

DESCRIPTION

This system describes how to repair or prevent osmosis of polyester below the waterline of a GRP yacht.

PRINCIPAL CHARACTERISTICS

The repair or prevention of osmosis of areas below the waterline may be required because of the following reasons:

- Prevention of osmosis:
The polyester shows no visible signs of osmosis and the gelcoat is in good condition. To prevent osmosis in the future, a coatings system is applied;
- Repair of osmosis:
The polyester shows various degrees of osmosis and needs repairs. Osmosis repair is usually only recommended for professionals.

The selection of the system (prevention or repair) depends on the condition of the surface. Osmosis prevention is recommended for new yachts and existing yachts still in good condition.

SURFACE CONDITION

1. When the gelcoat is in good condition and no micro blisters are visible in the area under the waterline, the system for osmosis prevention may be used.
2. When small, localized areas of blistering are visible on the surface, these may be repaired with the repair system. Next, the complete area is treated with the prevention system.
3. When more than 50% of the total area is covered with blisters, it is recommended to repair the complete area according to the osmosis repair system.

SURFACE PREPARATION

Prevention of osmosis, not yet treated polyester

1. Grit paper the surface;
2. Remove all dust and residue from the surface;
3. Degrease the surface and carefully remove all deposits of mould release agents using Double Coat Ontvetter.

Prevention of osmosis, already treated polyester

1. Clean the surface thoroughly to remove all contamination such as salt deposits, dirt, grease and other foreign matter, preferably by high pressure water cleaning and with a suitable cleaner;
2. Remove old layers of one component paint and anti-fouling completely (even when these are in a good condition);
3. Remove old layers two component paints with insufficient adhesion, preferably by grit paper;
4. Previous layers of two component paint which have good adhesion and which are in good condition should be abraded, preferably by grit paper;
5. Let the surface dry, this can take a few months;
6. Grit paper the surface;
7. Remove all dust and residue from the surface;
8. Degrease the surface thoroughly using Double Coat Ontvetter. The surface should be dry and free from grease, loose particles and other contamination.

Repair of osmosis

1. Clean the surface thoroughly to remove all contamination such as salt deposits, dirt, grease, acidic residue of osmosis and other foreign matter, preferably by high pressure water cleaning and with a suitable cleaner;
2. Remove all layers of previous coatings including the gelcoat by means of blasting, sand washing, Hot Vac system or peeling. Grit sanding is only recommended to remove blisters from small areas (spot repair);

- Let the surface dry, this can take a few months. It is possible to measure the moisture content using electronic moisture meters such as a "Skipper Plus". When using a moisture meter on polyester, always compare the readings above the waterline with the reading obtained below the waterline. An alternative method to check the moisture content is to attach a sheet of plastic foil with tape to the surface. When after 24 to 48 hours no condensation is visible behind the sheet, the area is sufficiently dry.

MATERIALS AND SPREADING RATES

The following materials are used in this paint system:

Variopox Injectiehars	spreading rate approx. 0,3 l/m ²
Variopox Plamuur	spreading rate depends on condition surface
IJmopox HB coating	spreading rate approx. 0,5 l/m ² (osmosis prevention) spreading rate approx. 0,7 l/m ² (osmosis repair)
IJmopox Verdunner	spreading rate depends on condition surface
Double Coat Ontvetter	spreading rate depends on application method

APPLICATION

Prevention of osmosis, new and treated polyester

- Repair scratches, cracks and other damaged areas with Variopox Plamuur. Gritpaper surface after curing.
- Apply three to four coats of IJmopox HB coating to a total dry film thickness of 375 µm (minimum spreading rate approx. 0,5 l/m²). Gritpaper between each coat.
- Apply an anti-fouling when required.

Repair of osmosis

- Apply one layer of Variopox Injectiehars (minimum spreading rate approx. 0,3 l/m²). Gritpaper surface after curing.
- Repair blisters, scratches, cracks and other damaged areas with Variopox Plamuur. Gritpaper after curing.
- Apply four to five coats of IJmopox HB coating to a total dry film thickness of 500 µm (minimum spreading rate approx. 0,7 l/m²). Gritpaper between each coat.
- Apply an anti-fouling when required.

Maintenance

Repair damaged areas using the recommendation for prevention of osmosis.

ADDITIONAL INFORMATION

- Repair of GRP
Damaged areas and dents may be repaired using a filler. Each damage, scratch or pinhole should be treated carefully. Scratches may be abraded and filled. Dents and cracks should be gritpapered until the laminate is exposed. After curing of the filler the surface should be cleaned with Double Coat Ontvetter.
Suitable fillers are:
 - Variopox Plamuur;
 - Variopox LG plamuur;
 - Variopox Finishing plamuur.
- Previous paint: one or two component?
When it is not known if the previous coating system was based on one- or two component products, this can be determined with a simple test. Soak a small piece of cloth in Double Coat Ontvetter and leave this for 15 minutes on the surface. Remove the cloth and check the surface. When the previous paint has not dissolved, is not softened and cannot be easily removed it is most probably a two component paint. Only then it is possible to apply a fresh coat of two

component paint.

