



# YACHTING



# YOUR PAINT GUIDE

ABOVE AND BELOW THE WATERLINE



# SET SAIL FOR THE HORIZON AND ENJOY GOOD MOMENTS AT SEA!

We are all looking forward to summer season and the great moments at sea – feel the wind in your hair, hear the engine roar and let sail catch the summer breeze. This is what life is about being able to relax and spend time with people you care about.

Our aim with the paint guide is to give you the best solution for an easy and efficient preparation of your boat that will last throughout the entire season.

Founded in Norway, Jotun is a world leader in marine products. We have been developing innovative products for the harshest environments since 1926 in one of North Europe biggest paint research centres.

Jotun Yachting has developed this guide to help boat owners enjoy good moments at sea. Discover our products, follow the instructions and learn from the useful application hints and you will be able to lean back and enjoy every minute on your boat without worrying.

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# PRIMERS AND UNDERCOATS

A perfect paint finish is the result of careful surface preparation. Regardless of whether the surface is new or previously painted, Jotun's primers and undercoats will secure a perfect foundation for the topcoat.

A primer is a product developed to provide adhesion to the substrate that is to be painted, while an undercoat is a link layer between the primer and the finishing coats. They can be either one or two component products.

There are several Jotun Yachting primers that can be used on any part of the boat. The difference between them is the degree of hardness, their waterproofing properties, adhesion properties to different substrates, anti corrosive properties, ease of application and volume solids/high build properties. The choice of product will have an effect on the paint system's long term durability.



## HINTS FOR SUCCESSFUL PRIMING

- Do not apply primers in very high or very low temperatures, in strong sunlight or strong wind.
- Wet the surrounding floor area to avoid dust on wet paint.
- Stir the product thoroughly and repeat during application.
- Use high quality solvent resistant rollers and brushes (mohair or foam type).
- Consider the pot life of the product after mixing two components products.
- Check the minimum and maximum recoating interval as stated in the technical data sheets. This is a critical factor when using two components products.
- Dry sand the surface with medium to coarse paper, specified in tables.
- On steel substrates, blasting is the best method but when not possible, matt the surface with very coarse grade paper or any other mechanical method. Always avoid polishing the metal as this will impact adhesion of the paint.
- Apply the necessary coats of primers as specified in the table on p. 7.
- Finally, apply the topcoat or the antifouling.

PRODUCTS



**ANTIPEST** is a two component epoxy, suitable as a long exposure undercoat for epoxy and polyurethane systems and designed to prevent osmosis in fibre glass hulls. AntiPest can be used both as primer for all types of substrates, including steel, fibre glass, aluminium and marine timber, and as well as intermediate adhesion undercoat, for polyurethane or antifoulings on top of epoxy primers. The ideal product for priming gelcoat before applying antifouling.



**EPOXY YACHT HB** Two component, epoxy mastic primer, with excellent waterproofing properties. The ideal primer for a perfect anti-corrosive protection system for steel, and against osmosis in fibre glass hulls. A water resistant product and thanks to its special adhesion properties, it can be applied on top of corroded surfaces once correctly prepared and cleaned. Due to its extreme hardness, it provides a high resistance to abrasion and long durability.



**EASYPRIMER** One component alkyd primer. Especially developed for EASYGLOSS topcoat. The product is filling and levelling well, does not run and is easy to work with. It is fast drying and has a very good hiding power. Offers very good sanding properties.



**VINYL PRIMER** One component, vinyl modified primer and sealer, aluminium pigmented for increased water resistance. Good adhesion to wood and previously applied antifoulings, thus being the ideal sealer. Fast drying product.



**VINYL PRIMER SPRAY** One component, aluminium pigmented vinyl modified primer specially developed for areas to be coated with Aqualine Optima, such as stern drives, flaps, outboard engines, etc. Fast drying product.



**XPRIMER** Is a multiple use, two component epoxy primer. It can be used as a fast drying primer above the waterline, also as an undercoat, that is easy to sand to smooth surface in preparation for Xtreme Gloss topcoat. Can be used on steel, aluminium, composites and wood and is available in 2 colours, white and light grey. For professional use only.

Guide to the use of Primers and Undercoats \*

PAINT SYSTEM FOR UNDERWATER AREAS

On top of new substrate or totally sanded/blasted surface:

		FIBRE GLASS	ALUMINIUM	WOOD	STEEL
1	Cleaning	High pressure fresh water washing and degrease if necessary			
2	Preparation	Dry sand with P120 - P150 grade	Grind	Dry sand with P80-P150 grade	Grind
	Apply				5-15x Clipper 1
3	Apply	3 x AntiPest	2 x AntiPest	2 x Vinyl Primer	2 x Epoxy Yacht HB
4	Apply				AntiPest
5	Apply	2 x Antifouling			

PAINT SYSTEM FOR TOPSIDES AND EXTERIOR AREAS

On top of new substrate or totally sanded/blasted surface:

		FIBRE GLASS		ALUMINIUM		WOOD	STEEL	
Components (Comp.)		Two Comp.	One Comp.	Two Comp.	One Comp.	One Comp.	Two Comp.	One Comp.
1	Cleaning	High pressure fresh water washing and degrease if necessary						
2	Preparation	Dry sand with P120-150 grade	Dry sanding with P80 grade	Grind	Dry sand with P80 grade	Dry sand with P80-P150 grade	Grind	
3	Apply	AntiPest XPrimer	Vinyl Primer, Easy-Primer	AntiPest XPrimer	Vinyl Primer, Easy-Primer	Clipper 1 (5-15 coats wet-on-wet until total absorption)	Epoxy Yacht HB	
4	Apply	AntiPest, XPrimer	Easy-Primer	AntiPest, XPrimer	Easy-Primer	EasyPrimer	AntiPest, XPrimer	Easy-Primer
5	Apply	TopGloss, Xtreme Gloss	Easy-Gloss	TopGloss, Xtreme Gloss	Easy-Gloss	EasyGloss	TopGloss, Xtreme Gloss	Easy-Gloss
6	Apply							

- One thick coat with primer may be accepted but be aware that this may result in an uneven surface, affecting the final finish.
- Xtreme Gloss may be applied on both XPrimer and Antipest but for best result use XPrimer. EasyGloss should only be applied on top of EasyPrimer.
- EasyPrimer and EasyGloss should only be used above the waterline.

\* The application process that appears in the tables are a guideline. For exact process please check the technical datasheets.

How much primer do I need below the waterline?

		MOTOR BOAT						SAILING BOAT						LARGE KEEL BOAT								
Length (m)	4	6	7,5	9	11	13	15	4	6	7,5	9	11	13	15	4	6	7,5	9	11	13	15	
	Length (ft)	15	20	25	30	36	43	49	15	20	25	30	36	43	49	15	20	25	30	36	43	49
Area (m²)		8	12	20	24	34	50	70	6	9	14	22	29	37	48	10	13,5	21	28	43	48	76
Litres Required	Antipest*	4	6	9,5	11,5	16	28	38	3	4,5	7	10,5	18	22	29	5	6,5	10	13,5	23	29	45
	Epoxy Yacht HB	2,5	3,5	6	7	10	14	20	2	2,5	4	6,5	7	8	10	3	4	6	8	9	10	16
	Vinyl Primer	2	3	5,5	6,5	9	13	18	2,2	2,5	4	6	8	10	13	2,6	3,5	5,5	7,5	10	13	20

\* two coats considered  
loss factor of 20% considered





# ANTIFOULING

As a proud boat owner, you want your boat to perform at its best, the way to achieve this is to prevent fouling on the hull. The most common maintenance carried out with yachting paints is the application of antifouling. This is necessary for perfect sailing as it is more difficult to keep the hull clean once fouling starts. Fouling can lead to loss of speed, increased fuel consumption, damage to the paint system and blocked water inlets.



