

GMS EP-620 PREPREG

Product

GMS Composites EP-620 prepreg is a special epoxy resin matrix system with long shelf life and high elongation. EP-620 is designed for composite applications requiring high energy absorption and impact resistance. The product has a versatile curing cycle from as low as 80°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-620 is available in a range of substrates such as carbon, aramid, s-glass, polyethylene or e-glass. The prepreg has good flow and the tack of EP-620 can be varied.

Applications

When combined with fibres such as carbon, aramid, s-glass or polyethylene, EP-620 can be used to produce items requiring energy absorption and impact resistance such as ballistics components, automotive and motorsport products, marine components subject to impact, etc. These products have applications in industries such as defence, military, personal protection, vehicle protection, infrastructure shielding, motorsport, transport and marine. The versatility of EP-620 means that large complex structure as well as small basic components can be produced.

Features

- ◆ **Variable cure cycle 80°C – 150°C**
- ◆ **Very high impact resistance**
- ◆ **Suitable for a range of components and processes**
- ◆ **Excellent shelf life**
- ◆ **Wide range of fibre substrates available**
- ◆ **Made in Australia**

Curing

The versatility of GMS Composites EP-620 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
80	12 hours
90	8 hrs
100	4 hrs
110	2 hr 30 min
120	1 hr
130	30 min
140	25 min
150	20 min

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

Gel Time

Hot plate

Temperature (°C)	Time (min)
80	210 – 240
90	100 – 160
100	35 - 45
110	22 - 30
120	10 - 15
140	3 - 6

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 1hrs at 120oC	Unit	Value
Flexural Strength	MPa	105 - 115
Elongation at flexural strength	%	5.2 – 5.7
Ultimate Strength	MPa	80 - 90
Ultimate Elongation	%	10.5 – 11.5
Flexural Modulus	MPa	2850 – 3050
Tg (DSC, 10 K/min)	°C	65 - 70
Fracture Toughness K _{1c}	MPa√m	2.20 – 2.35
Fracture Energy G _{1c}	J/m ²	1400 - 1550
Tensile Strength	MPa	60 – 70
Elongation at tensile strength	%	3.0 – 4.0
Ultimate Strength (tensile)	MPa	50 - 60
Ultimate Elongation (tensile)	%	8.5 – 10.0
tensile Modulus	MPa	2900 - 3100

Shelf Life

Room temperature (23°C)	> 6 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 accept 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.