

GMS EP-290 PREPREG

Product

GMS Composites EP-290 is a nano-toughened epoxy resin matrix prepreg with long shelf life. The product has a versatile curing cycle from 100°C or as high as 150°C, thus enabling the product to be used to produce a wide range of composite items, from large structures to numerous small components. EP-290 is available in a range of substrates such as carbon, glass or aramid. This nano-toughened system has outstanding fracture properties and resistance to microcracking. The prepreg has good flow and is of medium tack.

Applications

EP-290 can be used to produce structural components with carbon, glass or aramid fibres. The versatility of EP-290 means that large complex structures, as well as, small basic components can be produced. It is possible to utilise EP-290 in a number of industries and applications such as marine, sports and leisure, industrial components, automotive and wind turbine blades.

Features

- ◆ **Variable cure cycle 100°C – 150°C**
- ◆ **Good surface finish**
- ◆ **Suitable for a range of structures and processes**
- ◆ **Nano-Toughened**
- ◆ **Excellent shelf life**
- ◆ **Wide range of fibre substrates available**
- ◆ **Made in Australia**

Curing

The versatility of GMS Composites EP-290 means a range of cure cycles, pressures and ramp up rates can be adopted all of which will depend greatly on the part being produced. Below is a guide to cure cycles.

Temperature (°C)	Time
100	4 hrs
120	2 hrs
130	1 hr
150	30 min

Heat ramp up rate – 2°C / min
Pressure – 1 bar

Gel Time

Hot plate

Temperature (°C)	Time (min)
100	40 – 42
110	21 – 23
120	10 – 11
130	6 - 7
140	3 - 4

Values are indicative of small samples of neat resin formulation. Gel times may vary significantly in composites depending on fibre content and laminate thickness.

Properties

Properties of cured, neat formulation. Cure cycle 30min at 150°C	Unit	Value
Flexural Strength	MPa	120 - 130
Elongation at flexural strength	%	6.0 – 7.0
Flexural Modulus	MPa	2600 - 2800
T _g (DSC, 10 K/min)	°C	115 - 120
Fracture Toughness K _{1c}	MPa√m	1.80 – 2.0
Fracture Energy G _{1c}	J/m ²	1100 - 1200
Water Absorption (10 days H ₂ O, 23°C)	%	0.46 – 0.52

Properties of cured, reinforced formulation. 12 layers of 425gsm UD e-glass 62-68% fibre volume Cure cycle 30min at 150°C	Unit	Value
Fracture Energy G _{1c}	J/m ²	1200 - 1500
Properties of cured, reinforced formulation. 8 layers of 375gsm Carbon 5H Satin 55-60% fibre volume Cure cycle 30min at 150°C		
Fracture Energy G _{1c}	J/m ²	1600 - 1900

Shelf Life

Room temperature (23°C)	> 5 weeks
Refrigerated (-18°C)	12 months

Handling

Customers should ensure appropriate workplace OH&S guidelines are followed when working with this product. Appropriate measures should be taken to avoid contact with skin and eyes. Avoid inhalation of dust or fumes that may be released or created when machining, cutting or curing.

IMPORTANT

All information in this publication is considered accurate and to the best of knowledge of GMS Composites. GMS Composites reserves the right to implement changes and alterations to our products from time to time without giving prior notice. All specifications, weights and capacities in this brochure are approximate only and are included as measure of past performance and do not constitute a condition, warranty or guarantee of future performance. Customers should make their own assessment as to the suitability of this product for their own condition of use. No liability can be accepted in respect to the use of GMS Composites products in conjunction with other materials. Any advice and/or recommendations given by GMS Composites and its employees is given in good faith and is acted upon or followed by the customer entirely at their own risk.