## WHY DO WE USE ANTIFOULING?

- 1 Reduce or prevent any animal or algae fouling
- 2 Secure minimal friction and thus, maximize speed and performance
- 3 Reduce fuel consumption by reducing friction
- 4 Avoid fouling penetrating the paint, and improve protection of the hull

By securing a clean hull throughout the season, the fuel consumption can be reduced and this can help minimize CO<sub>2</sub>-emission and any environmental impact.



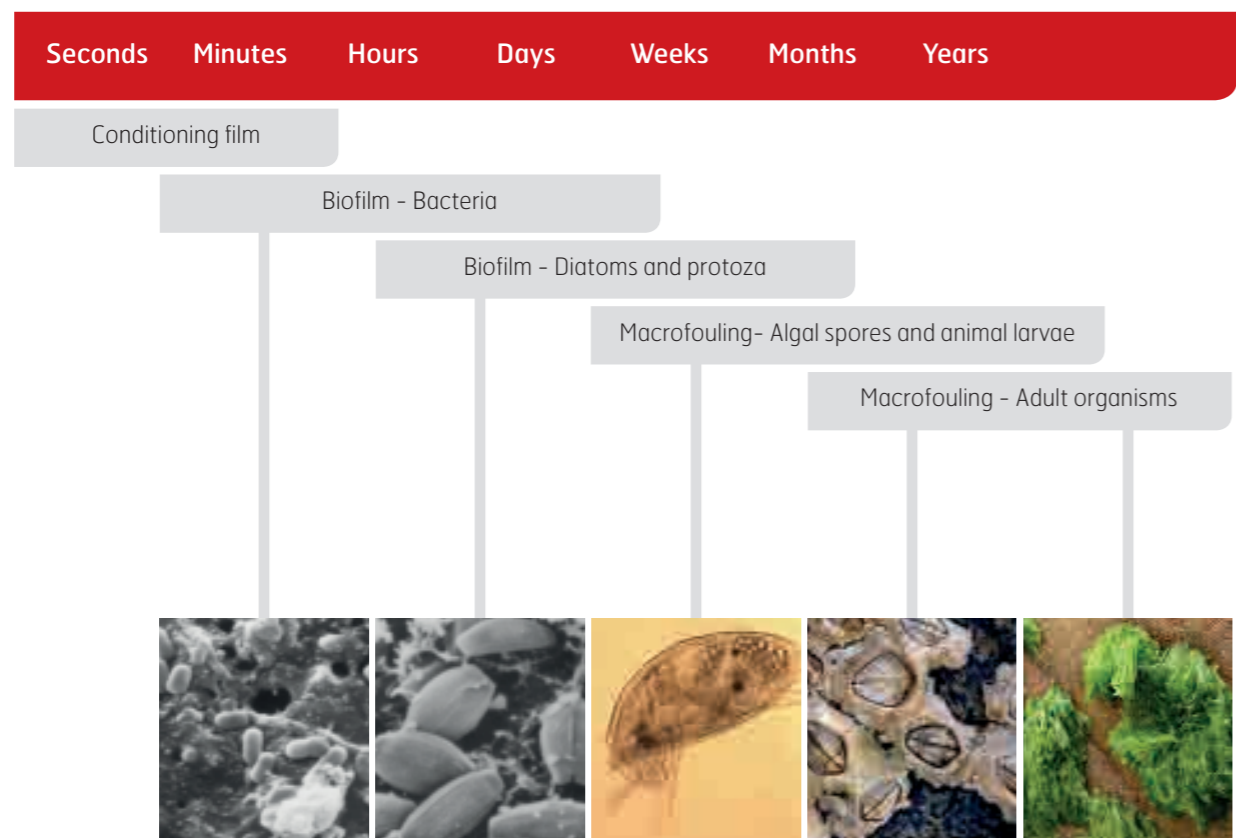
## Why does fouling occur?

Fouling growth depends on several factors: water quality, temperature, salinity and water depth in the harbour. There may be large differences in marinas located close to each other due to grey water spillage, pollution by various contaminants, no regeneration of the water, and nearby rivers, rain fall, vegetation, etc.

The number of species also has an influence. Antifouling products are intended to protect against up to 4,000 different types of fouling species living in our oceans. They can be classified as:

- Macro fouling: including animals and algae
- Micro fouling: normally referred to as slime, which is a viscous mixture of bacteria and other microscopic organisms

## How does fouling occur?



As a consequence, it is very important to choose the correct antifouling for your boat. Take into consideration the type of boat, and type of water the boat is used and moored.

## How does the antifouling work?

There are many different types of antifouling on the market and they can be divided into two main groups:

TYPE OF ANTI-FOULING	NEWLY SUBMERGED	OVER TIME
<p><b>SELPOLISHING</b> The biocide and the resin are dissolved in a predictable rate. As a result there is always a new fresh layer of antifouling in contact with the sea water keeping a regular leaching rate of the biocides throughout the whole service life of the product.</p> <p>All round technology for most types of boats. Ideal for cruisers and sailing lovers.</p> <p>NonStop Supreme, NonStop, Aqualine Optima and Mare Nostrum SP can be used on fibre, steel and wood. NonStop white and grey, Mare Nostrum SP White and Aqualine Optima can also be used on aluminium.</p>		
<p><b>HARD</b> Here the binder is insoluble, so the leaching rate of the biocide is not constant and the performance of the product decreases progressively throughout the season.</p> <p>Especially suitable for speed boats. Abrasion resistant product. Easy to sand. May be polished to give a smooth surface.</p> <p>Racing is a hard antifouling and can be used on fibre, steel and wood. Racing white and grey can also be used on aluminium.</p>		

● Biocides    ■ Antifouling

Some antifouling products may not be available in your country. Please contact your local Jotun office for detailed information.



## Choose the ideal antifouling

It is important to identify the ideal antifouling to fit with the existing paint system on the boat. There are three approaches to secure a correct choice:

- 1 If you know which antifouling is currently applied on the boat, follow the compatibility table on page 16.
- 2 If the current antifouling is unknown, apply a sealing coat of Vinyl Primer prior to applying the antifouling.

- 3 If the current paint system is damaged, remove coat by coat until a complete and undamaged coat is identified. (paint or original substrate). Sand the substrate and apply primer according to the recommended paint system for that particular substrate prior to applying antifouling.

In order to choose the correct antifouling for your boat and usage, it is important to consider type of boat, usage frequency, geographic location, current antifouling, and whether the boat is frequently transported by trailer. Also keep in mind environmental aspects and local regulations.

AREA OF USE	SELF POLISHING				HARD
	NonStop Supreme	NonStop	Mare-Nostrum SP	Aqualine Optima	Racing
Motor boats	★★★★	★★★★	★★		★★
Sailing boats	★★★★	★★★★	★★		★★
Regatta sailing boats	★★	★★	★		★★★★*
Speed boats (40 knots+)	★★	★★	★★		★★★★
Aluminium and light metal parts	**	★★★★ White/Grey	★★ White	★★★	★★ White/Grey
Propellers, flaps, etc (not made of light metal)	Same antifouling as for the main hull or Aqualine Optima ***				
High fouling areas	★★★★	★★★★	★	★★★	★★
Fresh water areas (lakes)	Antifouling is normally not recommended for use in freshwater areas				

Key: ★★★★★ Supreme   ★★★★ Excellent   ★★ Good   ★ Suitable

\*Jotun Yachting recommend wet sanding of the surface after application.

