The Gurit technical team has built a piece of a Miracle Dinghy to demonstrate the full capability of the Gurit AMPRO™ range which can be used for coating, bonding, filleting, filling, sheathing and laminating. This article goes through the steps taken and the resins and fillers used to build the section.

Each piece was cut from 5mm Marine plywood using a CNC router so the fit was perfect, the design also allowed for a dry assembly format, meaning that the finished component could be quickly visualized.

The next step was to coat all the surfaces of the plywood with AMPRO™ SEAL to ensure the wood was protected and reduce resin absorption during the bonding process. With all the wood sealed, the entire surface was sanded ready for the next stages.

**What is a Miracle?**

The Miracle is a small dinghy sailboat popularized in the United Kingdom, and designed by Jack Holt. Crew 1-4, weight 59kg, LOA 3.89m
“Using AMPRO™ made it much easier to build the miracle section; It’s easy to use in varied conditions, the resin cures well even at low temperatures and with no by-product formation and the increased over-coating window really minimises the preparation required.”

- Steve Main, Gurit Senior Technical Support Engineer
Gone was the air conditioned and temperature-controlled laboratory, replaced by a more typical environment that would be faced by a home boat builder: during the day work was carried out in a shed in ambient conditions and on colder nights the part was brought into the kitchen.

The next stage was to fit the inner gunwale and longitudinal bulkhead. These were both bonded using AMPRO™ mixed with microfibres to create a strong joint. A fillet made with microfibres tends to give quite a rough finish and is usually only used on joints that will be concealed. As you can see in the picture, anything available to hand was used to add weight to the joints while they cured.

Then two of the three deck ribs were fitted, which would still allow access to complete most of the inside fillets. The fillets to the inside of the longitudinal bulkhead were made using a mix of AMPRO™ and Glass Bubbles. More commonly these joints would use microballoons as these are the lightest form of fillet, however since we wanted a piece that demonstrated the full range of fillers available, glass bubbles were used.

With the internal fillets completed, all of the inner surfaces of the buoyancy tank were then given a final coat of AMPRO™ SEAL.
With the first section of deck cured, profiled and the internals coated, it was time to fit the deck rib and the last section of deck. As with a real build, the internal surfaces were coated with two coats of AMPRO™ seal and then bonded, without any cleaning of the internals. Creative clamping is often required in these situations, mixing sticks are ideal for packing and wedging!

The last piece of structure to be added was the rubbing strake. This was bonded on using a AMPRO™ mixed with Microballoons to ensure a similar colour match to the wood. In this instance, no screws were used, which may not be practical on a full size build. With the rubbing strake rounded and faired into the deck, the structure is finished.

The finished section is now ready to be coated. AMPRO™ CLR will be used for the internal cockpit and deck areas and AMPRO™ for the hull exterior prior to painting and varnishing. The finished section will be used by Gurit and Authorised distributors at trade shows and workshops to demonstrate the versatility of the AMPRO™ range.

For specific questions about this case study:

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