HUNTSMAN
Enriching lives through innovation

Advanced Materials

HYPRO® 2000X162 CTB#

Reactive Toughener and flexibilizer

DATA SHEET

Carboxyl-Terminated polyButadiene homopolymer

Product Description

HYPRO® reactive liquid polymers (RLPs) are 100% liquid rubbers used to improve toughness, flexibility, adhesion and impact resistance of thermoset resin systems including epoxies, vinyl esters, unsaturated polyesters, acrylics and urethanes.

HYPRO® 2000X162 CTB is a carboxyl-terminated butadiene homopolymer used predominantly as a reactant with a base thermoset resin to gain product performance improvements. These resultant pre-reacts (adducts) can be incorporated at various levels to suit the needs of your specific formulation

Applications

- Film and paste adhesives (structural and semi-structural applications)
- Coatings (solution, powder, waterborne)
- Polymeric intermediate for epoxies, vinyl esters, epoxy acrylates and phenolics
- End uses include aerospace, automotive, electrical/electronics, industrial, marine and construction applications

Benefits

- Enhances the toughness and flexibility of thermoset resins
- Improves adhesion to substrates that are difficult to bond to
- Increases impact and crack resistance
- Improves durability (fatigue resistance)
- Increases low-temperature mechanical properties
- Zero percent acrylonitrile content
- Provides Hydrophobicity

Key data

Specified key data

Viscosity at 27 °C (Brookfield)	**30 000 – 70 000**	**[mPa s]**
Carboxyl Content (Equivalents Per Hundred)	**0.037 – 0.053**	**[ephr]**
Heat loss	**0-1**	**[%]**

Specified key data are individually checked throughout and guaranteed.

Typical key data

Gardner	2 - 7
Appearance	Viscous amber liquid

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.

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.

HYPRO CTB, CTBN Standard Line of Products — Typical Properties

HYPRO Polymers	2000X162 CTB	1300 X31 CTBN	1300X13 CTBN
Acrylonitrile Content, %	0	10	26
Acid Number	25	28	32
EPHR*	0.045	0.05	0.057
Brookfield Viscosity, cP at 27ºC	60,000	60,000	500,000
Solubility Parameter, cal/cm^3 ^	8.14	8.46	9.15
Specific Gravity at 25ºC	0.907	0.924	0.960
Functionality	1.9	1.9	1.8
Molecular Weight, Mn (g.mol)	4,200	3,800	3,150
Glass Transition Temp. † ºC	-77	-66	-39

**Equivalents per hundred rubber.*

^Calculations based on molar attraction constants.

†Measured via DSC (differential scanning calorimeter).

Storage	HYPRO® 2000X162 CTB 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® 2000X162 CTB is not a primary skin irritant or 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. 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® 2000X162 CTB for additional safety and health information. The SDS is revised as new data becomes available.

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