

## 12: ALUMINIUM – BELOW THE WATER LINE

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### DESCRIPTION

This system describes how the area below the waterline of an aluminium yacht may be coated with a two component epoxy coating system.

### PRINCIPAL CHARACTERISTICS

This coating system may be applied directly to properly pre-treated aluminium and gives a excellent protection. This system can be recoated with most types of anti-fouling, provided free from copper (as metal or as metal-oxide).

### SURFACE CONDITION

Aluminium, in good condition.

### SURFACE PREPARATION

New building

1. Remove all corrosion products, preferably by low pressure blasting with aluminium oxide or by sanding;
2. The surface should be dry and free from grease, loose particles and other contamination;
3. Apply as soon as possible the first coat of IJmopox ZF primer.

Maintenance

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 all corrosion products and paint layers with insufficient adhesion (including one component paints in good condition), preferably by low pressure blasting with aluminium oxide or by sanding;
3. Previous layers of two component paints which have good adhesion and which are in good condition should be abraded; preferably by low pressure blasting with aluminium oxide or by sanding;
4. Clean and dry the surface thoroughly;
5. Apply as soon as possible the first coat of IJmopox ZF primer.

### MATERIALS AND SPREADING RATES

The following materials are used in this paint system:

Variopox Plamuur	spreading rate depends on condition surface
Variopox Finishing Plamuur	spreading rate depends on condition surface
IJmopox ZF primer	spreading rate approx. 0,18 l/m <sup>2</sup>
IJmopox HB coating	spreading rate approx. 0,30 l/m <sup>2</sup>
IJmopox Verdunner	spreading rate depends on application method
Double Coat Ontvetter	spreading rate depends on condition surface

### APPLICATION

New building

1. Apply immediately after surface preparation one to two coats of IJmopox ZF primer to a total dry film thickness of 100 µm (minimum spreading rate approx. 0,18 l/m<sup>2</sup>);
2. When required, repair small damages and dents with Variopox Plamuur;
3. Apply two to three coats of IJmopox HB coating to a total dry film thickness of 200 µm (minimum spreading rate approx. 0,30 l/m<sup>2</sup>);
4. When required, apply anti-fouling.

Maintenance, previously coated aluminium

1. Apply as spot-repair to damaged and bare areas one to two coats of IJmopox ZF primer to a total dry film thickness of 100 µm (minimum spreading rate approx. 0,18 l/m<sup>2</sup>);
2. When required, repair small damages and dents with Variopox Plamuur;

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3. Apply two to three coats of IJmopox HB coating to a total dry film thickness of 225 µm (minimum spreading rate approx. 0,30 l/m<sup>2</sup>);
4. When required, apply anti-fouling.

### ADDITIONAL INFORMATION

- **Properties of aluminium**  
To achieve good adhesion it is necessary to clean the surface thoroughly. Apply immediately after cleaning the first coat of IJmopox ZF primer.
- **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 be removed it is most probably a two component paint. Only then it is possible to apply a fresh coat of two component paint.
- **Repair of damages and dents**  
Damaged areas and dents may be repaired with Variopox Plamuur. When a smooth, fine finish is required, Variopox Finishing Plamuur may be used as second filler. Grit paper surface after application and curing of the filler and clean and degrease surface with Double Coat Ontvetter. Touch-up repaired areas with the following layer of the coating system to eliminate absorption of the filler.
- **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.
- **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, IJmopox HB coating or Double Coat cannot be applied over an anti-fouling. This is important at the overlap between the below- and above water area.
- **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"> <li>• Removal of old coats of paint,</li> <li>• Sanding aluminium prior to application of IJmopox ZF primer.</li> </ul>
P120	Suitable for: <ul style="list-style-type: none"> <li>• Sanding polyester gelcoat prior to repair with fillers,</li> </ul>

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Grit paper:	Recommended for:
	<ul style="list-style-type: none"> <li>Sanding of Variopox Injectiehars, Variopox Impregneerhars and Variopox Universele hars.</li> </ul>
P120 – P180	Suitable for: <ul style="list-style-type: none"> <li>Wood, after application of first coat of paint,</li> <li>Epoxy fillers,</li> <li>Polyester fillers,</li> <li>Sanding of IJmopox ZF primer and/or IJmopox HB coating between each coat.</li> </ul>
P180 – P220	Suitable for: <ul style="list-style-type: none"> <li>Sanding of Variopox Injectiehars, Variopox Impregneerhars and Variopox Universele hars,</li> <li>Sanding of IJmopox ZF primer or IJmopox HB coating prior to application of Double Coat.</li> </ul>
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

step		dry film thickness (µm)	spreading rate (m <sup>2</sup> /l)	recoating interval at 20 °C	preparation before next step
1	Pre-treatment				
2	Apply first coat of IJmopox ZF primer	50	11.0	16 hours	When recoated within 72 hours no preparation is required, otherwise sanding with P180.
3	Apply second coat of IJmopox ZF primer	50	11.0	16 hours	
4	Repair with Variopox Plamuur	n.a.	n.a.	48 hours	Sanding P180.
5	Apply first coat of IJmopox HB coating white, grey or black	75	9.3	8 hours	When recoated within 72 hours no preparation is required, otherwise sanding with P180.
6	Apply second coat of IJmopox HB coating white, grey or black	75	9.3	8 hours	
7	Apply third coat of IJmopox HB coating white, grey or black	75	9.3	8 hours	When recoated with an anti-fouling within 12 hours no preparation is required, otherwise sanding with P180.

• Relation dry/wet film thickness

Volume % IJmopox thinner	0	3	6	9	12
Wet film thickness IJmopox ZF primer at 50 µm dry film thickness	91	94	96	99	102
Wet film thickness IJmopox HB coating at 75 µm dry film thickness	107	110	113	117	120

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

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### *Disclaimer*

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