

# Inland Waterways Manual



# Thank you for choosing Hempel

This manual covers key aspects of painting and repainting steel narrowboats, barges, dutch barges, inland cruisers 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 [hempelyacht.com/hempel.com](http://hempelyacht.com/hempel.com). The website will also list local stockists and product datasheets.

Please contact us on 01633 874024 or e-mail [sales.uk@hempel.com](mailto:sales.uk@hempel.com) for additional technical advice.

## **Our products are easy to use**

We offer a comprehensive range, covering all substrates, needs, conditions and techniques.

With Hempel, you can rely on one brand for all your paint projects.

## **Our products are thoroughly tested and developed to the highest criteria**

They meet all environmental standards and legislative requirements.

They are easy to apply, effective and long-lasting, however challenging the conditions. Our product quality is trusted by customers around the globe.

## **Hempel was established over 100 years ago**

We have been delivering coating solutions for a range of environments for over 100 years – from motorboats to supertankers, oil rigs to bridges, superyachts to small dinghies.

## **We're here to help**

We pride ourselves on being approachable and helpful, offering you service that is second to none.

We're always happy to hear from you, and will do our best to answer any painting queries you may have.

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## Preparing to paint

- Preparing to paint a new boat
- Overview of finishes
- Main considerations
- Cathodic protection
- Personal protection

## Preparing to paint 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 the 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? It is not advisable to overcoat a single pack product with a two pack product.**
- 3. For bare steel, it is recommended that all mill scale should be removed prior to painting to ensure a long-lasting paint system.**
- 4. For best performance of any system grit blasting is recommended.**

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 the record details page at the back of this manual. 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 Hempel 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 ongoing 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 affected.

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 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.



## Personal protection

Ensure you wear suitable protective clothing, including gloves and glasses. Read labels carefully and follow all

application and health & safety advice. Open cans with care. Don't eat or drink in the vicinity of stored or applied paint.

	What are the hazards	The equipment to use
 Eyes	Chemical splash, dust, paint particles and droplets, projectiles, vapour.	Safety spectacles, goggles, face shields, visors.
 Breathing	Breathing dust, vapour, fumes, aerosols, oxygen-deficient atmospheres, paint particles.	<b>Short term filtering mask</b> against dust while sanding. <b>Half facemask</b> for sanding and painting, can be disposable or with replaceable filter cartridges. <b>Full air feed facemask</b> for spray painting.
 Hands	Abrasion, cuts and punctures, impact, chemicals, solvents, liquid paints, skin infection.	Leather gloves, latex gloves, armlets.
 Hands	Dust, dirt, oil and grease, paint particles.	<b>Barrier cream:</b> short term protection. <b>Cleaning cream:</b> designed to remove contaminants and cause least skin damage. <b>Maintenance cream:</b> to help restore the skin's natural protective layers.



	What are the hazards	The equipment to use
 <p>Hearing</p>	<p>Damage to inner ear from loud or constant noise levels.</p>	<p>Ear defenders, ear muffs, ear plugs.</p>
 <p>Body</p>	<p>Chemical or paint splash, spray from spray guns, impact or penetration, dust, excessive wear or entanglement of own clothing.</p>	<p>Overalls, coveralls.</p>
 <p>Feet</p>	<p>Wet, slipping, cuts and punctures, falling objects, chemical and paint splash, abrasion.</p>	<p>Steel toe protection and anti-slip soles. May be a prerequisite on some sites.</p>
 <p>Head</p>	<p>Impact from falling objects, head bumping, hair entanglement.</p>	<p>A range of helmets and bump caps.</p>

## Before you paint

- Conditions
- Temperature
- Identifying the existing coating
- Removing old paint & antifouling
- Cleaning & degreasing
- Abrading
- Application methods & tools

## Conditions

All Hempel 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 10 °C and 20 °C
- a relative humidity (RH) of 60-65%
- a well ventilated working area

Full product data sheets are available at our website [hempelyacht.com](http://hempelyacht.com) or [hempel.com](http://hempel.com).

