



## Paint Manual & Colour Chart for Steel Narrowboats, Dutch Barges & Wide Beam Vessels - Index

Planning the painting work for a new boat	1
Overview of finishes	2
Main considerations	2
Cathodic protection	2
Before you paint	2
Conditions	2
Temperature	3
Removing Old Paint & Antifouling	3 & 4
Cleaning & Degreasing	4
Abrading	4
Application methods & tools	5
Anza tools	6 & 7
Preparation	7
Calculating paint quantities	8
Preparation above and below the waterline	9
Specifications	10
Standard single pack system	10
Two pack surface tolerant system	10
Cabin roof single pack system	11
Varnishing	12
Exterior	12
Interior	12
Interior coatings	12
Water tanks	13
Repainting an existing topcoat	13
Above waterline	13
Below waterline	13
General painting tips	13
Record details	14



This booklet covers key aspects of painting and repainting steel narrowboats, dutch barges and wide beamed vessels. The information will be useful for both professional painters and boat owners wishing to paint or repaint a boat.

A paint system provides both resistance against corrosion and a cosmetic appearance. By selecting the correct paint specification corrosion can largely be overcome, giving steel vessels long periods of service with minimal maintenance.

More information is available from our website [www.blakespaints.com](http://www.blakespaints.com). The website will also list local stockists and product data sheets. Please contact us on 01489 864440 or e-mail [mi@uk.hempel.com](mailto:mi@uk.hempel.com) for additional technical advice.

If you visit your local Blakes stockists you will be able to see an accurate colour representation of our finished colours from a large colour card and shelf edges.

### **Planning the painting work for a new boat**

There are a number of grades of steel and possible treatments for the steel panels used in the construction of a new boat. To ensure that painting is successful, the following points need to be considered:

1. If the metal has been treated with a holding primer, is the holding primer suitable to weld through ?
2. Is the existing priming system suitable for overcoating with your chosen paint system? Generally it is not advisable to overcoat a single pack product with a two pack product.
3. For bare steel, ideally all mill scale should be removed prior to painting to ensure a long lasting paint system.
4. Grit blasting is recommended for the application of a two pack product. Grit blasting could also be considered for the removal of a single pack holding primer prior to the application of a two pack system.

Before you start it is important to take into account the finish that will be required, as this will largely determine the preparation and the primer. The type of finish is determined by the durability and type of service that a particular area will be subject to.

Planning should also take into account the various stages of work to be carried out, to ensure minimum disruption to areas that may have already been coated. For example, plan to undertake most of the welding prior to painting to avoid damaging paint both internally and externally. Similarly, welding will damage a primer or holding primer and will require surface preparation and re-priming. Ideally, a written log detailing the type of coatings used, when applied, colour reference and amount used would be of benefit, both throughout the project and for the future. Please use page ? to record these details. By logging this information you will be able to start the job correctly and save yourself a great deal of time and trouble in the future. Practical limitations, such as time, budget and facilities must also be considered.



## Overview of Finishes

Please note that all Blakes products are specifically designed for the environment and usage that they are going to be put to and will protect your investment far better than non specialist products. In addition to value for money, you will have greater gloss retention, better UV filters and harder and more durable surfaces. Use of two pack high performance products will provide long term benefits in reduced maintenance costs. Our products are available in convenient tin sizes to suit most jobs.

## Main Considerations

Many boats are produced to individual specifications, therefore planning for the end result and on going maintenance is important. For example, vessels used for charter or living on board will often require a higher paint specification than a conventional paint system both internally and externally. Similarly, vessels that will encounter severe high abrasion in certain areas may benefit from a single pack system that is easier to recoat. Particular requirements can also benefit from a combination of both two pack and single pack paints.

Another point for consideration is whether an antifouling is required. An antifouling will be required if the boat is kept afloat for long periods in salt water. Certain freshwater locations can also benefit from an antifouling to minimise problems such as, lime scale and weed fouling. The use of an antifouling will help to keep the bottom clean which will ensure that the boat speed is not adversely effected.

It is not routine practice to coat the flat bottom of a narrowboat, however a coating may be required under certain conditions, for example, when the water has a high oxygen content.

