



## Prepreg 4.3 oz IM Unidirectional Fabric

Part # - 3114

12" Wide. One of our most popular unidirectional carbon fiber fabrics in prepreg form. Identical to part #2596, this prepreg offers the advantages of pre-impregnation of an epoxy resin system. The material can be stored, shipped and handled at room temperatures and is cured using ramp up schedule requiring at most 310°F. Resin content 37.00% +/- 2%.

### Prepreg Overview:

Prepreg fabrics are pre-impregnated with an epoxy resin system. As a result, nearly perfect resin content and maximum, repeatable strength properties are attainable. When properly fabricated, parts made with Fibre Glast prepregs will have a clear shine and be free of air bubbles. Although prepreg material addresses many of the nagging challenges of composite fabrication, the user's fabrication techniques will directly affect the finished properties and cosmetics.

Fibre Glast prepregs are easy to handle and are able to be stored, shipped and handled at room temperatures. These prepregs have a shelf life of 12 months when the maximum storage temperature does not exceed 75°F, and 6 months when it does not exceed 90°F. There are 3 recommended cure cycles for Fibre Glast prepregs. All 3 will produce similar properties. Proper fabrication does require vacuum bagging and oven curing or vacuum bagging and curing in an autoclave.

All curing cycles begin with a temperature ramp up and end with a ramp down. The difference is the target temperature and the amount of time required for a complete cure. Always ramp up at a rate of no more than 5°F per minute until the target temperature is attained. Maintain the target temperature throughout the cure cycle and then ramp down at a rate of less than 5°F per minute to at least 150°F (66°C) before removing from the oven. Resin content 37.00% +/- 2%.

Fibre Glast prepregs are also environmentally friendly as they are solvent and MDS free. However, safety precautions are still necessary for handling, including eye and skin protection as well as excellent ventilation.

### Carbon Fiber Overview:

Graphite fibers contain up to 95% carbon and yield the highest tensile strength in the FRP industry. These fibers woven together form graphite fabric. These fabrics offer higher strength and stiffness-to-weight ratios than any other commonly available reinforcements. This unidirectional fabric is non-woven. Consequently, there is no crimping of the fibers and only minimal binder is used. Polyester fill threads on one side further reduce crimp potential. This results in the highest property unidirectional dry reinforcement available. To maximize the fiber properties we recommend using only epoxy or vinyl ester resin, although polyesters will bond to the fabrics. Our 4.3-ounce version is an intermediate modulus fabric with a tensile modulus of more than 24 MSI, and is ideally suited for aerospace and racing applications where maximum single-directional properties are crucial.

### Carbon Fiber Properties

Warp Raw Material	12K Tow
Weave Pattern	Unidirectional, Non-Woven
Fabric AreWeight	4.3 oz/ yd <sup>2</sup> (139 gsm approx.)
Full Roll Length	100 yards (typical)
Strength (KSI)	800-820
Modulus (MSI)	40
Nominal Thickness	.006 inches
Fabric Width	12 ± .25/-0 inches

### Neat Resin Properties

Density (g/cc)	1.21
Tg (°F/°C) (from G" DMA curve)	255 / 124
Tensile Modulus (ksi/GPa)	410 / 2.8
Tensile Strength (ksi/MPa)	11.5 / 79.0
Elongation at Break (%)	4.5
Tg after 24-Hr Water-Boil (°F/°C)	169° / 76°
Water Absorption %	3.9

### Cure

Target Temperature	Hold For
310°F (154°C)	1 Hour
290°F (143°C)	2 Hours
270°F (132°C)	4 Hours