 0.7 MPa
Fracture Toughness G1C	285 ± 48 J/m ²	686 ± 28 J/m ²	712 ± 42 J/m ²
Flexural Elongation at Break	5.6 ± 0.8%	7.3 ± 0.9%	5.1 ± 0.5%
Max Flexural Strength	18.3 ± 0.8 ksi 126.1 ± 5.2 MPa	15.8 ± 0.2 ksi 109.1 ± 1.5 MPa	14.7 ± 0.7 ksi 101.3 ± 4.8 MPa
Tensile Elongation at Break	3.7 ± 0.2%	4.9 ± 0.7%	4.5 ± 0.2%
Max Tensile Strength	10.5 ± 0.2 ksi 72.3 ± 1.3 MPa	9.7 ± 0.4 ksi 67.2 ± 2.9 MPa	9.7 ± 0.4 ksi 67.2 ± 2.9 MPa
Tg - DSC Midpoint	289.4 °F 143 °C	284.0 °F 140 °C	276.8 °F 136 °C
Viscosity at 25°C (8.4wt% of LME in ARALDITE® GY250)	12,300 CP 12,300 mPa.s	16,200 mPa.s 16,200 CP	19,200 CP 19,200 mPa.s

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Americas

Huntsman Advanced Materials
 Americas Inc.
 10003 Woodloch Forest Drive
 The Woodlands, TX 77380, USA
 Tel: +1 888 564 9318

Asia Pacific & India

Huntsman Advanced Materials
 (Guangdong) Co., Ltd,
 Shanghai Branch Office
 455 Wenjing Road, Minhang District
 Shanghai 200245, P.R. China
 Tel: +86 21 3357 6588

Europe, Middle East & Africa

Huntsman Advanced Materials
 (Switzerland) GmbH
 Klybeckstrasse 200
 P.O. Box
 4002 Basel, Switzerland
 Tel: +41 61 299 1111