\*\* NonStop Supreme is not suitable for aluminium hulls.

\*\*\* Aqualine Optima should not be applied on the hull.








Photo: Henrik Ljungqvist, adstream.se

## Paint Systems

On top of new substrates or completely paint free hulls:

		FIBRE GLASS	ALUMINIUM	WOOD	STEEL	LIGHT WEIGHT METALS
1	Cleaning	High pressure fresh water washing and degrease if necessary				Degrease with Jotun Thinner no7 (Xylene)
2	Preparation	Sanding with P120 - P150 grade	Grind	Sanding with P150 - P180 grade	Grind	Sanding with P150 - P180 grade
3	Apply			5-15 x Clipper I		
4	Apply	3 x AntiPest	2 x AntiPest	2 x Vinyl Primer	2 x Epoxy Yacht HB	2 x Vinyl Primer Spray
5	Apply				AntiPest	
6	Apply	2 x Antifouling	2 x Antifouling NonStop White/Grey, Racing White/Grey, Mare Nostrum SP White	2 x Antifouling	2 x Antifouling	3 x Aqualine Optima

On old paint systems: wash thoroughly with fresh water before you start. If the current antifouling is unknown, you need to apply a sealer coat of Vinyl Primer to ensure adhesion. If the already applied antifouling is known, please consult the compatibility chart on page 16.

PRODUCTS	AREA OF USE	COVERAGE per coat	CLEANING	DRYING TIME			COLOUR
				23°C	15°C	10°C	
 <p><b>NONSTOP SUPREME</b> Top of the range premium selfpolishing antifouling. It is based on a unique binder combination system assuring an active surface which is continuously renewed. Extremely efficient, longer lasting up to 24 months*.</p>	For all types of boats, except aluminium hulls, providing an excellent result.	10 m <sup>2</sup> /ltr.	Jotun Thinner no.7 (Xylene)	Recoating interval: 8 h Launching time, min: 12 h Launching time, max**: 9 mth	10 h 16 h 9 mth	12 h 24 h 9 mth	<ul style="list-style-type: none"> <li>● Black</li> <li>● Dark Grey</li> <li>● Dark blue</li> <li>● Blue</li> <li>● Red</li> </ul>
 <p><b>NONSTOP</b> Very efficient, long lasting, top-class selfpolishing antifouling product, based on advanced hydrating binders, assuring an active surface which is continuously renewed.</p> <p><b>BEST IN TEST</b> Norwegian magazine Båttiv and Seilas 3/2010</p>	For all types of boats, providing an excellent result throughout the entire season. Only white and grey colours are recommended for aluminium hulls.	10 m <sup>2</sup> /ltr.	Jotun Thinner no.7 (Xylene)	Recoating interval: 8 h Launching time, min: 12 h Launching time, max**: 9 mth	10 h 16 h 9 mth	12 h 24 h 9 mth	<ul style="list-style-type: none"> <li>● Black</li> <li>● Grey</li> <li>● White</li> <li>● Dark blue</li> <li>● Blue</li> <li>● Red</li> </ul>
 <p><b>RACING</b> Advanced hard antifouling that provides a hard, smooth and polishable surface. No chalking.</p>	Can be used on most types of boats, but specially developed for speed boats (40 knots+). Only white and grey colours are recommended for aluminium hulls.	10 m <sup>2</sup> /ltr.	Jotun Thinner no.7 (Xylene)	Recoating interval: 8 h Launching time, min: 12 h Launching time, max**: 9 mth	10 h 16 h 9 mth	12 h 24 h 9 mth	<ul style="list-style-type: none"> <li>● Black</li> <li>● Grey</li> <li>● White</li> <li>● Dark blue</li> <li>● Blue</li> <li>● Red</li> </ul>
 <p><b>MARE NOSTRUM SP</b> Efficient selfpolishing antifouling based on special binders, assuring an active surface.</p>	For all types of boats, providing a good result. Only white colour is recommended for aluminium hulls.	10 m <sup>2</sup> /ltr.	Jotun Thinner no.7 (Xylene)	Recoating interval: 8 h Launching time, min: 12 h Launching time, max**: 9 mth	10 h 16 h 9 mth	12 h 24 h 9 mth	<ul style="list-style-type: none"> <li>● Black</li> <li>● Dark blue</li> <li>● Red</li> <li>● White</li> </ul>
 <p><b>AQUALINE OPTIMA</b> A new generation of protection for drives and other light-metal components below the waterline. An outstanding effect against fouling throughout the entire season.</p> <p><b>BEST IN TEST</b> German Magazine Boot 3/2013</p>	For drives, flaps and other light-metal components below the waterline. It is important that the surface is cleaned and degreased (using Jotun Thinner no 7) prior to application of Vinyl Primer and Aqualine Optima.	10 m <sup>2</sup> /ltr.	Jotun Thinner no.7 (Xylene)	Apply 2-3 coats with 15-20 minutes interval Launching time, min: 3 h Launching time, max**: 9 mth	8 h 9 mth	10 h 9 mth	<ul style="list-style-type: none"> <li>● Black</li> <li>● Grey</li> </ul>




\* The service period depend on water temperature, fouling pressure and sailing hours.  
\*\* Under the condition that the boat is well protected or stored indoors.



## Selfpolishing antifoulings/hard antifoulings

OLD ANTIFOULING IN GOOD CONDITIONS	NEW ANTIFOULING			
	SELPOLISHING ANTIFOULINGS			HARD ANTIFOULINGS
	NonStop Supreme	NonStop	Mare Nostrum SP	Racing
NonStop Supreme, NonStop, Mare Nostrum SP Other selfpolishing antifoulings*	Apply directly			
Racing Other hard antifoulings*	Wet sand + new coat			
Unknown	Wet sand + Vinyl Primer			

\* Except Seajet 034, Hempel Glide Cruise, Hempel Glide Speed, International VC17 or antifouling product containing teflon. A sealer coat of Vinyl Primer must be applied when overcoating these.

-  Apply directly once the surface is dry and clean.
-  Wet sand with a medium grade sand paper and rinse well with fresh water. Apply new coat once the surface is dry and clean.
-  Wet sand with a medium grade sand paper and rinse well with fresh water. Apply one sealer coat of Vinyl Primer.

## How much antifouling do I need?

Preventing fouling is not just a question of the antifouling itself, but also the application and thickness of each coat. It is important to have enough paint for the surface to be painted, in order to achieve the correct protection.

	 MOTOR BOAT							 SAILING BOAT							 LARGE KEEL BOAT					
<b>Length (m)</b>	4	6	7,5	9	11	13	15	4	6	7,5	9	11	13	15	6	7,5	9	11	13	15
<b>Length (ft)</b>	13	20	25	30	36	43	49	15	20	25	30	36	43	49	20	25	30	36	43	49
<b>Area (m<sup>2</sup>)</b>	8	12	20	24	34	60	73	6	9	14	22	34	40	50	13,5	21	28	38	60	75
<b>Litres required</b>	2	3	5	6	8,5	14	17	1,5	2,5	3,5	5,5	8,5	10	12,5	3,5	5,5	7	9,5	14	18
<b>Cans 0,75 l.</b>	3	4	7	8	12	19	23	2	4	5	8	12	14	17	5	8	10	13	19	24

The figures show paint consumption for two coats. This is only a guide, the accuracy will decrease as the size of the boat increases.