## 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 Hempel products is 5 °C, the exceptions to this are **Hempel's two-component polyurethane varnish** and **topcoats** 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.

### 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.

### Note:

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

## Identifying the existing coating

It is important to establish the existing coatings prior to a re-paint or repair of damaged areas. Follow the guide below to determine if a single pack or two pack coating has been applied before undertaking any paint application.

Always wear protective rubber gloves.

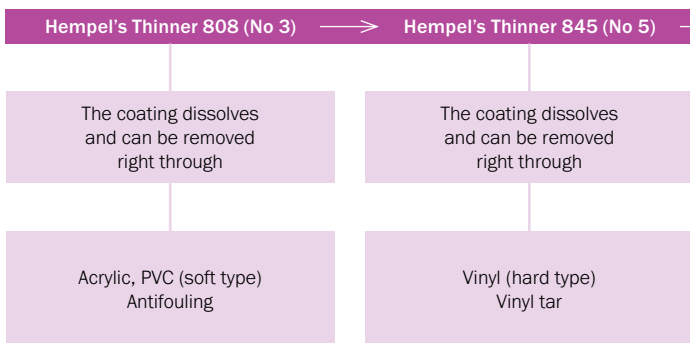
### Equipment

You will need the following equipment:

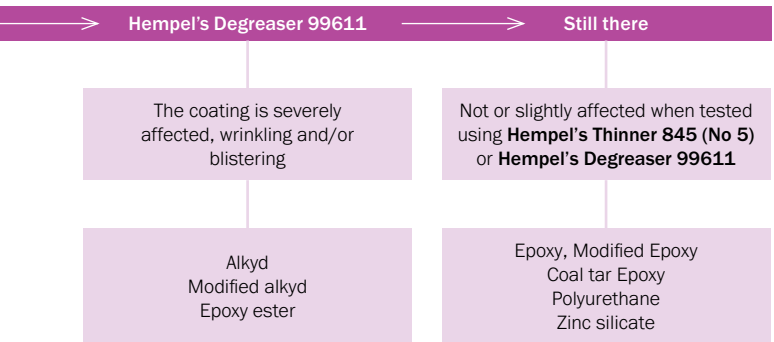
**Hempel's Thinner 808 (No 3)**, **Hempel's Thinner 845 (No 5)**, Tool Cleaner and pieces of cloth.

### Procedure

- Clean the surface thoroughly using **Hempel's Pre-Clean** and fresh water to remove dirt and chalking.
- **Rub the surface intensively for 2-10 minutes with a piece of cloth soaked in:**



Additional observations:	
Coating soft and black, dark brown or aluminium:	Bitumen
Coating hard, but black dark brown or alu, tar smell when scraped:	Coal tar epoxy
Coating severely chalking:	Epoxy or Chlorinated Rubber
Primer coat metal grey or greyish, metallic sheen when scraped:	Zinc epoxy or Zinc silicate



## Removing old paint & antifouling

The potentially difficult job of removing old paints and antifouling 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 antifouling. 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 22.

## 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 outdoors, 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

**Hempel's Pre-Clean** is a high strength water soluble cleaner, especially suitable for cleaning old paint surfaces, removing fuel, oil, grease and stubborn stains. Dilute with fresh water. 1:20 for general cleaning and alkaline sensitive substrates such as aluminium. 1:10 for more demanding cleaning. It can also be used to clean brushes covered in part cured paint.

It is particularly useful for engine compartments as it can be hosed off with fresh water. It is 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

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.



## Before you paint

### Wet Abrading

Antifoulings should always be wet abraded to avoid inhalation of toxic dust particles. Due to the lubricating action of the water, there is minimal 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.

Surface to sand	Dry paper grit size	Wet paper grit size
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.

**Note:** 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 removal of 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.



## 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 onto the surface our specifications list the litreage 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. 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 topcoats 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.

## Before you paint

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 applicator. 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.



