

# **HYPRO® 1300X16 ATBN Amine-Terminated Butadiene-Acrylonitrile**

## **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® 1300X16 ATBN polymer is an amine-terminated butadiene-acrylonitrile copolymer used predominantly with other amine-functional compounds to improve product performance when added to thermoset resin systems. The amine structure in HYPRO® 1300X16 ATBN polymer is based on N-aminoethylpiperazine (N-AEP).

## **Applications**

- Structural adhesive paste
- Composites
- Coatings and linings for corrosion resistance
- Construction joint sealers and mastics
- End uses include aerospace, construction, composites and industrial applications

## **Benefits & Features**

- Enhances the toughness and flexibility of thermoset resins
- Improves adhesion to substrates that are difficult to bond to
- Mid-range acrylonitrile-containing ATBN (18%) improves epoxy compatibility
- Increases low-temperature mechanical properties
- Increases impact and wear resistance

## **Typical Properties**

Property	HYPRO® 1300X16 ATBN
Appearance	Viscous liquid, amber (3-8 Gardner Color)
Actives Level, %	100
Brookfield Viscosity, cP at 27°C (81 °F)	150,000 – 250,000
Amine Equivalent Weight, g/eq	800 – 1000

### HYPRO ATBN Standard Line of Products —Typical Properties

HYPRO® Polymers	2000X173 ATB	1300X21 ATBN	1300X16 ATBN	1300X45 ATBN	1300X35 ATBN	1300X42 ATBN
Acrylonitrile Content, %	0	10	18	18	26	18
Amine Equivalent Weight (AEW), g/eq*	950	1,200	900	1,850	700	450
Amine Value	59	47	62	30	80	125
Brookfield Viscosity, cP at 27°C (81°F)	180,000	160,000	200,000	375,000	500,000	100,000
Specific Gravity at 25°C (77 °F)	–	0.938	0.956	–	0.978	0.942
Glass Transition Temp., °C (°F) **	–	-65 (-85)	-51 (-60)	–	-38 (-36)	-59 (-74)
Free Amine Level, %	4	2	5	< 0.1	7	10

\*For secondary amine-terminated polymers, AEW value may be used as Amine Hydrogen Equivalent Weight, whereas for HYPRO® 1300X42 ATBN polymer, a primary amine-terminated material, Weight per Active Hydrogen is AEW/2.

\*\*Measured via DSC (differential scanning calorimeter).

### Typical Epoxy Formulation Using HYPRO® 1300X16 ATBN Polymer

Formulation		1	2
DGEBA Liquid Epoxy (EEW-190)		100	100
Polyamidoamine		60	56.4
Calcium Carbonate		30	30
HYPRO® 1300X16 ATBN		–	30
Cured Properties			
	Cure Schedule	Test Temp	Result
Lap shear strength, psi (MPa)	2 weeks at 25 °C	at-40 °C	1,370 (9.45)
		at 25 °C	2,260 (15.58)
	2 hours at 60 °C + 1 hour at 100 °C	at-40 °C	1,600 (11.03)
		at 25 °C	2,500 (17.24)
T-peel strength, pli (N/mm)	2 weeks at 25 °C	at-40 °C	2,148 (14.81)
		at 25 °C	3,128 (21.57)
	2 hours at 60 °C + 1 hour at 100 °C	at-40 °C	2,550 (17.58)
		at 25 °C	2,550 (17.58)
T-peel strength, pli (N/mm)	2 weeks at 25 °C	at 25 °C	3.3 (0.579)
	2 hours at 60 °C + 1 hour at 100 °C	at 25 °C	35.0 (6.14)
			4.2 (0.736)

Substrate: sandblasted cold rolled steel

### Storage

**HYPRO® 1300X16 ATBN** 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 **6 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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