# TOPCOATS

Topcoats provide the first impression of your boat giving it a distinct character. Even an old worn surface can look like new with the correct choice of product. Topcoats are not only providing colour but are also an important barrier from the elements providing protection, UV protection, scratch resistance and durability.

All Jotun products offers these characteristics, while being easy to use and apply. Jotun offers both one and two component solutions, based on different needs and surfaces. All products are available in the selected yachting colours with optional availability in a wider range of colours using the JOTUN MCI color system.

## TYPES

Topcoats are available in two different types: one component and two two components products. The main differences are the degree of gloss, elasticity and application properties. This will also have an effect on the long term durability of the system.

## PRODUCTS



**XTREME GLOSS** Is an acrylic polyurethane, high gloss top coat, with a reflective, mirror like finish. Designed for spray application but can be applied by brush and roller, this very easy to use, high gloss topcoat should be applied on XPrimer for the perfect finish. Can be polished and buffed if required. For professional use only.



**TOPGLOSS** Two component polyurethane topcoat, providing a very high level of gloss and an exceptional hardness giving extra protection against abrasion. A professional finish can be achieved, even with roller or brush. Very good gloss and colour retention as well as levelling properties. For professional use only.



**EASYGLOSS** One component alkyd, giving very good application properties when applied by roller or brush. Provides a high gloss finish and good abrasion resistance, while staying flexible at the same time. For all types of boats.



Photo: Jeanneau by Heilmann Mairin

## HINTS FOR A PERFECT FINISH

- For more details on preparations, protection, stirring and what tools to use go to page 36-37.
- Do not apply paint in very high or very low temperatures, in strong sunlight or in strong wind.
- Wet the floor around to reduce dust on wet paint.
- Stir the product thoroughly and every now and again during application.
- If possible share the job between two people.
- Use high quality solvent resistant rollers, preferably mohair type or foam type.
- For the last coat a new absolutely clean brush should be used.
- Apply by roller and tip off by brush. Keep the brush at 45° angle to avoid brush marks.
- Do not apply two component topcoats on top of a one component system.
- Apply one primer coat as per the specification chart.
- If the surface has defects due to scratches, holes, etc. apply filler as necessary. Allow to dry and carefully sand with a P240 – P360 sand paper.
- After the filler, apply an extra coat of primer to seal the filler and prevent any solvent and resin entrapment which may affect the final gloss.
- Sand with P360-P400 sand paper. Thoroughly clean the surface before topcoating according to TDS.
- Finally, apply the topcoat.



## Paint Systems

### ONE COMPONENT SYSTEMS

On top of new substrate or completely sanded.

	FIBRE GLASS	ALUMINIUM	WOOD	STEEL
<b>1</b> <b>Cleaning</b>	High pressure fresh water washing and degrease with BoatWash if necessary			
<b>2</b> <b>Surface preparation</b>	Dry sand with P120 - P150 grade	Grind	Dry sand with P80 - P150 grade	Grind
<b>3</b> <b>Apply</b>	Vinyl Primer, EasyPrimer		Clipper I (5-15 coats wet-on-wet until total absorption)	Epoxy Yacht HB
<b>4</b> <b>Apply</b>	2 x EasyPrimer			
<b>5</b> <b>Apply</b>	2 x EasyGloss			

### TWO COMPONENT SYSTEMS

On top of new substrate or completely sanded.

	FIBRE GLASS	ALUMINIUM	WOOD	STEEL
<b>1</b> <b>Cleaning</b>	High pressure fresh water washing and degrease with BoatWash if necessary			
<b>2</b> <b>Preparation</b>	Dry sand with P120-150 grade	Dry sand with P120-150 grade	Dry sand with P80 - P150 grade	Grind
<b>3</b> <b>Apply</b>	AntiPest, XPrimer		Clipper I (5-15 coats wet-on-wet until total absorption)	Epoxy Yacht HB
<b>4</b> <b>Apply</b>	AntiPest, XPrimer			
<b>5</b> <b>Apply</b>	2 x TopGloss, 2 x Xtreme Gloss			

1. One thick coat with primer may be accepted but be aware that this may result in an uneven surface, affecting the final finish.

### PAINT SYSTEM

On top of existing paint system in good condition.



	ON TOP OF TWO COMPONENT PRODUCTS	ON TOP OF ONE COMPONENT PRODUCTS
<b>1</b> <b>Cleaning</b>	High pressure fresh water washing and degrease with BoatWash if necessary	
<b>2</b> <b>Surface preparation</b>	Light sanding with fine sand paper as P280-P360 and removal of dust	
<b>3</b> <b>Apply</b>	2 x TopGloss, 2 x Xtreme Gloss	2 x EasyGloss

## Application advice

### HOW MUCH PAINT WILL I NEED?

The necessary amount of paint is depending on the area to be painted. A simple way to calculate the area is by measuring the distance from the waterline to the deck and multiply it by the total length. This has to be multiplied by the two sides of the boat plus the area of the aft part. Since boats have different design, this calculation is only an estimate.

By dividing this area by the spreading rate of each product (information available in the can and the technical data sheets), you can establish the number of litres required to paint the boat. As a quick guide, please refer to the below table of approximate number of litres required for each boat type.

														
	MOTOR BOAT							SAILING BOAT						
<b>Waterline length (m)</b>	4	6	7,5	9	11	13	15	4	6	7,5	9	11	13	15
<b>Waterline length (ft)</b>	13	20	25	30	36	43	49	13	20	25	30	36	43	49
<b>Area (m<sup>2</sup>)</b>	8	12	20	24	34	46	58	6	9	14	22	34	46	58
<b>Cans 0,75 l. (one coat).</b>	1	2	3	3	5	6	8	1	2	2	3	5	6	8

### COLOURS

Historically, paint producers have offered limited range of colours for customers to choose from. Although the most common colours are white and dark blue, there is a wide variety colour shades and nowadays a large range of colours can be seen on all types of boats.

Jotun Yachting can offer a full range of colours thanks to the Jotun Multicolour System (MCI). Contact local Jotun office.

# WOOD TREATMENT AND VARNISHES

Wood is a natural material and gives a warm and sophisticated impression of your boat. A high quality varnish is needed to enhance and protect its beauty. Gloss level is important for people in general but even more significant is to find a varnish that provides protection for the wood against the harsh marine environment.

Sun, sea and wind affect wood throughout the season and varnishes have to be efficient and provide the following characteristics:

- 1 Protect the wood against – UV light - which attacks the natural fibers in the wood – sea water, rain, wind and dust.
- 2 Preserve and enhance the wood's natural beauty.

The best way of achieving a perfect result when varnishing is to allow enough time for preparations and pay attention to detail. Make sure you have as much time for the preparations as for the varnishing itself and use high quality brushes.



Photo: Wiknes



## HINTS FOR A PERFECT VARNISH RESULT

- Do not apply in very high or very low temperatures, under strong sunlight or in strong wind.
- Wet the floor around to avoid dust on wet paint.
- Stir the product thoroughly and every now and again during application.
- Use high quality mohair rollers or solvent resistant foam roller. If you use a brush apply the product by 45° angle to avoid brush marks.
- Apply thin coats following the direction of the wood grain.
- Apply 5-15 coats of Clipper I, wet-on-wet. If Clipper I is not available, the first coat of varnish can be diluted 10-15% to improve the penetration.
- Apply a first coat of Jotun Yachting varnish which should be diluted with 10% and 15% of the recommended Jotun thinner to help penetration.
- After the first coat, it may be necessary to sand with a medium to fine grade sandpaper to remove wood defects.
- Apply three to four coats of the product. If long lasting protection is desired, a total number of 10-15 very thin coats should be applied.
- As more coats are applied sand the surface with a fine grade to avoid defects and dust inclusions that may be visible on the following coats.
- Follow the drying times and the recoating intervals as stated in the technical data sheet of each product. A good rule would be to apply one coat per day.
- **NB! Materials such as cleaning rags, paper wipes and protective clothing, which are contaminated with the product may spontaneously self-ignite. To avoid the risks, burn it immediately or put it in water.**



## A good basis for varnishing

Before applying any varnish it is advisable to increase protection by applying a penetrating wood oil. The main purpose of this product is to increase the waterproof barrier of the system, to provide good protection against fungus and rot and also provide a well prepared substrate for varnishing.

