VITRIMAX

130 °C VITRIMER MATRIX FOR STRUCTURAL APPLICATIONS

T 130

TECHNICAL DATA SHEET

DESCRIPTION

Mallinda's vitrimer resins enable circularly recyclable composite structures, and the option of post-cure processing provides unprecedented manufacturing flexibility. Like traditional thermoset prepreg resins, **VITRIMAX** resins come in 2 parts which can be mixed and applied using standard prepreg practices. Once cured, these materials produce highly crosslinked network polymers for structural stability. However, unlike traditional thermoset prepreg, **VITRIMAX** resins enable post-cure processing to change shape. After impregnation, the prepreg can be partially or fully cured for extended shelf life at room temperature and reduced in-mold time during production. **VITRIMAX** relies on T_g-dependent covalent chemical bond welding at the surface of laminates that creates a fully crosslinked thermoset and resultant stability. Akin to thermoplastic prepreg, **VITRIMAX** enables fast and reliable heat welding, via compression molding, of prepreg laminates, while the covalent bonds yield the strength of the thermoset network. Unlike thermoplastic prepreg, **VITRIMAX** does not require long melting and cooling periods for part production, simply heat to the defined T_g range to activate bonding.

APPLICATIONS AND USE

VITRIMAX T130 is designed for high-performance, moderate temperature sporting, automotive & industrial applications. **VITRIMAX** T130 has a glass transition temperature of 130 °C, while having the added benefit of full end of life recyclability.

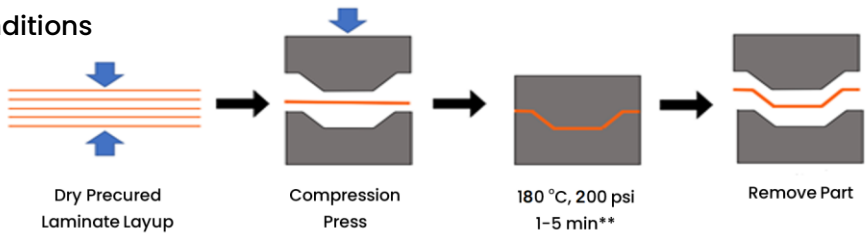
BENEFITS AND FEATURES

- Pre-cured prepreg exhibits indefinite ambient shelf-life
- Rapid and high throughput, out-of-autoclave, compression molding
- Cost competitive
- Complete end-of-life recyclability of resin and fiber
- Tg of 130 °C

CURE AND HANDLING

The suggested oven cure is 150 °C for 1h followed by 180°C for 1 h.

Rapid Heat Mold Conditions



**Dwell time depends upon the number of plies in a laminate:
5 plies: 1 minute (180 °C, 200 psi) / **15 plies**: 3 minutes (180 °C, 200 psi) / **30 plies**: 5 minutes (180 °C, 200 psi)

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RESIN PHYSICAL PROPERTIES

PHYSICAL PROPERTIES	VALUE	UNIT	TEST
Color	yellow to red	-	-
Mix Ratio	2.5:1	imine:epoxy	-
Initial Viscosity at 70 °C	30,000	cP	ASTM D2196
Pot life at 70 °C	90	minutes	-
Cured Resin Density	1.05	g/cm³	ASTM D792-20
Moisture Uptake	<1	Weight %	ASTM D570
Flexural Strength	135	MPa	ASTM D790
Flexural Modulus	3420	MPa	ASTM D790
Cured Resin Tg	130	°C	ASTM 7028

CURED CARBON FIBER PREPREG PROPERTIES

PHYSICAL PROPERTIES	VALUE	UNIT	TEST
Fiber	2585-12K	-	-
Weave	Unidirectional	-	-
Fiber Mass	139	g/m²	-
Nominal Cured Ply Thickness	0.15	mm	-
Nominal Fiber Volume	62	%	-
Fiber Density	0.93	g/cm³	-
Glass Transition Temperature	130	°C	ASTM D7028
Tensile Strength	250	ksi	ASTM D3039
Tensile Modulus	16.5	msi	
Flexural Strength	123	ksi	ASTM D7264
Flexural Modulus	18	msi	
Compressive Strength	130	ksi	ASTM D3410-16
ILSS	10	Ksi	ASTM D2344

STORAGE AND HANDLING

Shelf Life: Mallinda's **VITRIMAX** T130 resin has a shelf life of 1 year if left unopened. The resin should be stored in dry storage temperature of 5-60 °C.

Disposal of any unused materials should be in accordance with state and federal regulations. **VITRIMAX** T130 offers full end of life recyclability for reuse of all materials.

PRECAUTIONS FOR USE

Typical preventative measures should be taken when handling vitrimer resins and fibrous materials. Airborne fibers as a result of sawing, grinding, etc. can present health hazards. It is advised that the user, prior to interaction with the materials, observes the guidelines set forth in the Material Safety Data Sheet available upon request for this product. Users of the product are advised to wear clean, disposable nitrile gloves which provide protection as well as reduce the possibility of contamination of the material.

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