

An Emerald Performance Materials Company

Hypro[®] Reactive Liquid Polymers 2000X162 CTB

Carboxyl Terminated Butadiene

CAS #68891-79-2

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. These materials are a family of butadiene homopolymers and butadiene-acrylonitrile copolymers with functionality at the chain ends. Functional groups are carboxyl (COOH), amine (NH or NH₂), methacrylate or epoxy. The acrylonitrile content varies in these polymers from zero to 26% which directly affects the solubility and glass transition temperature (T_g) of the materials.

Hypro 2000X162 CTB is a carboxyl terminated butadiene homopolymer used predominately 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. Hypro 2000X162 CTB contains no acrylonitrile.

BENEFITS/FEATURES

- Enhances Toughness/Flexibility of Thermoset Resins
- Improves Adhesion to Difficult to Bond to Substrates
- Increases Low Temperature Mechanical Properties
- Increases Impact/Crack Resistance
- Improves Durability (Fatigue Resistance)
- Zero Percent Acrylonitrile Content
- Provides Hydrophobicity

TYPICAL USES

- Film and Paste Adhesives (Structural and Semi-Structural Applications)
- Composites
- Pre-Preg Modifier
- End uses include Aerospace, Automotive, Electrical/Electronics, Industrial and Construction Applications

TYPICAL PROPERTIES

Appearance	Liquid polymer, amber in color (2 - 7 on the Gardner Color Scale)
Actives Level	100%
Brookfield Viscosity, mPa.s or cP @ 25° C	40,000 - 80,000
Carboxyl Content (Equivalent Per Hundred)	0.037 - 0.053

STORAGE & HANDLING

To ensure optimal product performance, store material in original unopened containers at or below 50°C.

Hypro CTB, CTBN and CTBNX Standard Line of Products —Typical Properties						
Hypro Polymers	2000X162 CTB	1300X31 CTBN	1300X8* CTBN	1300X13* CTBN	1300X9 CTBNX	1300X18 CTBNX
Acrylonitrile Content, %	0	10	18	26	18	21.5
<u>Carboxyl Content:</u>						
-Acid Number	25	28	29	32	38	39
-EPHR**	0.045	0.050	0.052	0.057	0.067	0.070
Brookfield Visc. mPa.s or cP @ 27°C (81°F)	60,000	60,000	135,000	500,000	160,000	350,000
Solubility Parameter (cal/cm ³) ^{1/2***}	8.14	8.46	8.82	9.15	8.87	8.99
Specific Gravity 25°/25° (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., Tg, °C****	-77	-66	-52	-39	-52	-46

* 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).



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PACKAGING & AVAILABILITY

Hypro 2000X162 CTB is available in 55 gal. non-returnable steel drums (net weight 400 lbs.) and 5 gal. plastic pails (35 lbs. net). For further information regarding these materials or any other CVC Thermoset Specialties product, please contact your local Sales Representative or our Customer Service Department at 800-296-0040.

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