## Preparation

- Calculating paint quantities
- Preparation above and below the waterline

## Calculating paint quantities

To calculate the amount of Blacking required per coat =  
 $\text{Length Overall} \times \text{Blacking Height} \times 2$ .

To calculate the side of the cabin =  
 $\text{Length Overall} \times \text{Height of Cabin minus the estimated area of windows} \times 2$

Ideally take measurements using metres or alternatively convert feet to metres: 1 foot  $\times$  0.305 metres. At this stage you will have a surface area in  $\text{m}^2$ . 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 overleaf, calculate the most convenient tin size.

Colours can be made to order on selected topcoat finishes. These need to be ordered through your local stockist, providing a BS or RAL colour reference.



Hempel's	Coverage m <sup>2</sup> /litre	Tin sizes
Primer Undercoat	12	750ml & 2.5ltr
Underwater Primer	7.8	750ml & 2.5ltr
Light Primer	8.2	375ml, 750ml & 2.25ltr
Brilliant Gloss	11.2	375ml, 750ml & 2.5ltr
Multicoat	11.5	750ml & 2.5ltr
Bilge & Locker Paint	11	750ml & 2.5ltr
Non-Slip Deck Coating	9.2	750ml
Varnishes	Refer to Product Datasheet	750ml & 2.5ltr
Antifoulings	Refer to Product Datasheet	375ml, 750ml & 2.5ltr
Hempatex Hi-Build 46330	5.3	5ltr & 20ltr
Uni Primer 13140	8.4	5ltr & 20ltr
Hempadur Easy 47700	6.2	5ltr
Hempadur 15570 (Blast primer)	7.5	20ltr
Hempathane 55810 - 91% gloss - tinted to colour	16.3	5ltr
Hempathane 55610 - 70% gloss - tinted to colour	6.7	5ltr
Hempathane 55613 - 30% gloss - tinted to colour	5.7	5ltr
Hempalin Enamel 52140 - tinted to colour	15.3	5ltr
Hempatex Hi-Build 46410 - tinted to colour	6	5ltr
Hempadur 35560	5	4.85ltr
Hempel's High Protect II 35780	6.6	750ml & 2.5ltr
Hempadur Quattro XO 17870	6.4	5ltr & 20ltr
Hempel's Pro Tiecoat 49200	5.7	2.5ltr, 5ltr & 20ltr
Hempel's Profair 35290	1	5ltr & 20ltr
Hempel's Profiller 35370	0.5	5ltr, 20ltr & 380ltr

**Note:** Coverage based on typical thickness and can vary depending on application method.

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

Equally important for successful painting are 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.

# 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 recommended method of preparing steel to a standard suitable for the use of anticorrosive systems. As a general rule steel will require grit blasting to a minimum standard of Sa2.5 (ISO Standard i.e. 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 it is advisable to pressure wash the boat using a detergent and fresh water. This is 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 first coat of primer promptly after removing dust and grit by brushing, vacuuming or using dry compressed air.



## Specifications

- Standard single pack system
- Two pack surface tolerant system
- Cabin roof system

## Standard single pack system

For narrowboats, dutch barges, wide-beam vessels and general canal vessels.

### Above the waterline

#### Option 1

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Primer Undercoat 13201</b>	2	8 hrs – 5.5 days	4 hrs – 3 days	12	811 (No 1)
<b>Brilliant Gloss 53200</b>	2 – 3	20 hrs – 5.5 days	10 hrs – 5.5 days	11.2	811 (No 1)

#### Option 2

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Uniprimer 13140</b>	1	12 hrs – indefinite	6 hrs – indefinite	8.4	08080
<b>Uniprimer 13140</b>	1	4 hrs – 5.5 days	2 hrs – 3 days	8.4	08080
<b>Brilliant Gloss 53200</b>	2 – 3	20 hrs – 5.5 days	10 hrs – 5.5 days	11.2	811 (No 1)

#### Option 3

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Primer Undercoat 13201</b>	2	8 hrs – 5.5 days	4 hrs – 3 days	12	811 (No 1)
<b>Hempalin Enamel 52140</b>	2 – 3	16 hrs – 9 days	8 hrs – 5 days	15.3	08230



