

## **HYPRO® 2000X162 CTB Carboxyl-Terminated Butadiene**

### **Product Description**

HYPRO® reactive liquid polymers (RLPs) are 100% 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® 2000X162 CTB polymer 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)
- Composites
- Prepreg modifier
- End uses include aerospace, automotive, electrical/electronics, industrial and construction applications

### **Benefits & Features**

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

## Typical Properties

Property	HYPRO® 2000X162 CTB
Appearance	Viscous liquid, amber (2-7 Gardner Color)
Actives Level, %	100
Brookfield Viscosity, cP at 25°C	40,000 – 80,000
Carboxyl Content (Equivalents Per Hundred)	0.037 – 0.053

## HYPRO® CTB, CTBN and CTBNX Standard Line of Products — Typical Properties

HYPRO Polymers	2000X162 CTB	1300X31 CTBN	1300X8* CTBN	1300X13* CTB	1300X9 CTBNX	1300X18 CTBNX
Acrylonitrile Content, %	0	10	18	26	28	21.5
Carboxyl Content						
Acid Number	25	28	29	32	38	39
EPHR**	0.045	0.050	0.052	0.057	0.067	0.070
Brookfield Viscosity, cP at 27°C (81 °F)	60,000	60,000	135,000	500,000	160,000	350,000
Solubility Parameter, cal/cm <sup>3</sup> ^	8.14	8.46	8.82	9.15	8.87	8.99
Specific Gravity at 25°C (77 °F)	0.907	0.924	0.948	0.960	0.955	0.961
Functionality	1.9	1.9	1.8	1.8	2.4	2.4
Molecular Weight, Mn	4,200	3,800	3,550	3,150	3,600	3,400
Glass Transition Temp, °C (°F) †	-77 (-107)	-66 (-87)	-52 (-62)	-39 (-38)	-52 (-62)	-46 (-51)

\*An FDA version of this polymer is also available.

\*\*Equivalents per hundred rubber.

^Calculations based on molar attraction constants.

†Measured via DSC (differential scanning calorimeter).

## Storage

**HYPRO® 2000X162 CTB** material should be stored in a dry place, in the sealed original containers, at temperatures between **+2°C and +40°C (+35.6°F and +104°F)**. Under these storage conditions, the product has a shelf life of **12 months** (from date of manufacture). The products should not be exposed to direct sunlight.

### Precautionary Statement

Huntsman Advanced Materials Americas LLC maintains up-to-date Safety Data Sheets (SDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest SDS to determine possible health hazards and appropriate precautions to implement prior to using this material.

#### First Aid!

Refer to SDS as mentioned above.

**KEEP OUT OF REACH OF CHILDREN**

**FOR PROFESSIONAL AND INDUSTRIAL USE ONLY**

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