YACHTING Veneziani™

THE EPOXY SYSTEM RESINA 2000

How to protect and repair your boat

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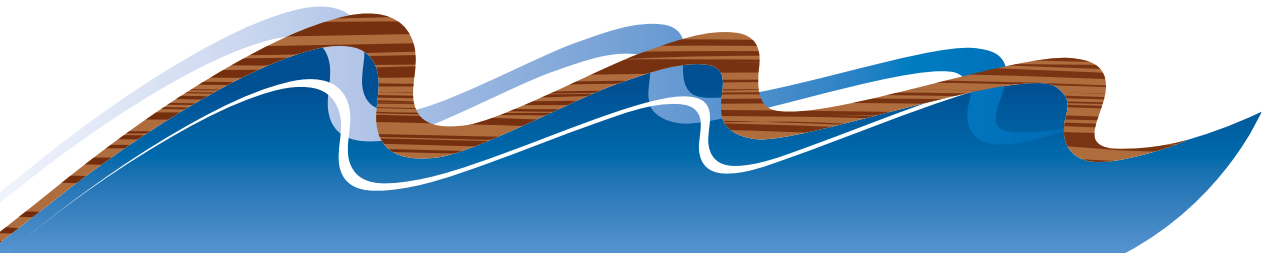

THE EPOXY SYSTEM RESINA 2000

How to protect and repair your boat.

If we want our boat to take us on our sea outings for as long as possible and to let us enjoy continuous contact with nature, we must give it all the attention it deserves. Seasonal protection and maintenance are essential to ensure a long and carefree life of the boat. And If the boat is made of wood, a material as noble as it is delicate, we must take special care.

Veneziani Yachting has always been a name of reference for the nautical world, has been manufacturing boat paints for over a century and has now developed a revolutionary Epoxy System consisting of Resina 2000 and its additives.

This system is very practical and versatile and provides a vast number of applications on wood, fibreglass and metal structures as well as many useful applications for repairs in other fields.

Of course this manual is not intended to provide an answer to everything, or to teach you how to build a boat. However if you leaf through it, you will find plenty of ideas on how to solve your boat problems using the Veneziani Yachting Epoxy System, even those that might arise during navigation.

We have tried to describe the operations to be carried out as clearly and in as much detail as possible, taking into account both the quality of the final result, and the financial and practical aspects of the work.

Finally a recommendation. When faced with demanding and difficult tasks, do not overestimate your capabilities. If the work load is too difficult, it is certainly wiser to turn to a specialized and properly equipped boatyard. In this case the manual shall be useful for comparing our suggestions with the work carried out.

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RESINA 2000

Resina 2000 is a two-pack, solvent-free epoxy resin, which has excellent impregnating power as well as high flexibility, hardness and adhesion, properties which confer outstanding resistance to fresh and salt water. Before using Resina 2000, mix the base and the hardener.

Pour 2 parts of base and 1 part of hardener into graduated cylinders in order to obtain maximum precision. When the dosage is completed transfer the content into a low and wide container in order to facilitate heat dispersion during mixing, and mix the content thoroughly. A wide container also facilitates the immersion of brushes and rollers.

It is very important to use exactly a mixing ratio of 2:1, without changing it, because otherwise the properties of the epoxy resin could be affected.

Never add thinner to Resina 2000. For the cleaning of the equipment only use DILUENTE 6610 for epoxy products.

RESINA 2000 - Protective barrier coat for wood

Resina 2000 is a solvent-free structural epoxy coating designed for use in the construction, protection and restoration of wood, GRP and other boat building materials. Resina 2000 is a technologically advanced coating with offers excellent penetration power, flexibility and adhesion, properties which are essential for the maintenance and the protection of wood. Resina 2000 can also be used to create high-strength wood to wood joints, surface protection and impermeability of boat hulls. Wood protected with Resina 2000 acquires higher strength and becomes impervious to water while maintaining its original flexibility. Together with special additives a range of fillers can be produced, which are very easy to apply and extremely strong. Colour: clear. Packaging: 0.75/1.50/15 L

For additional information please consult the technical data sheet. Pictures and size of packages are only indicative.

Since the pot-life of the mixed product is only 30 minutes at 20° C, prepare limited quantities (about 750 ml). The pot-life of a two-pack product is the time, after mixing base and hardener, during which it is possible to apply the product. Once this time - which varies depending on the type of product and diminishes with increasing temperatures - expires, the product becomes hard and cannot be used anymore. Preferably the application should be carried at a temperature range between + 15 and + 35° C. Different temperatures could affect the application properties of the product.
This system consists of Resina 2000 and its additives: MICROFIBRE, MICROSFERE, MICROSILICE, which can be combined according to the required use.