Jotun Yachting offers two traditional one component varnishes, and a two component varnish (Xtreme Gloss Clear) which is a combination of oil and varnish system.

### DIFFERENT TYPES OF VARNISHES AND WOOD TREATMENT PRODUCTS



**CLIPPER I** Preserving oil for wooden boats, interior and exterior above the waterline, with very good penetration effect. Ideal foundation for treatment with Jotun Yachting varnishes.

Substrate to be dry and free of contamination. Wash oily tropical hardwood with Jotun Thinner No 18. Sand with P60 – P80. Remove existing varnishes and loose wood fibres. Apply 5-15 coats, wet-on-wet, depending on surface absorption.



**CLIPPER II** High gloss, long oil alkyd varnish, with exceptional hardness and very good penetration properties. Gives a professional, clear finish. Contains UV filters to protect wood against sunlight. Very good levelling and gloss retention.

Substrate to be dry and free of contamination. To be applied over Clipper I or on old surfaces previously coated with Clipper II in good condition.



**BENAR MARINE** Moisture release, long oil, high gloss wood treatment. Provides a varnish finish effect with very high penetration and breathing properties, allowing humidity to be released without peeling off and to move together with breathable wood without cracking.

Substrate to be dry and free of contamination. To be applied over Clipper I or on old surfaces previously coated with Benar Marine in good condition.



**RAVILAKK** Urethane, high gloss varnish with exceptional flexibility and high hardness. Gives a professional finish, with a light golden finish. Its UV filters enhance the natural beauty of the wood. Very good levelling and gloss retention.

Substrate to be dry and free of contamination. To be applied over Clipper I or on old surfaces previously coated with Ravilakk in good condition.



**TEAK OIL** Organic teak oil designed to protect teak decks from oxidation and degradation caused by the environment. Can also be used on other wooden surfaces.

Substrate to be dry and free of contamination. Wash oily tropical hardwood with Jotun Thinner No 18. Apply one coat of Teak Oil by brush. After 15 minutes remove the excess oil with a dry, clean cloth. If necessary apply a second coat of Teak Oil after one hour.



**TEAK CLEANER** A waterbased cleaner for teak and other hardwoods. Teak Cleaner is designed to clean and restore weathered teak and other hardwoods. Restore the natural colour of the woods.

Shake Teak Cleaner well before use. Apply to the surface and allow work for 5–20 minutes. Rinse well with fresh water. Protect the wood with Jotun's Teak Sealer or Teak Oil.



**TEAK SEALER** Waterbased sealer for teak and other hardwoods. Provides a waxy surface which protects against water and dirt/stains and prevents the surface drying and cracking.

Clean the surface with Teak Cleaner and rinse well with fresh water. Shake Teak Sealer well before use. Apply with brush or roller until the wood is saturated. Wipe off excess after 30 minutes.

## The ideal varnish

PRODUCT	WOOD EXTERIORS	WOOD INTERIORS
Ravilakk	★★★★	★★★★
Clipper II	★★★★	★★★★
Benar Marine	★★★★	★

Key: ★★★★★ Excellent ★ Suitable

## Paint Systems

On top of new or totally sanded wood.

		ONE COMPONENT SYSTEM
1	Cleaning	High pressure fresh water washing and degrease with BoatWash
2	Preparation	Sand first with a P80–P180 grade sand paper, followed by P240–P320 grade
3	Apply	Clipper I (5-15 coats wet-on-wet until total absorption)
4	Apply	Ravilakk                      Clipper II                      Benar Marine
5	Apply	Ravilakk                      Clipper II                      Benar Marine
6	Apply	Ravilakk                      Clipper II                      Benar Marine
7	Apply	Ravilakk                      Clipper II                      Benar Marine
8	Type of finish	Gold glossy finish                      Clear glossy finish                      Clear glossy finish

To achieve a very high gloss when applying Ravilakk or Clipper II, it is advisable to apply one coat per day with sanding in between with a fine grade sandpaper (P320–P400).

Benar Marine can be over coated after 24 hours. Application may be done by applying very thin coats, brushing carefully.

# OSMOSIS

Osmosis is recognized as the main enemy of fibre glass hull boats. Osmosis occurs as a result of water vapour and humidity transmission through the gelcoat layer, affecting the fibre glass lamination and its structural resistance.

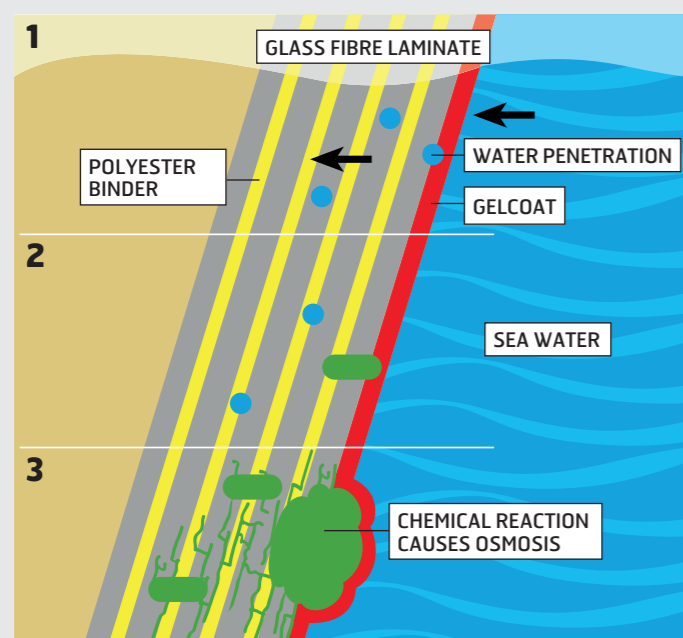
## THE OSMOSIS PROCESS

Osmosis is the natural process of liquids to equal the differences in pressure between the humidity content of the hull and the sea water. The gelcoat is not a totally waterproof barrier, so humidity will penetrate through the gelcoat down to the fibre glass laminate.

Other factors that contribute to the development of osmosis, are water and moisture in the bilges. This moisture will also penetrate the laminate from inside,

thus enabling osmosis to occur. The speed of the osmosis process and the damage it may cause is depending on several factors, such as production speed, glass fibre quality, water temperature etc. Osmosis is a potential problem for gelcoat hulls in the same way corrosion threaten steel and aluminium hulls. To prevent osmosis, it is important to apply a correct paint system as soon as possible.

## HOW DOES OSMOSIS OCCUR?



**Osmosis** is the process where water is transported through a film, e.g gelcoat, from an area with high concentration of water to an area with low concentration of water in order to achieve equal water concentration in the two areas. These areas may be in the polyester binder itself (yellow area), in the glass fibre laminate (grey area) or between the glass fibre laminate and the gelcoat (red area). After some time, both sides of the gelcoat have an equal concentration of water, which will create blisters with an hydraulic pressure behind the gelcoat.





