

# Technical Information

## Choosing Your Antifouling

Marine fouling growth will affect all vessels, although the type and density will be dependent on many factors including how often the vessel is used, where the vessel is kept and what type of antifouling you apply.

Fresh water doesn't usually incur many fouling problems, mainly just light weed and slime, however sea and rivers are abundant with marine life and a vessel can foul up very quickly.

A good and well chosen antifouling will protect your vessel and stay relatively clean throughout a season, on the other hand a poor

antifouling will not stay clean and as it fouls up will slow down your vessel and maximum speed will not be able to be achieved.

Aluminium vessels must not use any standard antifouling which contains copper as this will cause bi-metallic corrosion and could lead to serious damage to your vessel.

SeaAlu tin and copper free antifouling should be used on Aluminium Hulls.

Most vessels will apply fresh antifouling every spring in



order to ensure peak performance during the Spring and Summer months.

At the end of the season scrub the hull clean and wash down with fresh water, there may be some antifouling remaining but this is unlikely to be sufficient for another season.

### Special points of interest:

- *Preparation and Painting*
- *Keys Pointers*
- *Troubleshooting Guide*
- *What Paint System To Use*

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## Preparation and Painting

### Safe Application

All paints contain chemicals and care should always be taken when handling them. All paints should be used in well ventilated conditions and if ventilation is inadequate a respirator must be worn. Please use the relevant Safety and Technical Data sheets for your products available from [www.jotun.com](http://www.jotun.com)

### Equipment Needed

In addition to the application equipment you will also need waterproof sanding paper, masking tape and clean cotton rags. Rollers can be used for priming and antifouling but not for the initial coat of primer, which should be applied by brush. When applying primers a wet film thickness gauge is useful to check for correct film thickness.

### Surface Preparation

Good surface preparation is

essential. Previously painted surfaces must be thoroughly degreased using a water soluble degreaser which must be washed off afterwards with clean fresh water. After degreasing the surface must be sanded down and washed again to remove sanding debris and allowed to dry. If the existing paint is in a poor condition it should be taken back to sound paint or removed altogether.



## Preparation and Painting *contd.*



### Preparing the Paint

Paints and antifoulings should be stirred thoroughly before use to re-incorporate any pigment which has settled. For two pack products stir the individual components before mixing the two together and also use the recommended ratio. Adding extra curing agent will not make the paint dry any faster. Failure to mix two pack products thoroughly will result in insufficient curing agent in some of the paint, resulting in weaknesses in the paint film after curing.

### Application

Never use cold paints or varnishes as

they will be difficult to apply, if necessary stand them in a bucket of warm water. Do not add solvent to try to compensate for cold conditions. You must also ensure that the surface you are painting is not too cold, some two pack paints will not cure on cold surfaces and there is also the risk of condensation.

When working in warm conditions, work relatively quickly to avoid brush marks.

Always finish outdoor paintwork by early afternoon to avoid possible overnight dew.

## Other Products Required

### Primers

Primers are specific to certain substrates and will provide maximum adhesion to, and protection of, the material concerned. For example Aluminium and GRP vessels must use *Penguard HB* as a primer, whereas Steel vessels should use *Jotamastic*. Primers are designed to be anticorrosive and provide a moisture barrier. A dry film thickness (dft) of approximately 250 to 300 microns is usually specified.

### Sealer / Tie Coats

A tie coat for example *Vinyguard Silvergrey* will be required between the primer and anti-fouling. *Vinyguard Silvergrey* can also be used to seal off any existing antifouling if you are not sure what is already on your vessel and therefore not sure of its compatibility.

### Thinners

Solvents are used to adjust viscosity and for cleaning afterwards. Always use the appropriate thinners when you buy the paint.

### Non-Skid Additive

These are fine particles which can be added to any topcoat to prevent any one slipping on the surface. Apply one coat of topcoat as you normally would and then scatter the non-skid particles over the surface, when dry then apply a very thin second coat of topcoat. We recommend 1.5 - 2kg of non skid to every 10 litres of paint.

