



More about Prepreg Technologies

The two major benefits from the use of prepregs in boat construction are lighter weight and greater strength. Weight is controlled by regulating the amount of resin in the laminate. Each boat is designed with a fixed laminate schedule for the cloth, but the actual resin content in a wetpreg boat is a variable depending on application technique, temperature, and humidity. Using prepreg materials results in a consistent laminate with the correct (minimum) amount of resin already applied. More resin, which is inevitable in a wetpreg or infused boat, simply gives you more weight, not a stronger boat. The strength is in the fibers, resin is simply in the matrix to hold the fiber bundles in alignment. More resin than is necessary to hold the fibers is wasted weight.

At 330 square meters for the hull shell of a 106 foot sailing yacht, and 260 square meters for the deck, this translates into a weight savings of over 840 kilos compared to wetpreg, and 958 kilos compared to infused. The projected weights for the boat 'off the mold' are:

Prepreg: 4,277.5 kg (9,410 lbs.)
Wetpreg: 5,118.25 kg (11,260 lbs.)
Infused: 5,236.25kg (11,519 lbs.)

Reducing the resin content of the laminate also actually increases the interlaminar shear properties due to better fiber-to-fiber contact. This shear strength advantage results in greater stiffness of the laminate as well as the total structure of the boat. The shear strength increase is also a safety factor as it rates heavily in impact situations.

Prepreg laminates are also less porous than those of wetpreg laminates. This factor results in less moisture pick-up, which can be significant over the life of the boat. Boats that don't accumulate moisture over their lifetime will weigh less and be faster than their wetpreg counterparts.

An additional benefit to using prepreg is cosmetic; a boat that has been baked at 100 degrees C (212 degrees F) will remain stable in the hot summer sun, where dark painted topsides can reach 150 degrees F. This means that the topsides of a prepreg boat will be smoother and fairer, and require less maintenance than a boat cured at a lower temperature. Prepreg's only disadvantage is a slightly higher material and labor application cost, resulting in a price premium of about 15% compared to wetpreg.