- **Anti-fouling**
Most types of anti-fouling may be applied on top of IJmopox HB coating.
- **Overlap with coating system above the waterline**
Please note IJmopox ZF primer or Double Coat cannot be applied over an anti-fouling. This is important at the overlap between the below- and above water area.
- **Durability and surface preparation**
The durability of any paint system depends on a number of variables, amongst others: total dry film thickness, method of application, skill of labour, the conditions during which the coating is applied and cured, the exposure conditions during service and the preparation of the surface. Insufficient surface preparation might lead to blistering and loss of adhesion.
- **Sanding**
A durable adhesion will be obtained by thorough preparation of the surface. This may be achieved by sanding the surface. Sanding is also necessary when the time elapsed between application of each coat exceeds the maximum overcoating interval.
During application of the finishing coats, we recommend to use for each coat a finer grit paper. The table gives the recommended grit sizes:

Grit paper:	Recommended for:
P24 – P36	Suitable for steel prior to application of IJmopox ZF primer.
P60	Suitable for polyester gelcoat prior to the use of epoxy adhesives and bonding pastes.
P60 – P80	Suitable for: <ul style="list-style-type: none"> • Removal of old coats of paint, • Sanding aluminium prior to application of IJmopox ZF primer.
P120	Suitable for: <ul style="list-style-type: none"> • Sanding polyester gelcoat prior to repair with fillers, • Sanding of Variopox Injectiehars, Variopox Impregneerhars and Variopox Universele hars.
P120 – P180	Suitable for: <ul style="list-style-type: none"> • Wood, after application of first coat of paint, • Epoxy fillers, • Polyester fillers, • Sanding of IJmopox ZF primer and/or IJmopox HB coating between each coat.
P180 – P220	Suitable for: <ul style="list-style-type: none"> • Sanding of Variopox Injectiehars, Variopox Impregneerhars and Variopox Universele hars, • Sanding of IJmopox ZF primer or IJmopox HB coating prior to application of Double Coat.
P220 – P280	Suitable for sanding gelcoat prior to application of Double Coat.
P320 – P400	Suitable for sanding Double Coat between each coat.
P600	Suitable for sanding Double Coat prior to application of the final coat Double Coat when dark colours are used such as DC 855, DC 854 and RAL 5011, etc.
Finer then P600	Suitable to remove dull areas prior to polishing.

- **Example application schedule, prevention of osmosis**

step		dry film thickness (µm)	spreading rate (m ² /l)	recoating interval at 20 °C	preparation before next step
1	Pre-treatment				
2	Repair with Variopox Plamuur, Variopox Finishing plamuur or	n.a.	n.a.	48 hours	Sanding P180.

1: POLYESTER – OSMOSIS

step		dry film thickness (µm)	spreading rate (m ² /l)	recoating interval at 20 °C	preparation before next step
	Variopox LG plamuur				
3	Apply first coat of IJmopox HB coating grey or white	125	5,6	8 hours	When recoated with a next coat of IJmopox HB coating within 72 hours no preparation is required, otherwise sanding with P180.
4	Apply second coat of IJmopox HB coating grey or white	125	5,6	8 hours	
5	Apply third coat of IJmopox HB coating grey or white	125	5,6	8 hours	

- Example application schedule, repair of osmosis

step		dry film thickness (µm)	spreading rate (m ² /l)	recoating interval at 20 °C	preparation before next step
1	Pre-treatment				
2	Apply one coat of Variopox Injectiehars	n.a.	3,3	24 hours	
3	Repair with Variopox Plamuur, Variopox Finishing plamuur or Variopox LG plamuur	n.a.	n.a.	48 hours	Sanding P180.
4	Apply first coat of IJmopox HB coating grey or white	125	5,6	8 hours	When recoated with a next coat of IJmopox HB coating within 72 hours no preparation is required, otherwise sanding with P180.
5	Apply second coat of IJmopox HB coating black or grey	125	5,6	8 hours	
6	Apply third coat of IJmopox HB coating grey or white	125	5,6	8 hours	
7	Apply fourth coat of IJmopox HB coating white or grey	125	5,6	8 hours	When recoated with anti-fouling within 12 hours, no preparation is required, otherwise sanding with P180

- Relation dry/wet film thickness

Volume % IJmopox thinner	0	2	4	6	8
Wet film thickness IJmopox HB coating at 125 µm dry film thickness	179	184	189	195	200

For detailed information on the products mentioned in this sheet, please refer to our technical information sheets.

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