

## Nearly Stitch-free and Fancy



**F**IFTEEN TIMES STRONGER THAN STEEL (weight for weight), tougher than old boots, light as a feather, great profile (low stretch) and white.... After extensive trials, a new sail membrane created by Dimension-Polyant is now ready for the challenge of giving the superyacht industry new, improved “wings.” The company, market leaders in sailcloth manufacture, claims to have made a breakthrough in sail technology by producing D4<sup>®</sup> sail membrane with Dyneema<sup>®</sup>, “the world’s strongest fiber.” The Dyneema fiber was discovered accidentally in 1967 and is used, among other things, to stop bullets (bulletproof vests, VIP cars), mend wounds (sutures), build oil tankers and make snowboards. The D4 membrane was created by Brad Stephens and Bob Fraser of Fraser Sails in 1996 and was acquired by Dimension-Polyant in 2004.

Due to the high processing temperature involved during the production, it was not previously possible to incorporate Dyneema fiber into sail membranes, mainly due to the melting temperature of polyethylene but also to the material’s

ultra-smooth surface. But a new method of manufacture allows the Dyneema fiber to bond with the polyester film. D4 membranes with Dyneema provide sailors an optimal level of performance previously unheard of, claims Dimension-Polyant.

Last year, the first six yachts completing the Vendée Globe were “wearing” D4 membrane sails, proving perhaps that these sails can weather the storms and perform, firstly because the sails are lightweight – the lower the topmast weight of the rig, the less force the stern post hits the water in heavy seas and the closer a yacht can sail into the wind. The boat also has more righting momentum, thus speed. The new membrane technology allows for laying the high-modulus yarns in the exact direction in which the forces act; yarns are placed where they are most required. Sails can be designed to be lighter and have greater longevity when compared with the complicated patchwork of radial sails. The films fix the yarns within the sandwich structure and the fine taffeta fabric makes the cloth easier to grip and protects the compound structure from UV rays and harsh treatment like flexing. Each sail is custom made and it’s possible to craft sails that cater precisely to a particular territory’s requirements, the yacht’s characteristics and the owner’s wishes.

Capt. Richard Foster of the 34-meter Swan 112 *Anemos* is one of the first superyacht skippers to set sail using the D4 with Dyneema membranes. “The sails have a better shape and do seem to give better performance,” he says. “The membranes have been laid up specifically for this boat. There are only six joins in the mainsail (two hundred square meters plus) and they are all placed near the batons so you haven’t got hundreds of seams.”

The greatest problem he has experienced in the past has been delamination but the D4 sails have been put together with six tons of pressure. “All the glue has been evened out and we’re looking for these sails to last and be safe. Modern superyachts want different properties from race boats – sails have got to be white and because modern yachts are so powerful, the most important thing for us is safety,” he maintains. [www.dimension-polyant.com](http://www.dimension-polyant.com)