## Option 4

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Uniprimer 13140</b>	1	12 hrs – indefinite	6 hrs – indefinite	8.4	08080
<b>Uniprimer 13140</b>	1	4 hrs – 5.5 days	2 hrs – 3 days	8.4	08080
<b>Hempalin Enamel 52140</b>	2 – 3	16 hrs – 9 days	8 hrs – 5 days	15.3	08230

## Below the waterline

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Hempatex Hi-build 46330</b>	2	15 hrs – indefinite	8 hrs – indefinite	5.3	08080

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

Specification data provided in this manual refers to brush/roller application.

Further information can be found in the Hempel Paint Manual or Product Datasheet and [hempelyacht.com](http://hempelyacht.com) or [hempel.com](http://hempel.com).

## Two pack surface tolerant system

For narrowboats, dutch barges, wide-beam vessels and general canal vessels.

### Above the waterline

#### Premium priming system

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Hempadur Quattro XO 17870</b>	1 - 2	6 hrs - 60 days	3 hrs - 30 days	6	08450
<b>Hempadur Quattro XO 17870</b>	1	6 hrs - 6 days	3 hrs - 3 days	6	08450
<b>Hempathane 55810</b> or	2	24 hrs - indefinite	16 hrs - indefinite	16.3	08080
<b>Hempathane 55610</b> or	2	9 hrs - indefinite	6 hrs - indefinite	6.7	08080
<b>Hempathane 55613</b>	2	9 hrs - indefinite	6 hrs - indefinite	5.7	08080

#### Standard priming system

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Light Primer 45551</b>	1 - 2	9 hrs - 60 days	4 hrs - 30 days	8.2	845 (No. 5)
<b>Light Primer 45551</b>	1	14 hrs - 6 days	7 hrs - 3 days	8.2	845 (No. 5)
<b>Hempathane 55810</b> or	2	24 hrs - indefinite	16 hrs - indefinite	16.3	08080
<b>Hempathane 55610</b> or	2	9 hrs - indefinite	6 hrs - indefinite	6.7	08080
<b>Hempathane 55613</b>	2	9 hrs - indefinite	6 hrs - indefinite	5.7	08080

**Note:** If any filling or fairing is required, **Hempel's Profiller 35370** or **Hempel's Profair 35290** should be applied after the first coat of primer. Once cured and sanded smooth (if necessary), simply overcoat with the remaining coats of substrate primer.

## Below the waterline

## Premium priming system

Hempel's	No of coats	Recoating interval		Coverage m <sup>2</sup> /litre	Thinners
		10°C	20°C		
<b>Hempadur Quattro XO 17870</b>	3	6 hrs – 60 days	3 hrs – 30 days	6	08450
<b>Pro Tiecoat 49200*</b>	1	Refer to Product Datasheet			

## Standard priming system

Hempel's	No of coats	Recoating interval		Coverage m <sup>2</sup> /litre	Thinners
		10°C	20°C		
<b>Hempadur Easy 47700</b>	3	7 hrs – 30 days	3 hrs – 14 days	8.2	845 (No. 5)
<b>Hempadur Easy 47700</b>	1	7 hrs – 30 days	3 hrs – 14 days	8.2	845 (No. 5)
<b>Underwater Primer 26030*</b>	1	Refer to Product Datasheet			

\*If an antifouling is required, please follow the relevant below specification:

**Premium Antifouling Tiecoat**

Overcoating **Hempadur Quattro XO 17870** with **Hempel's Pro Tiecoat 49200**:

Overcoat substrate primer within intervals shown in table above

For the antifouling, please refer to Product Datasheet for overcoating interval of tiecoat.

**Standard Antifouling Tiecoat**

Overcoating **Hempadur Easy 47700** with **Underwater Primer 26030**:

Overcoat substrate primer whilst surface is still tacky. For the antifouling, please refer to Product Datasheet for overcoating interval of tiecoat.

