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Advanced Materials

HYPRO® 1300X40 ETBN#

Reactive Toughener and flexibilizer

DATA SHEET

Epoxy Terminated Butadiene-Acrylonitrile

Product Description

Hypro Reactive Liquid Polymers (RLP) are 100% solids liquid rubbers used to improve the toughness, flexibility, adhesion and impact resistance of thermoset resin systems including epoxies, vinyl esters, unsaturated polyesters, acrylics and urethanes.

HYPRO® 1300X40 ETBN is a styrene diluted epoxy terminated butadiene - acrylonitrile copolymer, 50% by weight styrene, 50% by weight ETBN. HYPRO® 1300X40 ETBN is used predominantly by blending with vinyl ester or unsaturated polyester resin systems to enhance toughness.

Applications

- Modifier for Unsaturated Polyester and Vinyl Ester Resins
- Additive for BMC (Bulk Molding Compound), SMC (Sheet Molding Compound), RTM (Resin Transfer Molding) and Vacuum Bagging/Infusion Systems
- End uses include Transportation, Electrical, Military, Recreational, Marine, Construction and Industrial Applications

Benefits

- Enhances the toughness and flexibility of thermoset resins
- Increases impact and crack resistance
- Improves durability (fatigue resistance)

Key data

Specified key data		
Viscosity at 25 °C (Brookfield)	**500 – 1 900**	**[mPa s]**
Acid number (titration)	**0 – 1.5**	**[mg KOH/g]**
Solid (not volatile) content	**48 - 52**	**[%]**

Specified key data are individually checked throughout and guaranteed.

Typical key data	
Specific gravity, 25 °C	0.945
Glass Transition Temperature	NA

Data which is described in this document as 'typical' is not analyzed on a regular basis and is given for information purposes only. Data values are not guaranteed or warranted unless if specifically mentioned.

The following Table shows some of the benefits that can be obtained when using HYPRO® 1300X40 ETBN in a typical vinyl ester formulation.

In addition to the brand name product denomination may show different appendices, which allows us to differentiate between our production sites: e.g. BD = Germany, US = United States, IN = India, CI = China, etc. These appendices are in use on packaging, transport and invoicing documents. Generally, the same specifications apply for all versions. Please address any additional need for clarification to the appropriate Huntsman contact.

Vinyl Ester Formulation Using HYPRO® 1300X40 ETBN

	1	2	3	4
Vinyl Ester	100	100	100	100
HYPRO® 1300X40 ETBN	0	15	20	30
Cobalt Naphthenate	0.5	0.5	0.5	0.5
MEK peroxide	2	2	2	2
CTBN Level, PHR	0	6.0	8.5	12.8
Tensile strength, MPa	42.1	47.4	47.7	33.9
Elongation, %	1.39	3.00	4.67	3.29
Modulus, GPa	3.29	2.22	1.82	1.61
*G_{1C} - J/M_2	110	460	740	940

**G1c is a measure of the energy required to fracture a material*

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Storage	HYPRO® 1300X40 ETBN should be stored in a dry place, preferably in the sealed original container, at temperatures between 2 and 40 °C. The product should not be stored exposed to direct sunlight. Keep away from food, drink and animal feeding stuff.
Handling precautions	HYPRO® 1300X40 ETBN is a 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. Butyl rubber gloves, full eye protection and protective clothing are recommended. Skin contact: Wash well with soap and water. Remove contaminated clothing and wash thoroughly before reusing. It is recommended that resin not be removed from skin with solvents since solvents increase contact and encourage penetration. Moreover, solvents of themselves dry and crack the skin. Eye contact: Flush immediately with large quantities of water. Contact a physician. Refer to the Safety Data Sheet on HYPRO® 1300X40 ETBN for additional safety and health information. The SDS is revised as new data becomes available.

Huntsman Advanced Materials
(Switzerland) GmbH
Klybeckstrasse 200
4057 Basel
Switzerland

Tel: +41 (0)61 299 11 11
Fax: +41 (0)61 299 11 12

www.huntsman.com/advanced_materials
Email: advanced_materials@huntsman.com