## Changing from one Antifouling to another

With just a few exceptions, most current vessel antifoulings can be overcoated with Jotun equivalents, but if in doubt please contact Jotun or your local distributor.



**“ What does ‘film thickness’ mean? Film thickness is a measure of the depth of an individual coat of paint, measured in microns. There are 1000 microns in a millimetre.” Dry film thickness and wet film thickness can both be measured.**

## Key Pointers to Ensure Good Paint Performance

- 1 All equipment should be clean and checked to ensure it is in perfect working order and is the right equipment for the job.
- 2 The correct type of paint must be used and it is important to carefully follow the specification for the actual area to be painted.
- 3 Read the instructions on the Technical and Safety Data Sheets available from [www.jotun.com](http://www.jotun.com) observe the safety precautions and do not smoke whilst painting.
- 4 Avoid inhaling solvent vapours. Ensure there is good ventilation if working in an enclosed area.
- 5 It is always advisable to wear goggles, mask and gloves. Always wash your hands with a hand cleaner or soap and water. Do not use thinners or solvents to clean your hands.
- 6 Before painting commences prepare a plan of how the tins of paint are to be distributed over the surface. Separate the area to be painted into reasonable sections and distribute the paint tins accordingly. This method helps to achieve a more even distribution of paint over the entire surface and ensures the quantity of paint corresponds to the specification.
- 7 Paint must be thoroughly mixed otherwise the quality may not be as expected. This is essential as the heaviest pigment in the paint sinks to the bottom of the tin.
- 8 Adhere carefully to instructions regarding the potlife (that's how long before it becomes unusable). Potlife decreases as temperature increases and vice versa.
- 9 Avoid unnecessary thinning. In cold weather it is advisable to keep the paint at room temperature.
- 10 Measurement of temperatures must be carried out in the vicinity of where application takes place.
- 11 When painting, the temperature of the substrate should be a minimum of 3°C above the dew-point to avoid condensation.
- 12 Follow the instructions regarding the recommended spreading rate for the paint.
- 13 Check the drying times, what may appear to be dry may not be. The ideal temperature range for applying paint is between 15—25°C with humidity at 85% maximum. Outside these ranges the drying times will be affected.
- 14 Paint should never be applied to a wet surface or during rain. Avoid painting when it is windy and avoid direct sunlight. Don't paint late in the day, remember evenings and night time are when moisture forms.
- 15 Sacrificial anodes must be replaced. It is essential that new anodes are not painted and it is advisable to protect them with aluminium foil. Tape may also be used. Remember to remove the foil or tape after painting. Additional cleaning may be required.
- 16 The wet film thickness must be measured at frequent intervals. The recommended thickness must be maintained throughout the painting.
- 17 Pay special attention to areas which were covered by keel blocks at the last painting.
- 18 The drying time between each coat must be in accordance with the current Technical Data Sheet for the product.
- 19 On Technical Data Sheets a typical dry and wet film thickness is shown. This is normally only achieved by airless spray application. To obtain the recommended dry or wet film thickness by brush or roller, the number of coats needed may at least need to be doubled.



## Jotun Products



### Antifoulings

#### SeaForce 30

For use on all vessels except Aluminium Vessels (see SeaAlu) for up to 36 months good antifouling performance. SeaForce 30 has high volume solids (58%) and provides reduced build up of leached layer to ensure trouble free overcoating and good performance.

#### SeaAlu

SeaAlu is suitable for use on aluminium vessels. SeaAlu is a selfsmoothing, selfpolishing antifouling which is highly versatile and can be used in all water temperatures and is highly effective at all speeds up to 40 knots.

### Primers

#### Jotamastic 87 - 2 pack

This product is a high volume solids epoxy mastic that can be applied directly onto prepared steel above and below the water. It has exceptional penetration, adhesion and moisture tolerance properties and is ideal where good lasting protection is required.

