

Osmosis Damage in Polyester / Glass Fibre Reinforced Plastic

„Real“ osmosis is to be understood as contact surface blisters formed between the gel coat and laminate, or within the laminate, containing a liquid which is reactive to acids.

In assessing the extent of the damage the following factors are important:

- Quantity, size, local distribution and pattern of the blisters.
- Affected areas (as a percentage), delamination, and whether mechanical stability is still ensured.

The following have come to be recognised as causes of „real“ osmosis:

- Gel coat is too thin or microporous, or too highly filled
- Air voids
- Insufficient hardening or preparation
- Hydrolysis
- Ageing
- Natural diffusion of water
- Damage due to chlorinated hydrocarbons such as methylene chloride, dichloromethane and trichloroethane.

The product labelling will indicate whether any of the substances mentioned above, which would be damaging to GFRP materials, are contained in the product. To avoid a re-occurrence of “real” osmosis, yachts and boats, whether new or in use, should be preserved with a preventative coating of epoxy primer of the recommended film thickness.

System 8 - Treatment of Osmosis

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POS	Product	Mixing ratio by weight	Theoretical coverage ca. m ² /l	Application method	Temperature at use/ of surface	Drying time at 20 °C, 80 % rel. Humidity		Overcoating interval		Thinner/Cleaner for tools	Remarks
						Touch dry (hrs.)	resistant against rain (hrs.)	min. h	max. days		
1	Epoxid-Primer	5 : 1	13,0	B/R/AS/LS	10-30	2	5	2	180	2K	Please sand the surface before further filling
1a	Only if constructional stability has to be restored: Epoxy-Resin	2 : 1	Approx. 1 kg per 500 g glass	B/R	10.30	1	3	3	1**	***	In accordance with construction calculations the necessary layer(s) of glass laminate are applied wet on wet. CARE! Only use glass for use with epoxy-suited skims
2	Epoxid-Leichtspachtel	2 : 1	as required	Filling knife	10-30	3-4*	–	6	1**	–	Fill holes and bubbles up to a max layer thickness of 3 mm (three working steps)
3	Epoxid-Feinspachtel	2 : 1	1	Filling knife	10-30	3-4*	–	6	1**	–	Apply material with smoothing trowel or filling knife. Sand the whole area. Repeat as necessary until a smooth surface is achieved
4	Epoxid-Primer	5 : 1	13,0	B/R/AS/LS	10-30	2	5	2	180	5	
5	Yacht-Antifouling		10,0	B/R/AS/LS	5-30	2	5	16	180	2	

The damaged gel coat and laminate must be thoroughly removed. Suitable methods include sandblasting or rasping. Thereafter a thorough washing with high pressure water at a nozzle distance of approx. 10 cm is necessary in order to remove all traces of salts and decomposition products. The following thorough drying out is particularly critical. It is recommended that the boat be enclosed, and drying aids employed, such as a dehumidifier. The surface must be free of loose particles, dust and grease. Where large areas of delmainment have occurred it should be determined whether constructional stability is still ensured, and precautions taken accordingly.

* sandable ** must be followed by sanding *** only use for cleaning tools

B = brush / LS = air-spraying / R = roller / AS = airless-spraying