## Cathodic Protection

On a steel vessel good cathodic protection is essential for a successful paint system. This involves anodes, earthing of electrical appliances and the possible installation of equipment to protect against stray currents from external sources. To ensure that correct cathodic protection is installed we recommend that professional advice is obtained. Painting of anodes with antifouling or a paint coating will prevent them from working properly.

## Before you paint ....

### Conditions

All Blakes paints are very tolerant to application conditions which can vary greatly. All curing rates and overcoating times quoted in this book are calculated assuming the following (unless otherwise stated):

- temperatures of 20°C
- a relative humidity (RH) of 60-65%
- a well ventilated working area



## Temperature

Painting can take place at a wide range of temperatures, you will need to adjust the drying and curing times accordingly. A good guide is to double the drying/curing time with a drop of 10°C and halve the time with an increase of 10°C (adjust accordingly between these temperatures).

Paint properties change with temperature variation. Paint thickens at lower temperatures which can make it more difficult to apply. Always note correct/maximum thinner ratios and take care not to add more than is recommended. At high temperatures the increased drying/curing rates of the paint reduce the flowing properties which can result in visible application marks. This also applies when painting in direct sunlight where the boat's surface has a much higher temperature than the ambient temperature.

The minimum application temperature for the majority of Blakes products is 5°C, the exceptions to this are Polygloss and Diamond Varnish which should not be applied at less than 10°C. These limits must be observed, as products will not cure below stated temperatures, resulting in poor film formation, poor adhesion between the coats and poor gloss finishes.

### HINT 1

To avoid paint getting too thick during cold weather, warm it by sitting the opened can in a bowl of warm water.

### Relative humidity

Ideally relative humidity should not be above 65% (this is measured with the use of a hygrometer). A good test is to moisten the surface to be painted and if it dries within 10-15 minutes, it should be all right to paint. Outdoor painting should not take place too early or too late in the day when there is a risk of condensation or dew.

## Removing old paint & antifouling

The potentially difficult job of removing old paints and antifoulings can be made easier with the use of paint and antifouling removers. These products can be used on single pack paints and varnishes and on antifoulings, however they are not suitable for stripping two pack systems, such as polyurethanes and epoxies. For certain jobs we recommend grit blasting, please refer to page ?



## Ventilation

### Indoors

Ample ventilation is important to allow the paint solvents to evaporate thereby allowing the paint to cure properly and avoid blistering.

### Outdoors

When painting out of doors, choose a calm day to minimise the risk of dust pollution on the paint surface and to allow solvent based paints to flow out naturally which will improve the final finish.

## Cleaning and Degreasing

Good surface preparation is vital to achieve a high quality finish. Part of this preparation is ensuring that the surface is free from any contamination.

### Cleaning before painting

Surface Cleaner is a high strength water soluble cleaner, especially suitable for cleaning old paint surfaces, removing fuel, oils and grease and areas where there are stubborn stains. May be diluted 50% with fresh water for soft coatings like antifouling or bitumens. It can also be used to clean brushes covered in part cured paint. Particularly useful for engine compartments as it can be hosed off with freshwater. Not recommended for use on bare or untreated wood which is liable to absorb the water.

## Abrading

To ensure good coating adhesion the surface to be painted must be: dry, clean, free from grease, even but not too smooth

### Dry abrading

is recommended for the removal of fillers, old paint (not antifouling as the dust is toxic) and the initial preparation of wood, aluminium, lead and GRP.

Dry sanding creates a lot of dust and a good quality particle mask and eye protection should always be worn. Dry abrasive paper is available in various grades and comes in sheets or on a roll. To ensure even abrading, wrap the paper around a cork sanding block.

### Wet Abrading

Antifouling should always be wet abraded to avoid inhalation of toxic dust particles. Due to the lubricating action of the water, there is minimum amount of paper clogging and a clean surface can be quickly achieved. Wet abrasive paper is available in sheets in various grades and should be used around a cork sanding block to ensure an evenly abraded surface.

Note: many areas of the World now require old antifouling to be collected and disposed of correctly. By using a scraper you can collect the old antifouling on sheets underneath the boat which will allow easy disposal, or use a vacuum attachment to the scraper or a grinding machine.