A tie coat of Vinyguard Silvergrey will also be required before applying antifouling.

If you are coating a relatively static vessel and are not applying antifouling then several coats of Jotamastic 87 will offer enough protection for your steel to prevent corrosion.

#### Penguard HB - 2 pack

A high build epoxy primer to be applied directly onto correctly prepared GRP or Aluminium above and below the waterline.

A tie coat of Vinyguard Silvergrey will be required between the Penguard HB Primer and the antifouling.

#### Vinyguard Silvergrey - single pack

Vinyguard Silvergrey is a quick drying primer suitable for wooden vessels.

Antifouling can be applied directly onto it as can single pack topcoats (*see topcoats section*)

### Topcoats

#### Hardtop XP - 2 pack

Hardtop XP is a two pack polyurethane topcoat which is exceptionally durable and has good colour and gloss retention. This product can be applied directly onto both the Penguard HB and Jotamastic 87 primers.

#### Hardtop Flexi - 2 pack

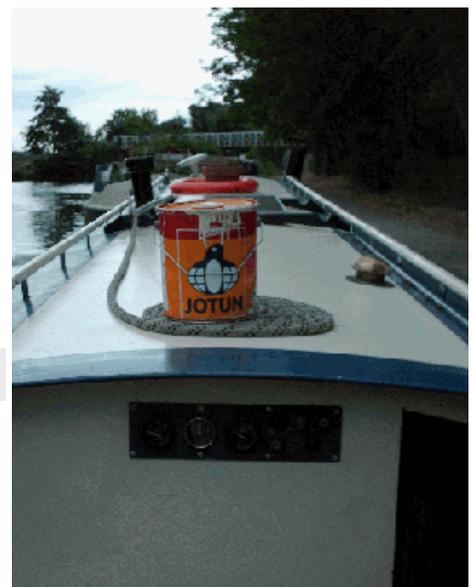
This product is also a two pack polyurethane similar to the above product, however this topcoat is exceptionally flexible and therefore is ideal in areas which need to withstand impact as the paint film won't crack or split.

#### Pioner Topcoat - single pack

Pioner Topcoat is a single pack acrylic topcoat that can be applied directly on top of Penguard HB or Jotamastic 87 primers.

#### Pilot II - single pack

Pilot II is a single pack glossy alkyd based topcoat which has good gloss retention and weather resistance. It can be applied directly on to Vinyguard Silvergrey but not directly onto Penguard HB or Jotamastic 87, in these cases a coat of Vinyguard Silvergrey would be needed in between.



#### Penguard Topcoat - 2 pack

This is a two pack epoxy based topcoat with excellent resistance against chemicals, solvents and water as well as mechanical impact. It is a glossy topcoat which can be applied directly onto Penguard HB primer as well as Jotamastic 87 primer.

