

## GMS BP-190 PREPREG

### Product

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GMS Composites BP-190 is a formulated Bismaleimide matrix prepreg, with long out life. The product is suitable for continuous use up to 200°C. BP-190 has been developed for the manufacture of high performance composite tools. After initial curing in an autoclave the tool can be demoulded and cured in a fan forced oven as a free standing component.

### Applications

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BP-190 can be used to produce advanced composite structures and tools with carbon. It can be used in areas where high temperature resistance is crucial and is suitable to produce large, complex structures as well as small basic components.

### Features

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- ◆ Heat performance up to 300°C
- ◆ Long term service life to 200°C
- ◆ Good toughness
- ◆ Excellent Mechanical properties at ambient and elevated temperatures
- ◆ Good humidity resistance
- ◆ Closely matches thermal expansion of composite parts
- ◆ Made in Australia

### Curing

The versatility of GMS Composites BP-190 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 shows the effect temperature and time has on the properties of the material.

Temperature (°C)	Time	Tg (°C) - DSC7
200	2 hrs	165
200	6 hrs	220
200	10 hrs	235
250	2 hrs	280
250	4 hrs	300
250	6 hrs	310

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

### Gel Time

Hot plate

Temperature (°C)	Time (min)
100	1000
150	60 - 100
200	3 - 5
250	< 1 min

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

### Cure Procedure\*\*

Thin laminates less than 12mm

1. Apply vacuum of 80kPa as a minimum and 100kPa autoclave pressure.
2. Heat to 120°C at 1 - 2°C / minute and hold for 1 hour.
3. Increase pressure to 585kPa and vent vacuum
4. Continue heating to 180°C at 1 - 2°C / minute and cure for 4 hours
5. Cool to or below 50°C at 3°C / minute before releasing pressure

### Post Cure Procedure in free standing oven\*\*

From ambient increase oven temperature to 200°C at a rate of 3 – 6°C / minute and cure for 2 hours. Then cure to 250°C at a rate of 1°C / minute and cure for 6 hours.

\*\*Cure and post cure procedures are to be used as a guide only. Customers need to conduct their own cure evaluation for their particular job.

### Properties

Properties of cured composite at above cure rates	Unit	Value
Reinforcement – AS-4-12K, 65 V/0		
Short Beam Shear Strength 25°C	MPa	122
177°C dry	MPa	82
177°C wet*	MPa	53
232°C dry	Mpa	78
Flexural Strength 25°C	Mpa	1860
177°C dry	Mpa	1510
177°C wet*	Mpa	1120
Flexural Modulus 25°C	Mpa	145
177°C dry	Mpa	145
177°C wet*	Mpa	150

\*Wet conditioning – 2 weeks @ 70°C, 95% R.H.

### Shelf Life

Room temperature (23°C) > 4 weeks  
 Cool room (1°C – 5°C) > 6 months  
 \* Do not store below 1°C

## **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.

Do not store this product below 1°C.  
Do not freeze this product.

### IMPORTANT

All information in this publication is considered accurate and to the best of knowledge of GMS Industrial. GMS Industrial 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 Industrial products in conjunction with other materials. Any advice and or recommendations given by GMS Industrial and its employees is given in good faith and is acted upon or followed by the customer entirely at their own risk.