## Choosing the right grade paper

surface to sand	dry paper no	wet paper no	
two component filler	60 - 100	n/a	
previously painted surfaces	150 - 180	180 -240	
paint or varnish	220	240	

## Mechanical Abrading

The main types of mechanical sanders are:

Belt Sander - allows rapid removal of material on flat surfaces.

Random Orbital/Dual Action Sanders - allows rapid removal of material from most surfaces. With careful selection of paper grade they can be used for rough fairing through to final sanding of undercoats prior to topcoat application.

Orbital Sander - general purpose sander for most preparations. Standard abrasive paper can be used making it a relatively economic abrading machine.

HINT - only lightly sand plywood and veneered surfaces to avoid sanding through the thin layer of veneer. The use of a hot air gun is also risky on veneered surfaces - use only with low temperature.

Note: drilling machine attachments and angle grinders should only be used for rough abrading as they can cut in and tend to leave marks.

Abrasive blasting - grit, slurry, sand are all used for abrasive blasting. Generally this means of removing paint and coatings is carried out by a professional person with the correct equipment and will leave you with the ideal surface for any new coatings.

If you wish to undertake the task yourself, you can hire a high pressure hose with relevant attachments.

## Application Methods & Tools

### Film Thickness

Paint coat film thickness is measured in microns (a micron = 1/1000 mm).

A wet film thickness gauge can be used when applying the product if coating depth is critical, but normally the area to be covered is calculated and the recommended amount of paint is applied.

To help you to get the correct amount of paint on to the surface, our specifications list the literage required per square metre to allow you to calculate quantities needed for the area you will be painting.



### Brush

Always use a good quality brush which is as large as possible for the job you are doing. Avoid using a new brush for a final coat as new brushes have a tendency to shed bristles. For best results use a crisscross technique on an area that is manageable. This involves brushing from side to side, followed by up and down.

This process is continued until the paint is evenly distributed over the area with the final strokes being very light (laying off) and in a vertical direction (see Paint Pad below for an alternative). Paint with the brush at an angle of 45° to minimise brush marks. During painting, the paint will start to cure on the brush, so to ensure consistent performance, clean the brush approximately every 30 minutes.

### Paint roller

Applying paint with a roller is a fast method of covering larger areas and using the correct roller head can produce excellent results. Where speed of application is more important than surface finish, a short pile mohair roller can be used. To produce a better quality finish, small diameter felt and closed cell foam rollers are recommended. In all cases use the crisscross technique described above to distribute the paint evenly.

Alternatively laying off paint applied by a roller with brush or pad will give you an improved finish.

### Paint pad

With a paint pad you can obtain an excellent finish. Both conventional and high performance top coats are suitable for paint pad application. Whilst the paint can be applied directly with the pad, it is most effective for levelling off paint which has been applied by brush or roller. The pad should be used immediately after the paint has been applied. Do not work the pad back and forward, but draw it in one direction only, using vertical strokes to avoid a paint build up which may sag. This technique will eliminate almost all application marks and result in an excellent finish.

### Spray equipment

It is generally accepted that paint applied by a spray gun will give the best results, providing the job is carried out by a skilled operative. Where possible keep the job at a steady temperature with low humidity, this is best achieved inside a shed. A full air fed mask should always be worn. If you do not have the skill and the necessary spray equipment, it is advisable to leave spray application of paint and varnish to a professional.

### **Anza Tools from Blakes**

**Anza are renowned throughout the World for their high quality paint application tools. Blakes have chosen a range of Anza tools that will help you with all your painting jobs.**

### **Anza Brushes**

#### **2000**

General purpose brush for use with all types of paint and varnish. Totally synthetic fibres with soft treated tips.



### **Elite & Elite Oval**

For use with all two pack paint, varnish and epoxy products. Soft mixture of natural bristles and synthetic fibres, available with flat or oval head.

### **Classic & Classic Oval**

For use with single pack paint and varnish products. High quality natural bristle, available with flat head or oval head.

### **Anza Rollers**

#### **Perfect Felt Rollers (Mini, Midi, Maxi)**

General purpose roller suitable for all applications, especially GelProtect SFE 200 and other epoxy products.

#### **Mohair Mini Rollers**

Ideal for all coatings but especially suitable for high build primers and undercoats.