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

## Specifications

**Hempadur Quattro XO 17870** is a high performance priming system which will provide a priming or finish coat. It can be overcoated with a two pack or a single pack finish.

If overcoating **Hempadur Quattro XO 17870** with a single pack alkyd product allow 10 days for the primer to cure, then key surface prior to application of chosen topcoat.



*The illustration above shows a vessel which has been grit blasted and masked upready for the application of Hempadur Quattro XO 17870.*

## Cabin roof system

After priming the cabin roof there are a number of options:

1. **Hempel's Non-Slip Deck Coating 56251** which contains anti-slip pearls.
2. **Hempel's Multicoat 51120** semi-gloss finish (requires **Hempel's Anti-Slip Pearls 69070**).
3. **Hempatex Hi-Build 46410** – flat finish (can be tinted and requires **Hempel's Anti-Slips Pearls 69070**).

A coarser additive, **Hempel's Anti-Slilt 67500** is available for areas such as the walkways around the boat where an anti-slip finish is very important.

For smaller areas on the deck, we recommend **Hempel's Non-Slip Deck Coating 56251** or **Hempatex Deck Coating Non-Skid 56250**.

### Single pack system

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Primer Undercoat 13201</b>	2	8 hrs – 5.5 days	4 hrs – 3 days	12	811 (No 1)
<b>Non-Slip Deck Coating 56251</b> or <b>Multicoat 51120</b>	2	5.5 hrs – 3 days	3 hrs – 3 days	9.2	808 (No 3)
	2	16 hrs – 5.5 days	8 hrs – 3 days	11.5	811 (No 1)

### Two pack system

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Hempadur Quattro XO 17870</b>	1 – 2	6 hrs – 60 days	3 hrs – 30 days	6	08450
<b>Hempadur Quattro XO 17870</b>	1	6 hrs – 6 days	3 hrs – 3 days	6	08450
<b>Hempathane 55613</b>	2	9 hrs – indefinite	6 hrs – indefinite	5.7	08080

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 single pack coating.

If a non-slip finish is required add **Hempel's Anti-Slip Pearls 69070** to the product.

# Varnishing

## Standard single pack system

Varnish will protect wood against the elements and, where the wood is of good quality, enhance the natural beauty of the surface.

### Hempel's Wood Impreg

A clear alkyd oil for use on wooden boats and hardwood. Excellent penetration properties allows the oil to saturate the wood before application of Hempel's varnishes and paints. For internal and external use above the waterline.



750ml

2.5l

**Minimum application temperature: 5 °C/40 °F**

Temp	Touch dry	Re-coat (min/max)	Thinner/ Tool cleaner	Coverage m <sup>2</sup> /litre	Tools
10°C	12 hrs	16 hrs – none	811 (No 1)	13	
20°C	6 hrs	8 hrs – none			

### Hempel's Favourite Varnish

A single component alkyd based, full bodied, high gloss varnish. For use above the waterline, both inside and outside, as part of a single component system. Especially easy to use, giving a tough, durable, long-lasting finish, with depth of gloss. Ideal for areas where structural flexibility of the wood is needed.



750ml

2.5l

**Minimum application temperature: 5 °C/40 °F**

Temp	Touch dry	Re-coat (min/max)	Thinner/ Tool cleaner	Coverage m <sup>2</sup> /litre	Tools
10°C	8 hrs	12 hrs – 4 days	811 (No 1)	16.3	
20°C	4 hrs	6 hrs – 2 days			



# Varnishing solutions for your narrowboat

[hempeleyacht.com](http://hempeleyacht.com)



**Favourite Varnish**



**Classic Varnish**



**Dura-Gloss Varnish**



**Dura-Satin Varnish**



**Diamond Varnish**



### Hempel's Classic Varnish


A single component traditional varnish produced from the highest quality materials, including tung oil. Use inside and outside above the waterline. Excellent flow at application, a flexible finish and long term UV filters ensure an uncompromising finish that will last for a long time.



