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## **WINDER BOATS – NOTES ON USE, MAINTENANCE & REPAIR** **OF EPOXY FOAM HULLS**

The hull and deck moulding comprise thin skins of woven glass or Kevlar, epoxy bonded to either side of a foam core to form a sandwich. Where rules permit, the thickness of the skins and the density and thickness of the foam are varied throughout the mouldings. We make the skins and foam light, where they can be light, but heavy and more rigid where this is of benefit to the life of the hull and its weight distribution.

The exterior finish is polyester gelcoat, which is a coating designed to be laid in a mould before commencing to laminate. Polyester gelcoat is the standard finish for FRP boats being readily available, easy to use and repair, has good UV stability and can be pigmented.

The epoxy resin used is stronger and tougher than the polyester resins normally used in boatbuilding and suffers minimal water absorption. Compared to a wood, epoxy foam sandwich construction makes it possible to build hulls with better weight distribution, much greater panel stiffness, longer life, reduced maintenance, and at reduced cost. There are, however, some disadvantages:-

Dents: - Foam sandwich panels can be dented if subjected to high local pressure. Trailers and launching trolleys must support the hull primarily on the bottom and be about 150 mm wide over a reasonable area. We supply moulded cradles of proven design. The foredeck and aft decks have to be kept light so cannot be walked on, and care should be taken not to make dents with spinnaker poles, rudder, trapeze hooks etc. Over-tightening ratchet straps can damage boats on trailers.

Heat distortion: - We bake our Fireball mouldings at 55C which gives the resin a resistance to temperature up to 65C above which it may soften and distortion can occur. We recommend the use of light coloured covers and light coloured floor paint to reflect strong sunlight and so keep surface temperature down in hot climates.

Tank pressure:- The air pressure in tanks due to expansion in hot conditions, and contraction on cooling, can become high enough to cause damage. We recommend the removal of the hatch covers after sailing, or drilling them with a 1.5 mm drill to relieve the pressure, especially in hot climates.

Gelcoat:- We have now been building epoxy boats with polyester gelcoat finish for over 12 years so have gained knowledge of the strengths and weaknesses of this system. We find that the bond between gelcoat and epoxy can be weakened by water penetration of the bond interface when this is damaged. Taping over damage will probably hold water and make the problem worse. It is probable that the gelcoat bond may also be weakened if permanently subject to high humidity. We advise removal of the undercover when not trailing, avoiding storing wet gear in the boat, reducing the “sweating”. Another gelcoat problem is blistering. This occurs under certain conditions of temperature and humidity and disappears once the gelcoat is allowed to thoroughly dry, so may be

aggravated by the use of a non-breathable cover. As with most builders of plastic boats, we recommend the use of a polycotton cover as an alternative to PVC.

## **MAINTENANCE**

The all FRP hull required little maintenance. Give it a wipe down after sailing and keep the cover clean. The non slip areas may need attention, and check for fittings coming loose, particularly on strut control systems, and check that some piece of rigging has not moved or stretched, losing your vital mast rake and pre-bend settings.

We use mylar slot gasket on our Fireball which is fine until it gets creased so care must be taken to see that the board is housed before recovering the boat on to its launching trolley. Creases can be removed with the careful use of a heat gun.

Our foils are all moulded so minor damage does not expose a timber core. Repair local damage with epoxy filler and paint locally when convenient. Perfectly finished foils are fast.

## **REPAIRS**

Damage to the mouldings should be dried and fully repaired within two months, or if that is not practical, sealed temporarily with epoxy until a full repair is possible. Do not use tape. Invisible repairs to gelcoat require some expertise, but we can supply you with a gelcoat repair kit and instructions if you wish to do your own.

We wish you every success with your Winder Boat and hope you find it a pleasure to own and exciting to race.

**Guy and David Winder**