

EPOCAST® 1614-A3 Epoxy Structural Syntactic Adhesive

Product Description

EPOCAST® 1614-A3 epoxy structural syntactic adhesive is a flame-retardant, low-density, frozen, one-component material used to reinforce honeycomb composite parts requiring high compressive strength at elevated temperatures up to 350 °F (177 °C). This material has been qualified to NTR-MS 1301A Ty II, CL IV, GR F and RMS 027 Type XII specifications, and meets the requirements of BMS5-28, Ty 14, CL 1 & 2 and other specifications. EPOCAST® 1614-A3 epoxy structural syntactic adhesive does not contain any SVHC (substance of very high concern) as defined under REACH.

Applications

EPOCAST® 1614-A3 epoxy structural syntactic adhesive is suitable for aerospace applications, which require high strength and low density, in the areas of honeycomb core reinforcement for structural bonding and joining, fastener or attachment potting and panel edge reinforcing, etc.

Features

- Pre-mixed and frozen
- Long shelf life at 0 °F (-18 °C)
- Long working life up to 16 hours (depending on process requirements)
- High compressive strength at ambient and elevated temperatures up to 350 °F (177 °C)
- Excellent hot/wet performance
- Excellent anti-crack performance
- Low density
- Flame-retardant
- Low coefficient of thermal expansion
- No SVHC as defined under REACH

Typical Properties as Supplied

Property	Test Method	Value
Appearance	Visual	Reddish brown paste
Wet Density, g/cm ³ (lb/ft ³)	ASTM D1875	< 0.75 (46.8)
Viscosity at 77 °F (25 °C), cP	ASTM D2196	Paste
Extrusion rate at 77 °F (25 °C) after 8 hours, g/min	OEM	> 1000
Sag resistance, inch (mm)	OEM	≤ 0.1 (2.54)

Processing

EPOCAST® 1614-A3 epoxy structural syntactic adhesive must be thawed and allowed to reach ambient temperature (70 °F – 80 °F) before use. Cartridges placed at ambient temperature will typically thaw in 2 to 4 hours, whereas patties may require 3 to 4 hours. Thawing may be accelerated by placing a frozen cartridge or patty in a 125 °F (52 °C) oven for one hour. For optimum performance, it is recommended that EPOCAST® 1614-A3 epoxy structural syntactic adhesive to be used in a dry environment below 60% R.H. High humidity or moisture may have a negative impact on cure and performance. To prevent moisture contamination, do not store uncapped cartridges and keep patty material tightly wrapped in plastic film. Never immerse patties in water.

Cure cycle

Cure cycle refers to the measured time and temperature of the material as determined by thermocouple. Typical cure schedules involve heating the material at a rate of 3 – 7 °F (2 – 4 °C) from room temperature to 260 °F (127 °C) for 90 minutes, or to 350 °F (177 °C) for 60 minutes. Applications that desire minimal shrinkage may apply slower ramp rates.

Typical Physical Properties After Cure

(Unless otherwise stated, the data were determined with typical production batches using standard test methods. They are typical values only, and do not constitute a product specification.)

Property		Test Method	Value
Cured Density, g/cm ³ (lb/ft ³)		ASTM D1622	0.70 - 0.75 (43.7 - 46.8)
Compressive strength, Ksi (MPa)	at 73 °F (23 °C)	ASTM D695	13 - 16 (89.6 - 110.3)
	at 300 °F (149 °C)		8.0 - 10.0 (55.1 - 68.9)
	at 350 °F (177 °C)		7.0 - 9.0 (48.2 - 62.0)
	at 73 °F (23 °C) after hot/wet exposure ²		11 - 13 (75.8 - 89.6)
	at 265 °F (129 °C) after hot/wet exposure ²		6.5 - 7.5 (44.8 - 51.7)
Tensile lap shear strength, Al/Al, at 73°F (23°C), Ksi (MPa)		ASTM D1002	1.2 – 1.5 (8.2 - 10.3)
Self-extinguishing time, seconds	15-second horizontal burn	FAR 25.853	< 5
	12-second vertical burn		< 15
Tg, TMA, °F (°C)	cured 1hour at 350 °F (177 °C)	ASTM E1824	372 (190)
Tg, DMA, °F (°C)	cured 1hour at 350 °F (177 °C)	ASTM D4065	385(196)
CTE, below Tg, μm/m·C	cured 1hour at 350 °F (177 °C)	ASTM E831	34

¹45 days at 160 °F / 85% RH per ASTM D5229

Storage

When stored in a dry place in its original sealed container at a temperature of 0 °F (-18 °C) or lower, EPOCAST® 1614-A3 epoxy structural syntactic adhesive has 6-month shelf-life from date of manufacture (supplied under Huntsman standard certification. Actual expiration date may differ based on customer specification). Uncured product 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 MSDS 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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