DISPENSING PUMPS FOR RESINA 2000 1,5 L PACKAGES

Also part of the RESINA 2000 range are the dispensing pumps, designed for an easy and accurate dosage, which can be fitted directly on the cans of a 1,5 L RESINA 2000 package. These pumps provide an accurate dosage of the base/hardener mixture, without the difficulties of manual dosing. In case of multiple use, the dispensing pumps can be left mounted on the cans.

RESINA 2000 IS NOT A FINISH

Since the surface painted with Resina 2000 is very smooth and glossy, it may be thought that it could serve as a finish. However, epoxy resins exposed to atmospheric agents for longer periods suffer discoloration and chalking. Therefore, in order to preserve long-lasting gloss and colour, a clear polyurethane UV-resistant finish, such as Wood Gloss or an enamel should be applied.

For a detailed description of painting systems both below and above the waterline please refer to our brochure "Maintaining your Boat".

DOSES AND USE

The additives shall be added to RESINA 2000 only after mixing base and hardener.
Proceed as outlined here below:

1 Mix component A with component B in accordance with the procedures indicated in the previous pages.

2 Carry out the dosage of the additives with the mixture in accordance with the following instructions regarding the use and the type of required compound.

3 Stir the Resina 2000 mixed with the additive until producing a homogeneous compound.

Attention: all instructions refer to mixing by "volume".

4 Apply the compound with brush, roller or filling knife according to the required use.

MICROFIBRE

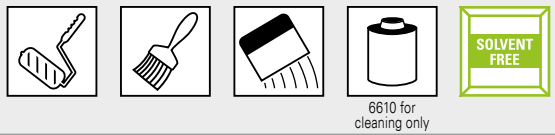
- **Liquid glue:** Mix 2 parts of already catalysed Resina 2000 +1 part of Microfibre, in order to produce a liquid glue suitable for the gluing of surfaces with small defects.

- **Light structural compund:** Mix 1 part of already catalysed Resina 2000 + 1 part of Microfibre, in order to produce a light structural compound suitable for gluing of surfaces with larger defects.

- **Structural, high viscosity compound:** Mix 1 part of already catalysed Resina 2000 + 2 parts of Microfibre, in order to produce a structural compound with high viscosity suitable to be applied on vertical surfaces without sagging.

MICROFIBRE - Synthetic microfibers

MICROFIBRE belongs to the range of additives to be mixed with RESINA 2000 in order to produce compounds with different properties. MICROFIBRE consists of microfibers with an average length of 500 microns, which, when mixed with RESINA 2000, create a strong compound, owing to a multidirectional internal structure. Due to the low absorbency of resin, the penetration capacity of RESINA 2000 is not affected. The main purpose is the gluing of T-joints, where a filler with high viscosity and high mechanical resistance is required. Packaging: 0,75 L/2,50 L



For additional information please consult the technical data sheet. Pictures and size of packages are only indicative.

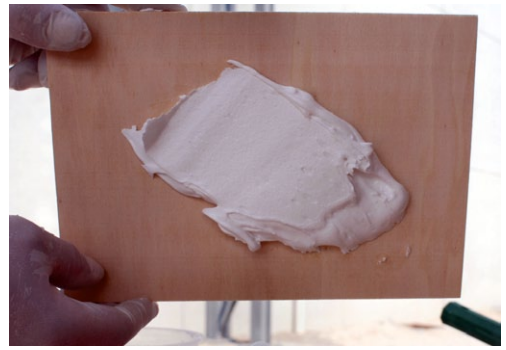
MICROSFERE

- **Liquid self-levelling compound:** Mix 2 parts of already catalysed Resina 2000 + 1 part of Microsfere, in order to produce a liquid compound suitable for the repair of horizontal cracks and for gluing.

- **Semi-fluid compound:** Mix 1 part of already catalysed Resina 2000 + 1 part of Microsfere, in order to produce a semi-liquid compound suitable as a filling compound for small surface defects and as a knifing filler.

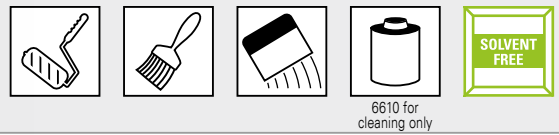
- **Filler:** Mix 1 part of already catalysed Resina 2000 + 2/3 parts of Microsfere, in order to produce a filler suitable to be applied at high thickness.

This filler shall have a viscosity suitable for application on vertical surfaces as well as shall be easy to sand after drying.