## Troubleshooting Guide

<b>Sound Paintwork, faded but adhering</b>	Normal wear and exposure to elements	Remove Oil/Grease marks, clean the surface. Remove any loose paint
<b>Paintwork heavily Crusted with previous paint</b>	Previous touch-ups carried out without proper preparation.	Remove Oil/Grease marks. Clean the Surface. Remove crusts of old paint to sound surface. Dust down.
<b>Paintwork flaking and poor adhesion</b>	Painted over moist surface. Painted over contaminated surface. Too short an interval between coats	Remove Oil/Grease marks. Clean the Surface. Remove flaking paint down to sound surface by chipping or wire Brushing. Dust down.
<b>Paintwork with limited areas of blistering/corrosion</b>	Painted over moist surface. Using equipment containing water e.g. Brushes Rollers, stored in water. Using Finishing coats over bare steel. Poor initial surface treatment.	Remove Oil/Grease marks. Clean the surface. Scrape blisters and remove any corrosion. Wash to remove any fluid from blisters.
<b>Areas of corrosion and heavy rust</b>	Maintenance neglected over a period Of time or carried out with no preparation of surfaces.	Remove Oil/Grease marks. Chip to remove heavy rust. Remove remainder of corrosion. Grit Blast/Power Discing where possible. Hand Brushing if these means are not Available. This method is not suitable with extensive areas of rust.
<b>Paint surface cracking or crocodiling</b>	Soft coat of primer or undercoat overcoated with a hard Finish coat. Too short an interval between coats. Paint unsuited to its use.	Remove Oil/Grease marks. Chip or scrape To remove cracked paint to reveal sound paint or bare steel. Wipe/dust down.
<b>Brush marks on Surface.</b>	Using over strong brush strokes. Paint too thick when applied. Undercoat with poor flow.	Clean down surface as necessary. Lightly abrade areas with marks with wire brush or emery block.
<b>Bubbling on the surface.</b>	Application by Brush or Roller carried Out too vigorously and paint 'worked' too much. Freshly painted surface exposed to strong sunlight.	Clean down surface as necessary. Lightly abrade area to remove the bubbles by light power discing or hand scraping.
<b>Cissing (withdrawal of paint in spots)</b>	Surface contaminated by Grease, etc. Previous coat is not compatible with Topcoat (Check that correct paint has been applied)	Remove the cissed paint wherever possible. Thoroughly degrease exposed surface by light power discing or hand scraping.
<b>Sagging.</b>	Excessively thick coats applied. Spray gun unskilfully used. Application over high gloss. Too much thinner.	Remove areas of sagging to reveal sound coatings beneath. Fresh coats may be removed by hand scraping. Other coats by Power Discing.
<b>Wrinkling.</b>	Paint applied too thickly. Fresh paint exposed to direct sunlight.	Remove areas of wrinkling to reveal sound coating beneath. Wipe/dust down surface. Light Power Discing/Hand scraping.

## Frequently Asked Questions ?

**I am wanting to paint a GRP yacht which has previously been painted. The current surface is very sound and has been prepared well, a large proportion (approx 30%) has been sanded to the gelcoat, the rest remains painted but is flattened. What Jotun system would you recommend?**

We always recommend an epoxy primer system when painting onto gelcoat as these paints have excellent adhesion to GRP and are also very water resistant, so help prevent osmosis. Normally the recommended paint system would be to use Penguard HB as a primer to go directly onto the gelcoat. As there is going to be some existing paint left on the boat though, if this remaining paint is a two pack product then it is fine to paint over it with Penguard HB, however if this existing paint is a single pack product then the solvents in the Penguard HB could lift the old paint. Your best option if this is the case is to touch up the areas where you've taken it back to GRP with Penguard HB and then seal the whole boat off with Jotamastic 87.

You can then apply either Penguard Topcoat (epoxy) Hardtop (polyurethane) or Pioner (acrylic) directly onto the Jotamastic above the waterline and if you are going to apply antifouling underwater then a tie coat of Vinyguard Silvergrey must be applied prior to the antifouling.

**I have applied the 3 coats of epoxy as a primer, how many coats of topcoat do I now need and which one? Also can the topcoat be applied with a roller / foam brush or brush?**

One coat of topcoat will normally be enough. The single pack topcoat (Pioner Topcoat) can be applied with a brush or roller. If you then lay off with a foam brush it is possible to get very good results. Although the two pack polyurethane (Hardtop AS) can give stunning results (high gloss with excellent gloss and colour retention as well as great abrasion resistance) you'll only achieve a mirror finish by spraying—it is not possible to lay this paint off as it dries too quickly, so if you roll you'll get an orange peel finish and if you brush you'll get brush marks. If durability is more important than finish then we'd recommend the Hardtop AS. Another possible option is Hardtop XP, another two pack polyurethane but which can be applied by brush and roller.