#### **Plastic Foam Rollers**

Ideal for finishing coat applications.

#### **Pint Trays & Tray Liners**

Available in a variety of sizes to suit all application tools.

#### **Paint Pad & Handle**

Suitable for all coatings especially laying off topcoat finishes. Replacement pads are available.

#### **Filling Knives & Scrapers**

A variety of filling knives for the application of fillers; and assorted scrapers for removal of all paint types.

#### **Sanding Cork**

Cork block for use when dry or wet abrading.

### **Preparation**

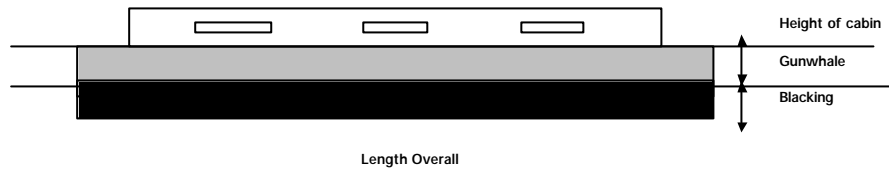
Inadequate preparation is the main cause of paint system failures. If you are in any doubt about the surface coating or it is advisable to remove any existing primers or coatings and start from bare steel.

Equally important for successful painting is accessibility, ventilation and suitable environmental conditions. Following the specification, calculating the surface areas and applying the correct amount of product will all help to ensure that the paint system is successful.

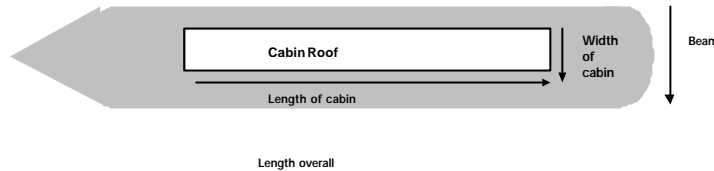




## Calculating paint quantities



To calculate the amount of Blacking required per coat = Length Overall x Blacking Height x 2.



To calculate the side of the cabin = Length Overall x Height of Cabin minus the estimated area of windows x 2

Ideally take measurements using metres or alternatively convert feet to metres  
1 foot x 0.305 metres

At this stage you will have a surface area in m<sup>2</sup>. To determine how much paint is required per coat, divide the surface area by the coverage of the product. Multiplying by the number of coats will provide the total literage required. From the table below calculate the most convenient tin size.

Product	Coverage m <sup>2</sup> /litre	Tin sizes
Primer Undercoat	10	750ml & 2.5ltr
Underwater Primer	8	.750ml & 2.5ltr
Yacht Enamel/Brilliant Enamel	13.5	.750ml & 2.5ltr
Bilge & Locker Paint	11	.750ml & 2.5ltr
Deck Paint	11	.750ml & 2.5ltr
Varnishes	17	.375, .750ml & 2.5ltr
Waterbourne varnishes	17	.750ml & 2.5ltr
Antifoulings	13	.750ml & 2.5ltr
Black Bitumen Varnish	10	5ltr
Uni Primer 1314	9	5ltr
Hempadur 45140	6	5ltr
Epoxy Pitch 15130	7.5	5ltr
Blast Primer 15560	10	5ltr
Hempathane 55100 - tinted to colour	11	5 ltr
Hempalin 52140 - tinted to colour	12	5ltr
Hempatex 46410 - tinted to colour	6	5ltr
Hempadur Multi-Strength 35530	4	9ltr



Colours can be made to order for a two pack polyurethane, single pack enamel and deck paint. These need to be ordered through your local stockist, providing a BS or RAL colour reference. The minimum order size is 5 litres.

### **Preparation above and below the waterline**

The methods of surface preparation employed and the degree of cleanliness achieved will directly influence the performance and life of any coating system.

### **Grit Blasting**

This is by far the most effective method of preparing metal surfaces and is the only method of preparing steel to a standard suitable for the use of two pack anticorrosive systems. As a general rule steel will require grit blasting to a minimum standard of SA2.5 (Swedish Visual Standard ie near white metal). New methods of grit blasting are now available which are more environmentally acceptable and can be undertaken in small boatyards or suitable private premises.