750ml

2.5l

**Minimum application temperature: 5 °C/40 °F**

Temp	Touch dry	Re-coat (min/max)	Thinner/ Tool cleaner	Coverage m <sup>2</sup> /litre	Tools
10°C	12 hrs	16 hrs – 4 days	811 (No 1)	17	
20°C	6 hrs	8 hrs – 2 days			


### Hempel's Marine Varnish

A quick-drying clear urethane alkyd. Use inside and outside above the waterline. Good flow at application, a flexible finish and UV filters ensure a finish that will last.



5l

**Minimum application temperature: 5 °C/40 °F**

Temp	Touch dry	Re-coat (min/max)	Thinner/ Tool cleaner	Coverage m <sup>2</sup> /litre	Tools
10°C	5 hrs	12 hrs – indefinite	811 (No 1)	18	
20°C	2.5 hrs	6 hrs – indefinite			

### Hempel's Teak Cleaner

A powder for cleaning all teak areas. Especially good for large areas such as decks, and for wood that's turned dark grey. Removes dirt and marks giving a clean surface ready for you to apply **Hempel's Teak Colour Restorer** or **Hempel's Teak Oil**. Wet the surface with fresh water and apply a uniform layer of **Hempel's Teak Cleaner**. Leave on for 10 to 20 minutes, using a stiff brush to scrub while the paste is still moist. Thoroughly hose down with clean fresh water before the paste hardens.



750g


### Hempel's Dura-Gloss Varnish/ Hempel's Dura-Satin Varnish

A single component, urethane modified alkyd with excellent resistance to alcohol and cleaning materials. For inside and outside areas above the waterline requiring a beautiful durable varnish. Quick-drying to an extremely hard and durable high gloss/satin surface, highly resistant to wear and abrasion within hours of application.



750ml

**Minimum application temperature: 5 °C/40 °F**

Temp	Touch dry	Re-coat (min/max)	Thinner/ Tool cleaner	Coverage m <sup>2</sup> /litre	Tools
10 °C	6 hrs	8 hrs – 4 days	811 (No 1)	Dura-Gloss Varnish 19.2	
20 °C	3 hrs	4 hrs – 2 days		Dura-Satin Varnish 16.8	

## Two pack high performance system

### Hempel's Diamond Varnish

A two-component polyurethane varnish. Use inside and outside above the waterline. Use where a hard, extremely durable and long lasting finish is required. Highly resistant to abrasion and chemicals, for the ultimate finish in durability and beauty.

**For professional use only.**



750ml

**Pot life at 20 °C:** Mixed product 6hrs

**Mix ratio:** 2:1

**Minimum application temperature:** 10 °C

Temp	Touch dry	Re-coat (min/max)	Thinner/ Tool cleaner	Coverage m <sup>2</sup> /litre	Tools
10°C	16 hrs	32 hrs – 10 days	871 (No 2) (brush)	12.5	
20°C	8 hrs	16 hrs – 5 days	851 (No 6) (spray)		

### Hempel's Sealer

Is a two-component epoxy-polyamide with low viscosity and good penetration ability. For saturation of glass fibre laminate, when gel coat has been removed (repair of osmosis damage). For priming of ferro-cement boats and boats of wood that can absorb the sealer.



750ml

**Minimum application temperature:** 5 °C

Temp	Touch dry	Re-coat (min/max)	Thinner/Tool cleaner	Coverage m <sup>2</sup> /litre	Tools
10°C	8 hrs	8 hrs – none	845 (No 5)	10	
20°C	4 hrs	4 hrs – none			

## Interior coatings

- Single pack systems
- Two-component systems
- Water tanks

## Single pack systems

## Gloss finish system

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Primer Undercoat</b>	2	8 hrs – 6 days	4 hrs – 3 days	12	811 (No 1)
<b>Brilliant Gloss</b>	2 – 3	20 hrs – 6 days	10 hrs – 6 days	11.2	811 (No 1) 808 (No 3) - spray