## HOW TO DETECT AND TREAT A HULL AFFECTED BY OSMOSIS

It is not always easy to detect osmosis in a hull. Only when blistering can be seen, it is easy to check if the hull has osmosis. If the blistering, blisters (usually of different sizes) contain a brown coloured liquid with a vinegar odour, it is reason to believe that the hull has osmosis and an osmosis treatment must be initiated. If blisters are dry and hard, they are the consequence of air or solvent retention during the painting works, which has no effect on the fibre glass.

If blisters are not visible, this does not mean that hull is osmosis free: as we seen in the "Osmosis process" explanation, the process requires a certain time before blisters are likely to appear. Furthermore preventive treatments will not stop the osmotic process, so it is advisable to get the hull inspected by a professional who can confirm any osmosis status or potential. If so, a repair treatment should be initiated as soon as possible to avoid the progression of osmosis.

If a full osmosis treatment has to be carried out, the gelcoat must be removed completely, the hull must be left to dry and the Jotun Yachting Osmoshell system should be applied to the fibre glass before any primer or antifouling. The most important point is to replace the gelcoat with the correct thickness with epoxy products which are much more waterproof than gelcoat.



### PRODUCTS



**OSMOSHELL** Unique filler for repairs of major osmosis damage. Contains glass flakes to provide exceptional hardness. Should be applied by professionals. Jotun's recommended product for major osmosis damages.



**EPOXY YACHT HB** Two component, epoxy mastic primer, with excellent waterproofing properties. The ideal primer for a perfect anti-corrosive protection system for steel, and against osmosis in fibre glass hulls. A water resistant product and thanks to its special adhesion properties, it can be applied on top of corroded surfaces once correctly prepared and cleaned clean. Due to its extreme hardness, it provides a high resistance to abrasion and long durability.

## PAINT SYSTEM WITH OSMOSHELL

Recommended painting process for an osmosis treatment of a fibre glass hull

1	Cleaning	High pressure fresh water washing and degrease with BoatWash if necessary
2	Preparation	Remove the existing paint and gelcoat completely and rinse the hull with fresh water (warm if possible) adding some abrasive material(*)
3	Preparation	Let the hull dry (less than 1% water in the fibre glass), wash with fresh water every week
4	Apply	Apply a first coat of Osmoshell with a smooth spatula to fill in all defects, hollows etc.
5	Apply	1.000 microns (1 mm) with Osmoshell by tooth and smooth spatula after surface preparation
6	Apply	One coat of Finishing Filler** if necessary to achieve a smooth surface
7	Apply	Antipest (1 coat)
8	Apply	Antifouling (2 coats)

Small osmosis damage may be repaired with Epoxy Repair.

Osmoshell is a solvent-free epoxy coating, reinforced with glass flakes, giving a very high structural surface, being virtually waterproof. This is a curative coating system for hulls affected by osmosis.

(\*) If abrasive material cannot be used, coarse sanding with P40 – P80 dry paper is recommended in order to ensure the correct surface roughness and full adherence of the system.

(\*\*) Finishing Filler is recommended to obtain a smooth surface, as Osmoshell will leave certain roughness after application and should not be sanded to avoid film thickness reduction. Finishing Filler can be easily sanded to get a smooth surface.

Moisture content of the hull has to be less than 1% before application of any coating.

## PAINT SYSTEM WITH EPOXY YACHT HB

An alternative repair coating system to Osmoshell is to apply several coats of Epoxy Yacht HB, a high build epoxy coating. Apply 8-10 coats depending on application method, before application of AntiPest. This process is slower and will provide less thickness, but is much easier to apply (roller only) and the final result will be a good alternative to Osmoshell, in terms of water resistance.

Painting process for an osmosis repair system of a fibre glass hull

1	Cleaning	High pressure fresh water washing and degrease with BoatWash if necessary
2	Preparation	Remove the existing paint and gelcoat completely and rinse the hull with fresh water (warm if possible) adding some abrasive material(*)
3	Preparation	Let the hull dry (less than 1% water in the fibre glass), wash with fresh water every week
4	Apply	800 microns (8-10 coats) Epoxy Yacht HB applied with brush or roller
5	Apply	One coat of Finishing Filler** if necessary to achieve a smooth surface
6	Apply	AntiPest (1 coat)
7	Apply	Antifouling (2 coats)

(\*) If abrasive material can not be used, coarse sanding with P40 – P80 dry paper should be carried out in order to assure the correct surface roughness and full adherence of the system.

(\*\*) Finishing filler is recommended to obtain a smooth surface. It is not needed in terms of water resistance, but Epoxy Yacht HB is a high build coating which may leave certain roughness after application. Epoxy Yacht HB should not be sanded to avoid film thickness reduction. Finishing Filler can be easily sanded to get a smooth surface.

Moisture content of the hull has to be less than 1% before application of any coating.

# FILLERS

Fillers are designed for the repair of any hull imperfections, caused by collision or construction defects. These products can be applied at a very high film thickness and have very good sanding properties. Fillers are quite hard coatings, in order to resist damage, but must still be flexible enough to avoid cracking, particularly on sailing boats.

## MAIN CHARACTERISTICS ARE:

- To level out and smooth the hull surface.
- To help sanding works with minimum loss of thickness and volume.

There are different types of fillers, however Jotun Yachting recommends the use of two component epoxy fillers due to its better waterproof barrier, low water absorption and degree of solvent resistance, compared to polyester fillers. Their hardness and flexibility are also significantly better. For underwater areas, only epoxy fillers can be used.

It is important to note that fillers have to be applied between coats of primers (sandwich technique), in order to secure a total sealing of the filler coat. By doing this, the risk of water absorption and low gloss areas on subsequent coats due to solvent absorption is avoided.

## FILLER COLOURS

Each component of Jotun Yachting epoxy fillers have contrasting colours in order to help mixing. The mixing is correct when a final homogenous colour is achieved and there is no trace of the original component colours.

## TYPES OF FILLERS

Jotun Yachting has three types of solvent free epoxy fillers. These are suitable for different types of use. Lightweight Filler is an ultra-light weight fairing compound for big repairs and Finishing Filler is a filler for smooth finishes and relatively small defects. The main difference between them is the type of finish they provide, their degree of hardness and waterproof properties. All of them are very easy to sand.

## PRODUCTS



**LIGHTWEIGHT FILLER** Two component, ultra light weight (0,57 kg/l), epoxy solvent free filler compound for high film thickness application. It can be applied up to 30 mm, and fill big areas, without having a big impact in the total weight of the boat. It is very easy to sand, but is more porous and leaves a more irregular surface than Finishing Filler, so it should be recoated with Finishing Filler after sanding and prior the epoxy primer application.



**FINISHING FILLER** Two component smooth epoxy filler, for finishing jobs. Can be applied up to 3 mm of film thickness, leaving a very smooth surface without pores. Can be sanded easily and provides a very smooth and uniform surface. Although it has a low absorption rate, it is necessary to seal the filler with an epoxy coating. Suitable as filler system in osmosis treatments and repairs.

Some products may not be available in your country. Please contact your local Jotun office for detailed information.

## Filler system

### 1. SURFACE PREPARATION

Must always be applied on top of a dry and clean epoxy primer. If overcoating interval is exceeded, the primer should be sanded.

### 2. FILLERS



Jotun Yachting fillers are all two components epoxies, with a mixing ratio ratio is 1:1 both by weight and volume, so it is very easy to get the correct mixing proportion for any quantity needed. Once applied and dry, the filler has to be sanded before re-painting with an epoxy primer or between filler layers.