Prior to grit blasting is advisable to pressure wash the boat using a detergent and fresh water. This particularly important when removing old paint coatings.

### **Power Tools**

Power tools with the appropriate abrasive or rotary wire attachments provide a quick and effective means of removing corrosion and preparing the surface. The disadvantage of power tools is that they can polish the surface to such an extent that adhesion of subsequent paint layers may be adversely affected. This can be overcome by giving the surface a final grind with a new coarse grinding disc or angle grinder.

### **Hand Tools**

The use of chipping hammers, wire brushes and abrasive paper is a slow and often unsatisfactory form of surface preparation. These methods of preparation are labour intensive, of an inferior quality and should only be used for local repairs or when alternative methods are not available.

### **Following any of the above....**

to minimise flash rusting, apply the 1st coat of primer promptly after removing dust and grit by brushing, vacuuming or using dry compressed air.



## Specifications

**Standard Single Pack System - narrowboat, dutch barges, wide beam vessels and general canal vessels**

Product	No of coats	Overcoating times @ 20°C	Coverage m <sup>2</sup> /litre	Thinners
<b>Above the Waterline</b>				
Primer Undercoat/Uni Primer 1314	5	4 hours - 3 days	10	No 1
Yacht Enamel/Brilliant Enamel	2	8 hours - 3 days	13.5	No 1
<b>Below the Waterline</b>				
Black Bitumen Varnish	4	6 hours - indefinite	10	No 1

Note: In all cases, if overcoating times are exceeded - abrade the surface and wash off with fresh water.

**Two Pack Surface Tolerant System - narrowboat, dutch barges, wide beam vessels & general canal vessels**

Product	No of coats	Overcoating times @ 20°C	Coverage m <sup>2</sup> /litre	Thinners
<b>Above the Waterline</b>				
Hempadur 45140 Epoxy	2-3 coats	8 hours - 4 days	6	No 5
Polygloss	2	16 hours - 5 days	15	No 2 Brushing No 6 Spraying
<b>Below the Waterline</b>				
Hempadur 45140 Epoxy,	4 coats,	8 hours - 4 days	6	No 5

If an antifouling is required, please follow the specification below. Please note that to avoid abrading the last coat of Hempadur 45140, a tie coat of Underwater Primer will need to be applied promptly.

Overcoating Hempadur 45140 with Underwater Primer		8 hours - 12 hours		
Underwater Primer	1	3 hours - 6 months	8	No 3
Blakes antifouling	2	TBA		No 3

Notes: In all cases, if overcoating times are exceeded - abrade the surface and wash off with fresh water.



If overcoating Hempadur 45140 with a single pack alkyd product allow 10 days for the Hempadur 45140 to cure, then key surface prior to application of chosen topcoat.



The illustration shows a vessel which has been grit blasted and masked up ready for the application of Hempadur 45140. Hempadur 45140 is a high performance priming system which will provide a priming or finish coat. It can be overcoated with Polygloss or a conventional single pack finish.

#### **Cabin roof**

After priming the cabin roof there are a number of options. If a satin finish is required we recommend Bilge & Locker Paint.

If a special colour is required use Hempadur 46410 which can be tinted to most colours.

To all of these finishes an anti-slip additive can be added if required. A coarser additive, Anti Slint, is available for areas such as the walkways around the boat where an anti-slip finish is very important.

For smaller areas on the cabin roof or deck, we recommend Deck Paint. This product is a rubber based anti-slip coating that does not always need an anti-slip additive.

#### **Cabin Roof Single Pack System**

<b>Product</b>	<b>no of coats</b>	<b>overcoating times @ 20°C</b>	<b>Coverage m<sup>2</sup>/litre</b>	<b>Thinners</b>
Primer Undercoat/Hempel Uni Primer 13140	4	6 hours	8	No 3
Bilge & Locker Paint/Hempatex 46410	2	8	10	No 1

If a two pack priming system is used allow 10 days for the product to cure, then key the surface prior to the application of chosen coating



## Varnishing

### Exterior

#### Favourite Varnish

A single pack, alkyd based, full bodied, high gloss. Especially easy to use, giving a tough, durable finish with depth of gloss and longevity of life. Ideal for areas where structural flexibility of the wood is required. Ideally suited for external use above the waterline.