MICROSFERE - Hollow glass-microspheres

MICROSFERE belongs to the range of additives to be mixed with RESINA 2000 in order to produce compounds with different properties. MICROSFERE consists of microspheres with low absorbency of humidity, which therefore can be used for applications above and below the waterline. Their main purpose is the production of fillers with low specific gravity, which are easy to sand and whose consistency may be varied according to the needs of the operator. These fillers are best suited for the repair of horizontal cracks, small surface defects, jointing and as knifing fillers. Packaging: 0,75 L/2,50 l



For additional information please consult the technical data sheet. Pictures and size of packages are only indicative.

MICROSILICE

- **Fluid compound:** Mix 2 parts of already catalysed Resina 2000 + 1 part of Microsilice, in order to produce a liquid compound suitable for gluing of small parts and laminations.

- **Paste:** Mix 1 part of already catalysed Resina 2000 + 1 part of Microsilice, in order to produce a paste suitable for jointing, gluing of fittings and as an all purpose filler.

- **Structural compound:** Mix 1 part of already catalysed Resina 2000 + 2 parts of Microsilice, in order to produce a structural compound suitable for extensive jointing and filler application.

The recommended doses of additive to be mixed with Resina 2000 are indicative: they can be modulated in order to produce a mixture suitable for your requirements. Do not exceed the maximum recommended dose in order to avoid loss of adhesion and fragility of the compound.
Do not use the additives with the first coat, otherwise the penetrating power of the resin would be reduced.

MICROSILICE - Colloidal microsilica

MICROSILICE belongs to the range of additives to be mixed with RESINA 2000 in order to produce compounds with different properties. MICROSILICE is a thickening additive used with RESINA 2000. Best suited for gluing, jointing and the repair of defective spots. It may be mixed together with other additives of the range in order to improve knife application and appearance of the product and is suitable for both above and below waterline applications. Packaging: 0,75 L




6610 for cleaning only

For additional information please consult the technical data sheet. Pictures and size of packages are only indicative.

SURFACE PREPARATION

Satisfactory results depend not only on the properties of Resina 2000 but above all on proper surface preparation and application. Do not try to save time during surface preparation: it is always time well spent. Unless specifically indicated otherwise, the operations described on this page must be performed prior to all tasks indicated in the subsequent pages.
On any type of substrate, old existing coatings must be eliminated in order to ensure perfect adhesion of Resina 2000.

WOOD SURFACES

1 Make sure that the wood is completely dry in order to avoid that humidity entrapped under the coating shall cause rotting and in order to ensure the best possible adhesion of the coating system.

2 Clean the surface thoroughly removing all traces of oil, grease or wax. An effective procedure to detect contaminations with grease or oil, consists in spraying a small quantity of water on the surface: if the water spreads out or is adsorbed, the surface is clean. If drops are formed the surface needs additional degreasing

3 Sand with an abrasive paper of a grade suitable for the subsequent finish. Parts to be glued should be sanded in different direction in order to obtain a surface as rough as possible.

GRP AND METAL SURFACES

1 Degrease with DETERSIL and rinse thoroughly with fresh water. Do not use thinners or solvents, which – instead of cleaning – would spread the contamination over the surface.

2 Paper-sand, disc-sand or sand-blast the area to be treated in order obtain a clean surface with a rough profile.

3 Remove the dust and proceed with the application.

A humidity gauge, suitable for measuring the humidity content in GRP and wood.

Disc-sanding is one of the most effective procedures of preparing a surface for the application of Resina 2000.

ATTENTION!
By resin we mean Resina 2000 carefully mixed with the hardener.

WOOD PROTECTION

Wooden boats are exposed to humidity, UV-rays and marine fouling, agents which may cause the deterioration of wood, especially in the case of poor maintenance, and can affect the original mechanical resistance of the planking, impairing the reliability of the boat.
The application of a protective coating with Resina 2000 offers several advantages:

- Produces a barrier impervious to moisture and oxygen, the agents which cause the deterioration of wood.
- Creates a suitable base for the subsequent coating system.
- Does not affect the flexibility and the natural movements of the wood.

After surface preparation proceed as follows:

1 If the wood is new and dry apply, immediately after surface preparation, 1 coat of FIBRODUR, a sealer which penetrates deeply into the wood fibers and enhances the adhesion of Resina 2000. Sand with 180 grade paper and remove the dust.

2 Apply RESINA 2000; the application can be carried out with brush or roller owing to the fluidity and the good levelling capacity of the product.