**I'm in the process of fibre glass repairing the underside of a canoe, I'd like to finish it off with a coat of waterproof colour paint. What am I looking for and do you stock it?**

Penguard HB is the correct primer to apply direct to GRP however as it is a primer it has a matt finish and is only available in red, grey or white. Paint two or preferably three coats on the Penguard HB onto the surface, coverage is approximately 9 m<sup>2</sup> per litre per coat. You don't have to paint over it but if you do want a gloss finish and colour you can apply Pioner Topcoat over the Penguard HB and this has a coverage of around 7 m<sup>2</sup> per litre. Pioner Topcoat is sufficiently waterproof for submersion, and we can mix the shade to any BS or RAL colour.

**What is the best varnish for my boat cabin?**

The best product for you will be Penguard Clear, a two pack pure epoxy varnish. It will perform very well provided it is not exposed to too much direct sunlight as UV light tends to degrade epoxy paints. We have sold it in the past as interior floor varnish as it is extremely hard wearing and very water resistant. Coverage is around 12 m<sup>2</sup> per litre.

**How practical is it to "touch up" two pack systems in the event of the inevitable scratch / damage as the paint comes in 5 litre quantities. Is this the reason for using single pack systems?**

It is quite fiddly to touch up two packs as you have to mix the comp. A and the comp. B in the correct ratios. The advantages of two pack paint are that they are much tougher and have a much better colour retention. Single packs lose their colour more quickly, this means that touching up a single pack after a year will be more noticeable than touching up a two pack. If you are going to be regularly touching up the topcoat then we would recommend the single pack as it's much easier especially Pioner (acrylic) as it fuses with previous Pioner which ensures very good adhesion.

## What Paint System To Use ?

There are various different types of paint systems that can be proposed, each with their own benefits. The better the paint system quality the more durable the paint will be. To give you some idea here are some typical systems for different paint types.

### Underwater - GRP

Product	No. of coats x microns
Penguard HB	2 x 150
Vinyguard Silvergrey	1 x 50
SeaForce 30	max 150 / coat

*“ If you are not removing the previous underwater coating and are not sure what is already on your boat then seal off completely with one full coat of Vinyguard Silvergrey before applying antifouling.”*

### Underwater - Aluminium

Product	No. of coats x microns
Penguard HB	2 x 150
Vinyguard Silvergrey	1 x 50
SeaAlu	max 150 / coat

### Underwater - Steel - Option 1

Product	No. of coats x microns
Jotamastic 87	2 x 150
Vinyguard Silvergrey	1 x 50
SeaForce 30	max 150 / coat

### Underwater - Wooden

Product	No. of coats x microns
Vinyguard Silvergrey	3 x 80
SeaForce 30	max 150 / coat

### Underwater - Steel - Option 2

Product	No. of coats x microns
Vinyguard Silvergrey	3 x 80
SeaForce 30	max 150 / coat



## What Paint System To Use ? (continued)

### Topsides - GRP

Product	No. of coats x microns
Penguard HB	2 x 150
<i>Followed by</i>	
Penguard Topcoat	1 x 50
<i>Or</i>	
Hardtop XP / Flexi	1 x 50
<i>Or</i>	
Pioner Topcoat	1 x 50

### Topsides - Aluminium

Product	No. of coats x microns
Penguard HB	2 x 150
<i>Followed by</i>	
Penguard Topcoat	1 x 50
<i>Or</i>	
Hardtop XP / Flexi	1 x 50
<i>Or</i>	
Pioner Topcoat	1 x 50

### Topsides - Steel - Option 1

Product	No. of coats x microns
Jotamastic 87	2 x 150
<i>Followed by</i>	
Penguard Topcoat	1 x 50
<i>Or</i>	
Hardtop XP / Flexi	1 x 50
<i>Or</i>	
Pioner Topcoat	1 x 50

### Topsides - Steel - Option 2

Product	No. of coats x microns
Vinyguard Silvergrey	3 x 50
Pilot II	1 x 50
<i>Or</i>	
Pioner Topcoat	1 x 50

### Topsides - Wooden

Product	No. of coats x microns
Vinyguard Silvergrey	3 x 50
Pilot II	1 x 50
<i>Or</i>	
Pioner Topcoat	1 x 50