#### Favourite Varnish

Product	No of coats	Overcoating times @ 20°C	Coverage m <sup>2</sup> /litre	Thinners
Favourite thinned up to 30%	1	6 hours - 2 days	20	No1
Favourite thinned up to 10%	1	6 hours - 2 days	18	No1
Favourite	4	6 hours - 2 days	16	No1

### Interior

#### SeaTech Varnish

For convenient odour less application to interior areas we recommend SeaTech varnishes. SeaTech varnishes are waterbourne and available in a gloss and satin finish. The finish is very durable and long lasting.

#### SeaTech varnish (gloss & satin finish)

Product	no of coats	overcoating times @ 20°C	Coverage m <sup>2</sup> /litre	Thinners
Sealer* SeaTech Varnish thinned up to 20% with water	1	2 hours - 6 hours	15	water
1st coat - SeaTech Varnish thinned up to 5% with water	1	2 hours - 6 hours	13	water
Finish - SeaTech Varnish	4	2 hours - 6 hours	12	water

### Interior Coatings

Although there are a number of options and preparation methods, grit blasting is restricted in interior locations. Therefore, we suggest that a single pack system is used. After priming the bilge area/engine room, we recommend the application of Blakes Bilge & Locker Paint. If a lining is to be installed 3-4 coats of primer will provide adequate protection.



Product	No of coats	Overcoating times @ 20°C	Coverage m <sup>2</sup> /litre	Thinners
Primer Undercoat/Hempel Uni Primer 13140	4	6 hours	8	No 3
Bilge & Locker Paint	2	8	11	No 1

### Water Tanks

Recent legislation concerning products that can be used on mild steel fresh water tanks, has restricted the number of products that have a water potable certificate. Please contact us for more details on Hempadur Multi-Strength 35530 which is an epoxy coating with a potable water tank certificate. To apply Hempadur Multi-Strength 35530 to a mild steel tank, grit blasting will be required.

### Repainting an existing topcoat

Both two pack and single pack paint finishes require repainting. It is important to maintain the coating on your narrowboat as this will ensure adequate protection for the substrate, keep the boat looking good and help to maintain the value.

#### Above Waterline

Assuming the existing coating is sound and you are recoating with the same, or a compatible, product:

Clean thoroughly with Surface Cleaner to remove any surface contamination and then wash thoroughly with fresh water. Allow to dry fully.

Abrade with 180-280 grade abrasive paper. Wash thoroughly with fresh water and allow to dry.

Apply appropriate undercoat where necessary, followed by one or two coats of Brilliant Enamel or Polygloss as required.

For areas where the coatings are damaged, filling and priming may be necessary prior to application of undercoat and topcoat.

Clean the surface thoroughly as above with Surface Cleaner.

#### Below the Waterline

Wash thoroughly, (ie pressure wash) with fresh water and allow to dry. Abrade with 100-150 grade abrasive paper.

Apply new coating of the same type or compatible. Please note that Epoxy Pitch 15130 is still available and could be used to recoat an existing Epoxy Pitch coating.

### General Painting Tips

Make sure that you have thoroughly prepared the surface as this is the key to a successful finish.

Bare metal must be primed immediately after surface preparation to avoid contamination and surface deterioration prior to coating, and to obtain maximum adhesion to the surface.



Read all labels carefully and follow all application and health & safety recommendations.

Always stir paint thoroughly to an even consistency.

Stir paint periodically during application.

To avoid dust rising, dampen the ground prior to painting.

Decant enough paint to do the job into a suitable container. Reseal paint tin lid to maintain the quality of the paint for future use.

It is often easier if two people carry out the painting, with the first person applying the paint and the second person laying off with a high quality brush or pad.

Remove any masking tape before the paint has completely cured as this will help avoid exaggerated paint edges. Please note that 3M produce a comprehensive range of masking tapes. When using two pack products a special plastic masking tape is required. Also available from 3M is a paper tape that can be left on for long periods of time.

#### Record details

For further reference we recommend that you record details of the paint system used on the vessel.

Please use the form below:

Date applied	Product	Colour and colour code - important for finish coats	Amount used	Area