Cross the roller passes to produce an even coating

3 Apply at least 2 additional coats of RESINA 2000 in order to ensure proper protection. The theoretical coverage is about 10 m^2/L and the thickness per coat about 100 micron. With 3 coats one can apply 300 micron, which is the minimum indispensable thickness for underwater areas. Usually for the first coat more paint is required than for the subsequent coats.

4 If necessary, carry out the filling between the 1st and the 2nd coat, using a mixture of RESINA 2000 and MICROSFERE.

WORK BETTER AND FASTER

- For better results apply more thin coats rather than fewer thick coats. In order to check the thickness use a wet film thickness gauge.

Wet film thickness gauge

- For large areas use polyurethane foam rollers, which allow a quick and clean job, without sagging or air entrapment. Use light, "criss-cross" strokes to ensure an even coating without sagging and wastage.
- To remove any air bubbles which could form, use light strokes with a dry brush. To avoid sanding between coats, comply with the recoat time: minimum 10, maximum 36 hours (at 20° C). Full curing to reach the maximum resistance requires 7 days (at 20° C).
- Sometimes, at high humidity or low temperature a sticky layer may form on the surface of the coating. To remove it, simply wash the surface with fresh water. This phenomenon (amine blushing), which could cause problems for sanding and the adhesion of subsequent coats, is caused by floating of water soluble amines, contained in the hardener, the to the coating surface. After washing and drying continue with the application as normal.

LAMINATIONS

Laminations consist in building a new part or in covering an existing part with reinforcing fabrics made of fiberglass, carbon or Kevlar mats impregnated with RESINA 2000.

Proceed as follows:

1 Wet the surface to be treated evenly with catalysed Resina 2000 by means of a short-hair roller or a brush.

2 Cut a piece of fabric slightly larger than the area to be treated and spread it uniformly. On large areas there should be an overlap of a few centimetres at the joints.

3 Impregnate the fabric with an additional coat of Resina 2000. For removing air bubbles and wrinkles often special foam-breaking rollers are used. The adhesion may be defective on sharp edges, which should be rounded previously. Remove excess resin with a spatula or a small roller.

4 Wait at least 10 hours before cutting off the protruding edges with a cutter.

An example of a laminated part after completion.

GLUING

The Veneziani Yachting Epoxy System provides easy and fast gluing between different boat building materials.

For gluing, Resina 2000 must be thickened with:

- MICROFIBRE for applications where higher strength is required.
- MICROSILICE for applications where good resistance and easy sanding is required.

For gluing follow the procedures outlined here below:

1 Clean and sand the parts to be glued.

2 Impregnate with catalyzed RESINA 2000 (without additives) before gluing. This step is particularly important for wood, in order to ensure deep penetration of the resin into the fibers. Otherwise the wood could absorb resin from the gluing paste, resulting in a more fragile bonding.

3 Mix the resin with the additive of choice and apply the mixture to the surfaces to be glued, taking care to level any uneven spots.

4 After gluing, apply one additional coat of RESINA 2000 to the joint and the surrounding area for waterproofing and complete the coating system with the recommended finish (please refer to the brochure "Maintaining your Boat").

ATTENTION!

In order to ensure perfect adhesion between the parts to be glued, to avoid porosities and for a clean job, excess resin should be pressed out and removed. It is not necessary to apply high pressure to the parts; clamps or vices will be sufficient and also prevent sliding.

REMARK!

The viscosity of the mixture should be adapted to the conditions of the surfaces to be glued together. Rougher surface require a mixture with higher viscosity.

ANGLE JOINTS

Angle joints are often called "T-joints" or beads and are often made to strengthen the bond between frames and planking, between topside and deck or simply to install a shelf or a fitting. This procedure consists in gluing two perpendicular parts and ensures both pleasant appearance and a strong joint by increasing the contact surface.

For producing an angle joint proceed as follows:

1 Sand the parts to be glued.

2 Impregnate with catalyzed RESINA 2000 (without additives).

3 Wait for the resin to penetrate and become sticky, then apply more RESINA 2000 mixed with MICROSILICE (mixing ratio resin/additive 1:2 by volume) to the contact areas.

4 Fasten the parts to be glued and apply additional mixture along the joint. Usually it is not necessary to apply high pressure to the joints.

5 Remove the surplus mixture with a spatula in order to facilitate sanding.

6 Apply one coat of a mixture with MICROSFERE which is easier to sand and provides a better finish. If necessary, shape the joint with a round tip spatula or a wooden stick with a tip adapted to the radius of the desired joint.

