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Lightweight Composite Kayaks Designed by Olympic Gold Medallist and World Solo Ocean Racing Champion Use Latest Epoxy Bonding Gel-Coat Technology

Epic Kayaks design and manufacture a range of epoxy resin based composite kayaks for touring, surf ski racing and ICF racing. The designs and composite technology used have been developed by the co founders Greg Barton, two times Olympic Gold Medalist and Oscar Chalupsky, eleven times World Molokai solo ocean racing champion; they focus on using high performance composite materials and the latest technology in order to build kayaks which are extremely light but strong, easy to handle and highly efficient in the water. The epoxy kayaks made in their new purpose built factory in China now use the polyester epoxy bonding spray gel-coat, Crystic® GC 253PA supplied by Scott Bader Asia Pacific instead of a vinyl ester gel-coat. The result has been an improvement in weathering performance and significant manufacturing productivity gains.

Hangzhou Epic Boat Co. Ltd., a wholly owned subsidiary of Epic Kayaks, Inc., commenced production in China in early 2009. Their 10,000 square meter (100,000 square foot) custom built factory, located in Zhejiang province, about 300 Km from Shanghai, is equipped with temperature controlled laminating rooms, high capacity vacuum pumps and post curing ovens; all craft are fully heat post cured to ensure maximum laminate strength in achieved. The factory has been designed to ensure the best possible efficiency and quality control and uses top quality suppliers of high performance composite materials for the different epoxy laminate constructions; a combination of woven fibreglass and Kevlar fabrics, carbon fibre, honeycomb pattern foam cores or Nomex honey comb cores are used depending on the model. Finished kayaks are mainly exported to the USA, Australia and Europe.

The changeover by Hangzhou Epic Boat Co from using a vinyl ester gel-coat to a polyester epoxy bonding gel-coat was driven by two key factors: improving product quality and reducing costs. Spray trials with Crystic GC 253PA successfully demonstrated it to be robust, sag resistant and easy to handle. Quality improvements were achieved with Crystic GC 253PA due to its superior long term UV weathering and gloss retention performance compared to the vinyl ester spray gel-coat. All Crystic epoxy bonding gel-coats in the range have significantly improved weathering performance compared with either a vinyl ester or epoxy gel-coat. As part of its rigorous R & D product development, Scott Bader independently tests all its gel-coats under the extreme 12 month UV resistance and durability test conditions at the Altas Services Group test site in Florida, USA.

In production, the vinyl ester gel-coat required both back surface preparation and a tiecoat to be applied prior to infusing the epoxy resin laminate structure. Significant productivity gains and cost savings of over 15% have been achieved by Hangzhou Epic Boat Co. as no back surface preparation or tiecoat is required with Crystic GC 253PA. Overall de-mould times were further

reduced as Crystic GC 253PA is tack free in under two hours, so the backup delay time is also shorter.

Another critical quality consideration is gel-coat adhesion. Scott Bader gives assurances that consistently good long term gel-coat adhesion is achieved with epoxy resin systems which are compatible with their epoxy bonding gel-coat; they test for compatibility as part of the service. Rigorous adhesion tests on a variety of compatible epoxy resins have been carried out which demonstrated that failure occurs internally within the laminate structure and not at the gel-coat interface. Reliable performance in use has been proven for a number of years by other boat producers, such as Synthesize Yachts & Design Ltd., Hampshire, England.

The Crystic Epoxy Bonding gel-coat range has brush, spray, low odour and fire retardant options. All are pre-accelerated, isophthalic gel-coats, which use a standard MEKP catalyst, designed for use in the wind energy, marine, building and transportation markets to provide a reliable, permanent bond with wet lay or prepreg epoxy resin systems. Further details about the Crystic Epoxy Bonding gel-coat range are available from Scott Bader on line at www.scottbader.com, by sending a request to composites@scottbader.com or by contacting a local Scott Bader representative or regional distributor.

Spray trials with Crystic 253PA successfully demonstrated it to be robust, sag resistant and easy to handle.

Crystic 253PA epoxy bonding gelcoat is tack free in less than 2 hours and needs no back surface preparation or a tiecoat, yet still achieves excellent long term adhesion to the epoxy back up resin.

Epic 'Touring' model kayak. The choice of epoxy resin and sandwich core construction used makes them much lighter than most touring kayaks.

About Scott Bader

Scott Bader was established in 1921. Today it is a £180 million multinational chemical company, employing 560 people worldwide. It is a common trusteeship company, having no external shareholders, with a strong commitment to supporting its workforce, society and the environment. The Scott Bader headquarters is based in the UK where they have purpose-built, state-of-the-art Technical facilities that provide R & D as well as complete evaluation, testing and application support. They have manufacturing facilities in the UK, France, Croatia, The Middle East and South Africa. For further information regarding Scott Bader, please call +44 (0) 1933 663100, visit www.scottbader.com or e-mail info@scottbader.com