

# BoatCraft Pacific

## OSMOSIS & FIBREGLASS REPAIR

Osmosis is Fibreglass cancer. In permanently immersed polyester fibreglass boats, there are some laminates which contain certain defects which attract water into the structure of the fibreglass, and this water creates enough internal pressure to form blisters in the hull. These blisters are sometimes only in the outer layers of the fibreglass, sometimes they have penetrated very deeply into it. The causes, and best methods to deal with it, are still being investigated by both resin and boat manufacturers, and at this time there is no absolutely certain remedy. If the osmosis is caught soon enough, and it is restricted to the outer layer of the laminate, then repair is much easier and more certain. Epoxy is the best resin to carry out repairs as it has so much greater water resistance than polyester.

The blistered area must be ground away, down to sound laminate, and the hull should then be left to dry out for many weeks. Some operators recommend localised heating of the hull, even to quite high temperatures, to destroy the chemical defects in the laminate. When the hull is dry, recoat and restore with Bote-Cote as described in the following section. To create an osmosis barrier over the whole hull, we recommend coating the hull with three coats of Bote-Cote, exactly as described for a new timber hull.

### Fibreglass Repair

Bote-Cote bonds strongly to clean polyester fibreglass, therefore is ideal for repairing fibreglass boats. To repair an impact to fibreglass, first grind away all shattered material, preferably to a uniform shape, say a circle, and feather out the edges radially some 6 to 8 times the depth of the hole. Apply a first coat of Bote-Cote thinned with TPRDA, this will wick into any remaining damage and re-bond the fibres. Then rebuilt the area by laminating on patches of fibreglass with Bote-Cote, steadily increasing their size to match the increasing diameter of the hole until the patch is level with the surrounding surface. Finish off with a piece of Peel Ply, polythene film, or packaging tape to even out the surface and make it easier to sand flush after it has cured.

If the hole is right through the fibreglass follow the above procedure, but first fit a backing piece of plywood to provide a firm base for laminating. If this backer is to be temporary, cover it with polythene film first to prevent it sticking. After removal, if possible laminate some additional glass onto the inside of the patch to lock the repair around the edges of the hole.

Transoms and stringers are favourite sources of rot in fibreglass boats. Most production boats are built with plywood transom inserts and timber stringers. These were not sealed properly during manufacture, being simply bonded into place using polyester resin, chopped strand mat, and 'bog'. Over not too many years this potent mixture weakens and delaminates from the plywood or timber, water enters and the timber rots away, leaving flappy transoms and bilge panels.

To repair these, first you must remove the fibreglass covering the stringer or inside of the transom, extract all the material inside it, and expose the original inside surface of the hull. Clean and sand this surface, prepare replacement timber or plywood to fit, and thoroughly coat it with Bote-Cote. Apply a thickened Bote-Cote mix to this replacement, and to its corresponding area of the hull, then fix the timber in place with enough clamping to ensure some of the mix is squeezed out all around. This can be smoothed into a fillet along all the edges, and further filletting mix should be applied to make generously rounded fillets. After this replacement has set, fibreglass the whole area with Bote-Cote, continuing the glass well out onto the adjacent area of the fibreglass hull. For transom repairs, we recommend Biaxial glass for maximum strength both across as well as up and down the transom. For stringers, use Double Bias tape, which will conform more easily to the corners and edges.