## Semi-gloss finish system

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Multicoat</b> thinned up to 20%	1	16 hrs – 6 days	8 hrs – 3 days	11.5	811 (No 1)
<b>Multicoat</b> thinned up to 10%	1	16 hrs – 6 days	8 hrs – 3 days	11.5	811 (No 1)
<b>Multicoat</b>	2 – 3	16 hrs – 6 days	8 hrs – 3 days	11.5	811 (No 1) 808 (No 3) - spray

## Matt finish system

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Hempatex Hi-Build 46410</b>	3 – 4	7 hrs – indefinite	4 hrs – Indefinite	4.2	808 (No 3)

## Bilge &amp; Lockers

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10 °C	20 °C		
<b>Bilge &amp; Locker Paint</b>	2 – 3	16 hrs – 6 days	8 hrs – 3 days	11	811 (No 1)

If maximum overcoating time is exceeded abrade between coats.

## Two-component systems

## Bilges &amp; Lockers

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10°C	20°C		
<b>Hempadur Quattro XO 17870</b>	2 - 3	6 hrs - 60 days	3 hrs - 30 days	6	08450

## Engine bays

Hempel's	No of coats	Can be overcoated after:		Coverage m <sup>2</sup> /litre	Thinners
		10°C	20°C		
<b>High Protect II</b>	2	20 hrs - 12.5 days	8 hrs - 5 days	6.6	Do not thin

**Minimum application temperature: 5 °C**

## 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 35560 which is an epoxy coating with a potable water tank certificate. To apply Hempadur 35560 to a mild steel tank, grit blasting will be required.



### Note:

Always ensure that all interior areas are well ventilated during and after application of paint.

## Repainting an existing topcoat

- Above the waterline
- Below the waterline



## 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 its value.

### Above the waterline

Assuming the existing coating is sound and you are recoating with the same, or a compatible, product: clean thoroughly with **Hempel's Pre-Clean** 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 two coats of appropriate topcoat 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 **Hempel's Pre-Clean**.



### Below the waterline

Wash thoroughly, (i.e. pressure wash) with fresh water and allow to dry.

Abrade with 100-150 grade abrasive paper.

Apply a new coating of the same type or compatible.

**Remember:** Always wet abrade antifoulings.

## 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.

Always read the label and product information before use.



## Boatcare

A boat will need maintaining during the season to ensure it keeps its good appearance and sailing capabilities and the coating system is maintained. How much maintenance and care is needed will depend on the environment in which the boat is sailed.

### Clean

#### Hempel's Pre-Clean

High strength cleaner and degreaser for pre-cleaning gelcoat and painted surfaces to remove fuel, oil, grease, wax and silicone. Use prior to painting and for deep cleaning. It can also be used for cleaning bilges. Dilute with fresh water 1:20 for general cleaning and alkaline sensitive substrates such as aluminium. Use a lower dilution for more demanding cleaning. Use to clean brushes covered in part cured paint. Do not use on bare or untreated wood which may absorb the water.



1 ltr

**Minimum application temperature: 5 °C/40 °F**

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### Renew

#### Hempel's Custom Marine Polish

Liquid polish which cleans, polishes and protects gelcoat painted and varnished surfaces. Contains silicone which cures on the surface to create a protective barrier and clear gloss.



500 ml

### Protect

#### Hempel's Wax TecCel

Premium high performance liquid wax with TecCel technology, for a long lasting, deep gloss, tough protective finish on gelcoat, painted and varnished surfaces.

Apply with a soft cloth, polish by hand or with a polishing machine, allow to dry for 5-10 minutes, polish away any residue with a clean cloth leaving a high gloss mirror like finish.



500 ml

**Minimum application temperature: 5 °C/40 °F**

## Health & Safety

By law, all paint products must display details of Health and Safety precautions. Here are the warning symbols most commonly found on our products, with a brief description.

