

SECTION V - BOATBUILDING PRODUCT EVOLUTION

System Three Resins began manufacturing and selling formulated epoxy resin systems to the marine industry in 1979. Our initial product (now called our General Purpose epoxy) took what we call the “chemistry set” approach. That is, for building or repairing wooden boats, one bought a low viscosity, clear resin and the appropriate speed hardener, along with powdered fillers, thixotropes, wood flour, microballoons and the like. The basic resin/hardener system was formulated to be able to coat wood and wet out fiberglass cloth when used right out of the container. With the addition of various dusty powdered fillers one could make an adhesive, filleting putty or fairing compound.

The “chemistry set” approach requires that the user invest considerable time in order learn how to use the products successfully. While all the various combinations of materials in the “chemistry set” produce adequate materials none are optimized for any particular application. For example, the best epoxy adhesives have qualities that make them unsuitable for use as coating resins. The converse is also true: The best coating resins make marginally adequate adhesives. But, the “chemistry set” approach required that one resin/hardener combination be used for both. So, while compromises were required, coating formulations drove the mix, forcing customers to use only acceptable, not optimized, products for non-coating applications.

The “chemistry set” approach requires the addition of lightweight dusty obnoxious fillers that change the liquid system into non-sagging putties, fairing and filleting compounds. It is impossible to add these without dispersing a lot of air into the mix. Air has the effect of temporarily increasing thixotropy in a putty yet almost always results in a putty that will slump unless enough real thixotrope has been added. Imagine watching a carefully made fillet start to sag as it cures.

In 1999, we recognized the drawbacks of the “chemistry set” approach and began working on a concept that it might be possible to eliminate the use of fillers and achieve a better end result. For example, if we could make a product that would solely be used as a fairing putty we could optimize a resin/hardener system especially for this application. We could then disperse the microballoons and remove the incorporated air in our vacuum equipment. Then all the user would have to do is mix the two parts together and apply the resultant material. By eliminating the requirement that the user add two separate fillers we no longer needed to provide time to add them. This allowed us to make a super fast curing system. The resultant product was SilverTip QuikFair, a microballoon filled fairing compound that can be applied and then sanded three hours later - about five times as fast as what could be achieved via the “chemistry set” approach! As we pursued this concept we discovered technology that allowed a liquid resin and hardener to instantly form a soft paste when mixed. We were able to use this technology to make an optimized wood adhesive (SilverTip GelMagic) and wood-flour based filleting material (SilverTip EZ-Fillet). Separating these from coating resin requirements allowed us to again optimize each product individually utilizing our “soft-paste” discovery.

All this now allowed us to optimize the coating/fiberglassing resin system since it no longer had to perform other functions. We developed an almost colorless easy to use 2:1 system that cures without amine blush, has excellent impact resistance and better elevated temperature properties than other room temperature cured epoxy systems. It has almost twice the working time for the same thin film cure time as our General Purpose “chemistry set” epoxy. The result of nearly five years of development work on this concept is our new SilverTip Series of marine epoxy resin products.

