CVC Thermoset Specialties

An Emerald Performance Materials Company

TECHNICAL BULLETIN

Hypro® Reactive Liquid Polymers 1300X47 CTBN
Carboxyl Terminated Butadiene-Acrylonitrile in Styrene
CAS #68891-46-3/100-42-5

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 NH_2), methacrylate or epoxy. The acrylonitrile content varies in these polymers from zero to 26% which directly affects the solubility and glass transition temperature (Tg) of the materials.

Hypro 1300X47 CTBN is a carboxyl terminated butadiene-acrylonitrile copolymer in styrene used predominately as a modifier for a base thermoset resin to gain product performance improvements. These resultant pre-reacts or adducts can be incorporated at various levels to suit the needs of your specific formulation.

TYPICAL USES

- Film and Paste Adhesives (Structural and Semi-Structural Applications)
- Composites
- Thermoset Compatibilizer
- End uses include Automotive, Electrical/Electronics, Marine, Construction and Industrial 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	3,500 - 10,000
Total Solids	79 - 85

BENEFITS/FEATURES

- Enhances Toughness/Flexibility of Thermoset Resins such as Epoxies
- Improves Adhesion to Difficult to Bond to Substrates
- Increases Low Temperature Mechanical Properties
- Increases Impact/Crack Resistance
- Improves Durability (Fatigue Resistance)
- Lowest Acrylonitrile Containing CTBN
- Provides Hydrophobicity

STORAGE & HANDLING

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

CVC Thermoset Specialties
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Hypro® 1300X47 CTBN

Hypro™ CTB, CTBN and CTBNX Standard Line of Products —Typical Properties							
Hypro Polymers	**2000X162 CTB**	**1300X31 CTBN**	**1300X47 CTBN**	**1300X8* CTBN**	**1300X13* CTBN**	**1300X9 CTBNX**	**1300X18 CTBNX**
Acrylonitrile Content, %	0	10	10	18	26	18	21.5
Carboxyl Content:							
-Acid Number	25	28	28	29	32	38	39
-EPHR**	0.045	0.050	0.050	0.052	0.057	0.067	0.070
Brookfield Visc. mPa.s or cP @ 27ºC (81ºF)	60,000	60,000	6,000	135,000	500,000	160,000	350,000
Solubility Parameter $(cal/cm^3)^{1/2}$***	8.14	8.46	8.46	8.82	9.15	8.87	8.99
Specific Gravity 25º/25º (77ºF)	0.907	0.924	0.924	0.948	0.960	0.955	0.961
Functionality	1.9	1.9	1.9	1.8	1.8	2.4	2.4
Molecular Weight, Mn	4,200	3,800	3,800	3,550	3,150	3,600	3,400
Glass Transition Temp., Tg,ºC****	-77	-66	-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).

PACKAGING & AVAILABILITY

Hypro 1300X47 CTBN is available in 55 gal. non-returnable steel drums (net weight 425 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.

DISCLAIMER

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