NB. All fillers are more porous than epoxy paints, so in case of heavy rain after filler application, they may absorb some humidity. Therefore, it is necessary to let them dry for a couple of days before overcoating in order to help evaporation and drying.



# BOATCARE AND THINNERS

Here is an introduction of the Jotun boatcare products that can help you to achieve the perfect result.

PRODUCTS	AREA OF USE
 <p><b>BOATWASH</b> Alkaline waterborne detergent for removing grease, salt and dirt without matting the surface. Biological degradable and can also be diluted with salt water, but it is important to rinse with fresh water afterwards. Suitable cleaner for gelcoat and wooden boats both outside and inside, and on painted or varnished surfaces.</p>	<ul style="list-style-type: none"> <li>Normal cleaning: dilute with fresh water. Ratio of 1:50 – 1:100</li> <li>Heavy cleaning: dilute with fresh water. Ratio of 1:20</li> <li>Cleaning engine: undiluted BoatWash on to the surface and leave to work for 5 – 10 min</li> <li>Clean the surface using a brush or a sponge</li> <li>Always rinse with fresh water</li> </ul>
 <p><b>MARINE RUBBING</b> is a heavy duty liquid rubbing specially formulated for yachts where excellent results on maintenance of weathered surfaces is required. It is suited for both machine polishing as well as hand polishing. Do not contain abrasives components and can be used for rubbing and polishing of gelcoat and surfaces painted with two component top coats. Excellent for removal of small scratches, oxidized surfaces, dirt and stains. Can be used for cleaning of fender lists.</p>	<ul style="list-style-type: none"> <li>Wash the surface with BoatWash, rinse well with fresh water</li> <li>Shake Marine Rubbing before use</li> <li>Apply a rich amount of Marine Rubbing with a soft cloth or sponge but machine polish with wool pad is</li> <li>Recommended, at 1000-1500 rpm</li> <li>By hand: Alternatively, rub only smaller areas at the time, with circular movements. Complete with a new</li> <li>Clean micro fibre cloth to high gloss</li> <li>To seal the coat give the surface a finishing treatment with Hard Wax</li> <li>Do not apply Marine Rubbing on hot surfaces or in direct sunlight</li> </ul>
 <p><b>HARD WAX</b> A nano-technology based wax, specially developed for new and thoroughly cleaned surfaces, ensuring a deep mirror shine and long lasting protection. Can be degreased. To be used on gelcoat and two component topcoated surfaces.</p>	<ul style="list-style-type: none"> <li>Wash the surface with BoatWash, rinse well with fresh water</li> <li>Shake well before use</li> <li>For older oxidised or flat surfaces: use Marine Rubbing first</li> <li>For machine polishing recommended rotating speed is 1000 rpm</li> <li>Apply a thin layer of Hard Wax with a soft cloth or sponge and let it dry for 10–15 min</li> <li>Polish with microfiber cloth to obtain high gloss</li> <li>Do not apply on hot surfaces or in direct sunlight</li> </ul>

## FOR A PERFECT FINISH THROUGHOUT THE SEASON



**1. Boatwash** - Use the correct dilution with water and clean with sponge.



**2. Marine Rubbing** - apply generously with soft cloth or polishing paper, apply on small surfaces at a time. Machine polish with wool pad at 1000-1500 rpm.



**3. Hard Wax** - apply with microfibre cloth or lambs wool cloth. Allow to dry 10-15 min. Polish with microfibre cloth, or foam pad if using machine.

### FOR A BEAUTIFUL TEAK DECK



**Teak Cleaner**  
- apply with brush or roller and allow to dry for 15-20 min. If the surface is dirty, scrub with a short hair brush. Rinse thoroughly with fresh water.









**Teak Sealer/Teak Oil**  
- apply with cloth or sponge and wipe off excessive fluid with microfibre cloth.



## 2. THINNERS

Quick guide for solvents and thinners to be used with different Jotun Yachting products.

PRODUCT	TYPE	FOR USE WITH	JOTUN PRODUCTS
 <p><b>JOTUN THINNER NO. 2</b></p>	Alkyds and urethane alkyds	One component topcoats and varnishes	Clipper I, Clipper II, Ravilakk, Benar Marine, EasyPrimer, EasyGloss
 <p><b>JOTUN THINNER NO. 7</b></p>	Vinyl acrylics, urethane alkyds and polysiloxanes	One- and two-component topcoats, primers and antifouling	All antifouling, Vinyl Primer
 <p><b>JOTUN THINNER NO. 12</b></p>	Polyurethane	Two component topcoats and varnishes	TopGloss, Xtreme Gloss
 <p><b>JOTUN THINNER NO. 17</b></p>	Epoxy coatings	Two component primers	Epoxy Yacht HB, AntiPest, Osmoshell, XPrimer
 <p><b>JOTUN THINNER NO. 18</b></p>	Polyurethanes, medium evaporation	Two component topcoats and varnishes	TopGloss, Xtreme Gloss
 <p><b>JOTUN THINNER NO. 19</b></p>	Polyurethanes, fast evaporation	Two component topcoats and varnishes	TopGloss, Xtreme Gloss

Jotun Thinner No. 17 and Jotun Thinner No. 18 can be used for cleaning tools and other equipment.

Do not add excessive solvent to coatings. Carefully check the coating manual and the technical data sheet of each product before adding any thinner. Solvents can affect in drying times, film formation and curing properties.

Important: Do not add any solvent to fillers. Solvents will affect drying times, film formation and water/solvent resistance properties.

# HEALTH, SAFETY AND ENVIRONMENT

In this section you find advices aimed at helping you apply our products in a way that minimizes risk for health, safety and the environment. The product back labels provide you with symbols and warnings where you need to be extra cautious.

## BEFORE YOU BEGIN

- Read the product back label carefully. Safety data sheets are available at [www.jotun.com](http://www.jotun.com)
- Wear protective and correct protection.
- Remove any rings, watches and bracelets before starting work.
- Always cover work area with protective sheets to prevent chemical runoff into the sea.
- Follow marina work regulations.
- Consider the weather, avoiding rain and strong winds.

## DURING AND AFTER WORK

- Avoid inhalation.
- Wet sanding is recommended. Make sure your work area is properly ventilated.
- Consider using respiratory protection. This is required when spray painting.
- Avoid using hot air guns to strip old paint.

## PROTECT YOUR EYES AND SKIN

- Always wear protective goggles (or visor), overalls and chemical resistant gloves.
- Consider using a long handled brush or roller.
- Avoid stripping, sanding or painting directly above your face.
- Use soapy water (not paint thinner) to remove paint from skin.
- Immediately change any garments spattered with paint or thinner.

## PROTECT THE ENVIRONMENT

- For sanding, Jotun Yachting recommend using power tools connected to a vacuum cleaner, thus collecting up to 99% of the dust created.
- Choose the recommended brushes and rollers.
- Whether sanding wet or dry, always keep a clean cloth handy.
- Immediately wipe off any spillage.
- Dispose old paint cans, excess paint and equipment at an approved waste management facility.





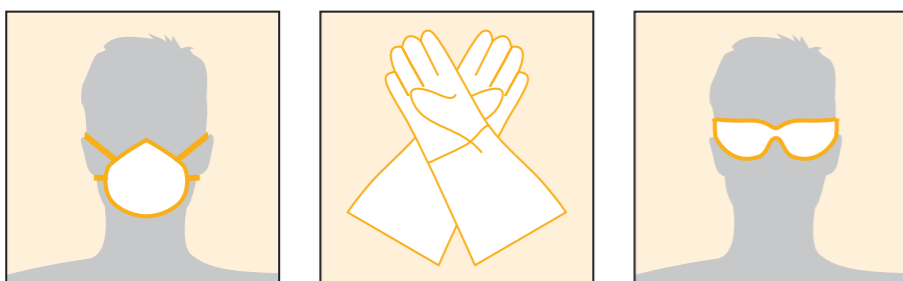
# APPLICATION ADVICE

## 1. PREPARATION

Before starting any job, the waterline must be protected as well as any other area which is not going to be painted. This can be done with a solvent resistant plastic. In the case of spray application there will be a lot of paint mist, thus it is important to carefully protect the underwater area as well as the deck.