	<p><b>Corrosive</b> May destroy living tissue on contact.</p>
	<p><b>Dangerous to the environment</b> May present an immediate or delayed danger to one or more components of the environment.</p>
	<p><b>Harmful</b> May cause damage to health.</p> <p><b>Irritant</b> May cause inflammation to skin or other mucous membranes.</p>
	<p><b>Highly flammable</b> May catch fire in contact with air, only needs brief contact with ignition source, has very low flash point or evolves highly flammable gases in contact with water.</p> <p><b>Extremely flammable</b> Has an extremely low flash point and boiling point, and gases that catch fire in contact with air.</p>
	<p><b>Chronic health hazard</b> Respiratory sensitizers (can cause e.g. asthma)</p>

### General good practice

- Refer to safety/product data sheets for product information and content.
- Always read the label thoroughly and contact us if you're not sure how to use the products.
- Wear the appropriate personal protective equipment (PPE).
- Provide adequate ventilation for the product used. If necessary, use a respirator. Don't breathe vapour/spray.
- Open cans with care.
- Immediately clean up spills.
- Do not eat or drink in the vicinity of stored or applied paint.
- Do not swallow. If swallowed, immediately seek medical advice and show the container/label.
- Some products may cause irritation, always seek medical advice if you're concerned.
- Where possible, removed antifouling paint should be collected and disposed of safely.
- Contact your local authority for information on waste disposal.



# The complete painting solution

[hempeleyacht.com](http://hempeleyacht.com)



**Primer Undercoat**



**Multicoat**



**Non-Slip Deck Coating**



**Brilliant Gloss**



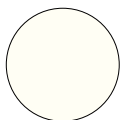
**Bilge & Locker Paint**



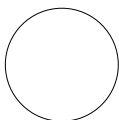
**Anti-Slip Pearls**



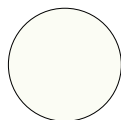
## Topcoat Guide



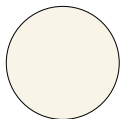
10000 White  
MC/B&L/DC



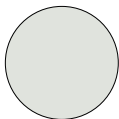
10501 Polar White  
BG



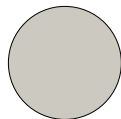
10231 Pure White  
BG



10381 Off White  
BG



10121 Matterhorn White  
BG



19500 Light Grey  
MC/B&L/DC



12011 Pale Grey  
BG



10141 Town Grey  
BG



11480 Mid Grey  
MC/DC/B&L



12221 Smoke Grey  
BG



22210 Pale Cream  
MC/DC



21401 Cream  
BG



38140 Ice Blue  
BG



33390 Light Blue  
MC



32800 Souvenirs Blue  
BG





30100 Navy Blue  
MC/DC



34161 Cobalt Blue  
BG



35141 Flag Blue  
BG



31810 Britannia Blue  
BG



46121 Marine Green  
BG



53121 Bordeaux Red  
BG



54121 Radiant Red  
BG



50800 Pillarbox Red  
MC



50190 Survival Orange  
BG



19990 Black  
MC/BG

MC = Hempel's Multicoat

DC = Hempel's Non-Slip Deck Coating

B&L = Hempel's Bildge & Locker Paint

BG = Hempel's Brilliant Gloss

**Warning:** Although care is taken to match colours as accurately as possible, the printing process does not allow exact colour and gloss level reproduction. We recommend you check for accuracy before applying. For the full range of Primers/Undercoats for Single and Two Pack products please refer to Hempel's Paint Manual.





## Inland Waterways Manual

2022/2023

As a world-leading supplier of trusted coating solutions, Hempel is a global company with strong values, working with customers in the protective, marine, decorative, container and yacht industries. Hempel factories, R&D centres and stock points are established in every region.

Across the globe, Hempel's coatings protect surfaces, structures and equipment. They extend asset lifetimes, reduce maintenance costs and make homes and workplaces safer and more colourful. Hempel was founded in Copenhagen, Denmark in 1915. It is proudly owned by the Hempel Foundation, which ensures a solid economic base for the Hempel Group and supports cultural, social, humanitarian and scientific purposes around the world.

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Stockist