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## Seaworthiness

By Jeff Spira

Nearly every day I get an email from someone wanting to know if a model XXXXX boat is strong enough to handle the (ocean/lake/river) conditions in (wherever they live.) These questions are extremely difficult to answer. All boats are all designed to handle whatever stormy conditions they will ever come across. Whether they actually handle these conditions depends on a number of factors; workmanship is one of them and the other is operator skill.

Classic wooden boats are designed to be a collection of individual parts with the loads created by the water they're in being transmitted between the parts through the fasteners holding the parts together. This has been an effective wooden boat construction method that has served the seafaring community for thousands of years. Newer boat designs, like all Spira International boat models utilize a more sort of "unibody" construction much like modern cars. Originally cars had a stout welded steel chassis, on which a body was attached, but now the body and frame are integrated into the unibody, a one-piece welded structure that is far stronger than the original multi piece structure. Modern home-built boat designs are similar. There are stitch-and-glue hulls and framed plywood hulls that embrace this philosophy to produce lighter, stronger and more seaworthy hulls.

A stitch and glue hull utilizes edge bonded plywood panels to distribute the water loads through the shell of the boat hull. These are well known, but less commonly known are the framed plywood unibody construction that relies on modern adhesives to bond the various hull components into a one-piece structure, for purposes of strength and seaworthiness. Though these hulls use fasteners to hold the components together while the epoxy or polyurethane adhesive cures, once they have fully hardened, you could remove all of the fasteners and they'd still be just as strong. Hulls like these can absorb tremendous water loads whether a stormy sea, the angry whitewater of a rushing river, or the crashing waves of a coastal shore break causes them.

Unibody boat construction has yet another major advantage: crash resistance. While running into underwater obstructions can puncture them just as easily as classic hull construction, impact collisions are distributed throughout the hull bond joints, rather than concentrated only at the relatively small fastener bearing surfaces. This means substantially higher impact loads can be taken before major structural

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damage is done. The selection of either epoxy or polyurethane adhesives for this construction means that the bonded joints are also flexible and tend not to crack when exposed to sudden impact loads.

Construction quality also plays a major role in a boat hull's seaworthiness. If the selection of materials is poor, the fitting of joints is shoddy, or the application of adhesives and fastenings isn't up to par, the hull's strength will be compromised. With its strength compromised, its seaworthiness is also compromised. Poorly built boat hulls never seem to come apart when tied to the dock or drifting along in calm water. They have a nasty habit of coming apart when you need them the most, like when you're hurtling through class 4 whitewater down a canyon or when beating home in an offshore gale. Exercising care in your construction is the obvious remedy for this failure mode.

True seaworthiness is a function of the boat operator, though, not the boat. The vast majority of all accidents at sea, like accidents on the roads, or in the skies, are caused by operator error. Incredibly long open sea voyages have been safely undertaken in very small craft. In 1876, celebrating the 100th year birthday of the United States, a man named Alfred Johnson, sailed from Gloucester Massachusetts all the way across the North Atlantic to England in an open 20-foot Grand Banks Dory named the Centennial. Few would consider this an open sea capable boat, yet he survived a major gale across some of the most treacherous waters anywhere to arrive safely.

Seamanship is not something a person is born knowing but rather, like many skills, it is learned. Serious study, lots of experience, and a good dose of prudence go into being safe on the water. Rough water, whether at sea, on raging rivers, or stormy lakes, is not forgiving of foolish mistakes and chance taking. Until you're sure, don't chance it, and take every educational opportunity you can find to learn about seamanship, weather, and the other knowledge of safe boating.