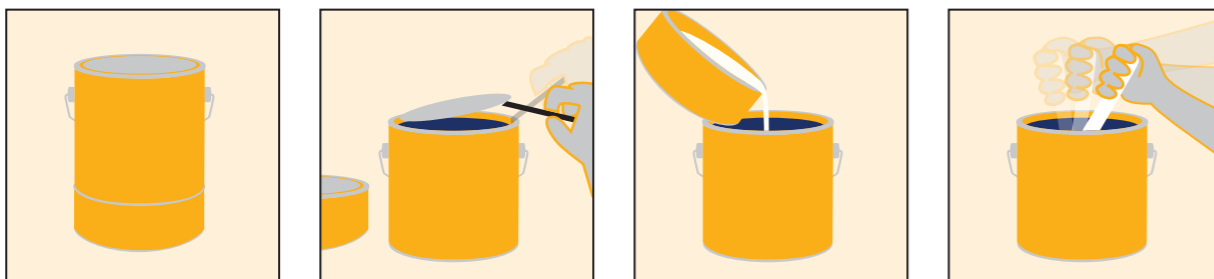
## 2. PROTECTION

It is also important to protect yourself with the correct overalls, gloves, goggles and mask. Adhere to safety instructions on the back labels and technical data sheets.



## 3. STIRRING

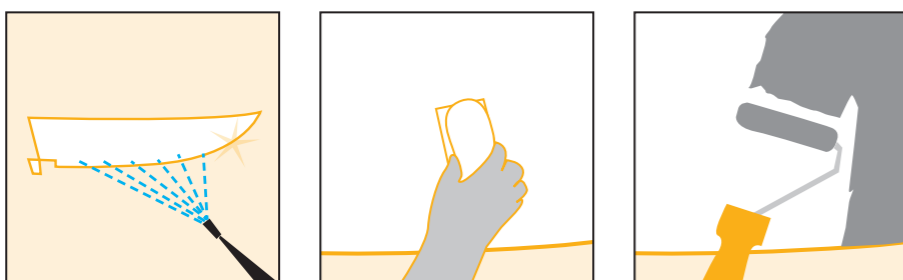
It is essential to thoroughly stir any type of paint, it is even more critical for two component products. If not, correct drying will not be achieved and it will not provide the expected protection. It may also cause adhesion problems with the subsequent coats. It is also critical in the case of antifouling to thoroughly stir as some ingredients, such as copper and zinc, will have a tendency to settle during shelf life. For cans up to three litre, use a wooden/metallic stirrer, for bigger can sizes use a mechanical stirrer. The stirrer should be completely clean to avoid contamination. Vinyl Primer spray and Aqualine Optima spray: shake well prior to use.



## 4. SURFACE PREPARATION

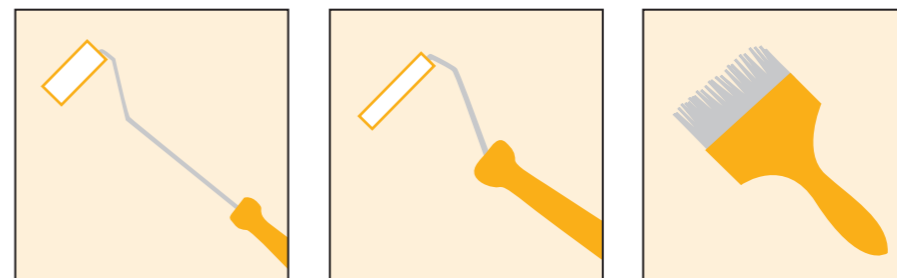
It is absolutely essential to apply paints over totally clean surfaces, with a correct surface profile as this aids adhesion. Basic steps to follow are:

- Wash with fresh water to remove dust, salts and other contamination. If grease or oil are present, then the surface must be degreased.
- Sand the surface with dry medium grade paper (P80–P180), specified in the tables for each section. On steel substrates, blasting is the best method but when not possible, matt the surface with very coarse grade paper or any other mechanical method. Always avoid polishing the metal as this will impair adhesion of the paint.
- Apply the necessary coats of primers as specified in the table on p. 7.
- Finally, apply the topcoat or the antifouling.



## 5. APPLICATION TOOLS

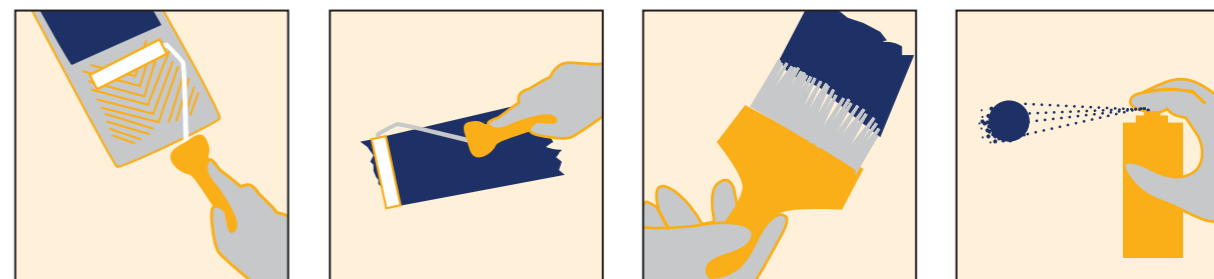
- Roller: A medium or short pile mohair roller, resistant to solvent is recommended. A foam roller may also be used, but with this type of roller there will be more air entrapment, so extra brushing work to remove air will be needed.
- Brush: For small areas or touch up works, it should be solvent resistant. It is important to use a good quality brush as its will not loose fibres which may then be left on the paint film.
- Spray: Airless spray is the best method for priming, due to its better wetting properties, the film formation and thickness applied without dilution etc. Alternatively, conventional spray can be used, but more coats will be necessary to achieve the specified film thickness and protection. Spray application should only be done by professionals.



## 6. APPLICATION

Apply the recommended coats. An extra coat of antifouling is recommended on those areas with more friction. These parts are fore part, water line and aft part, near the propellers. Avoid applying under adverse conditions such as strong wind, high sunlight/heat (specially at noon in summer time), low temperatures, high humidity or rain. It is not recommended to add solvents as these reduce the thickness applied and there will be more risk of sagging, splashes, etc.

However, if necessary to apply paint in strong wind or in high temperatures, it is possible to add between 5% and 10% (maximum) of solvent. Only use Jotun thinners and carefully read the product specific technical data sheet prior to use.



# ANTIFOULING COLOURS



NONSTOP SUPREME	NONSTOP	RACING	MARE NOSTRUM SP	AQUALINE OPTIMA
BLACK	BLACK	BLACK	BLACK	BLACK
DARK GREY	GREY	GREY		GREY
RED	RED	RED	RED	
DARK BLUE	DARK BLUE	DARK BLUE	DARK BLUE	
BLUE	BLUE	BLUE		
	WHITE	WHITE	WHITE	

The printing process may render some of the colour samples imperfectly. We recommend testing the paint before committing to a colour.





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