7 If necessary, apply a suitable coating system.

FILLING

Filling is necessary for levelling uneven spots and for repairing damages caused by aging or accidents. The use of the Veneziani Yachting Epoxy System make the work easier. Fillers produced with RESINA 2000 and its additives are solvent-free and therefore do not shrink during curing. Using MICROSFERE for the profiling of large areas provides also a sound-proofing and heat-insulating barrier.

For filling proceed as follows:

- Sand and clean the surface to be treated, removing, if necessary, rough spots,.
- Impregnate the surface with RESINA 2000, using rollers for larger areas and brushes smaller areas.
- Prepare the filler by adding the desired quantity of MICROSFERE to the catalysed resin. Apply the filler with a spatula of suitable size or with a bar, preferably crossing the passes. The maximum recommended thickness is 10 mm. If a higher thickness is needed, apply several layers.

1 Mix 2 parts of base with 1 part of hardener. Stir thoroughly for a few minutes.

2 Impregnate the surface to be treated with RESINA 2000 using a short hair roller or a brush.

3 Prepare the filler by adding the desired quantity of MICROSFERE to the RESINA 2000. Mix and stir thoroughly.

REMEMBER:

• When repairing wood with spots damaged by rot, first of all remove the deteriorated parts with a chisel and then apply the product.

• When filling wooden surfaces with a clear finish, it is possible to produce a filler of the same colour by mixing the resin with sawdust from the same wood.

4 Apply the filler with a spatula of suitable size.

5 Cross the strokes by 90°

Profiling is the filling of large areas, common in the building of new boats and the repair of severe damages. Profiling is carried out with special rods or bars which make it possible to spread the filler evenly over very large areas, resulting in a continuous layer with very low specific weight. This procedure is usually carried out by boatyards, however if you decide to perform it by yourself, keep in mind to prepare limited quantities of product at a time, which ensure a longer pot-life and avoid discarding of unused catalysed resin. Profiling is very common on keels and rudders, often carried out to improve the boat's performance.

GRP REPAIRS

The Veneziani Yachting Epoxy System is also suitable for GRP repairs. Actually the applications of this product on fiberglass provide better adhesion than those with polyester resin.

The main uses are the following:
- Repairs of delaminations.
- Repairs of cracks.
- Repairs of broken spots.
- Repairs of crevices.
- Structural reinforcements
- Gluing of teak staves on decks.

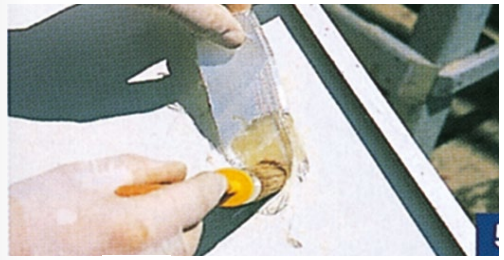
For these repairs proceed as follows:
- Prepare the surface to be treated.
- Degrease the surface by washing with DETERSIL, a degreasing and emulsifying detergent.

REPAIRING A GRP CRACK

1 Prepare the surface by disc-sanding.

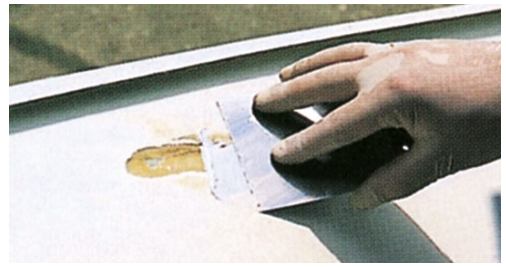
2 Apply by brush a quantity of catalysed RESIN 2000 sufficient to impregnate the damaged area.

3 Fit a piece of fiberglass mat, previously cut to the desired shape. Impregnate the fiberglass with more catalysed RESINA 2000.



4 Within 16 – 48 hours repeat the above procedure until the required thickness has been obtained. Once the resin has hardened, remove any residues by polishing.

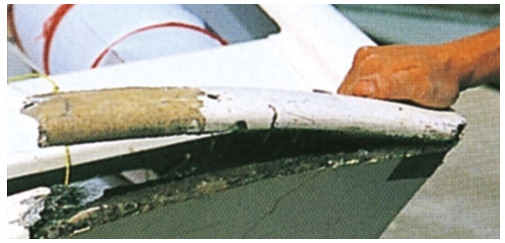
5 Fill the repaired area with a mixture made of RESINA 2000 and MICROSFERE. For this procedure a square spatula is recommended.



6 Once the filler has hardened, carry out the final polishing and apply a suitable painting system.

GLUING OF GRP

1 Separate the parts to be glued with shims or wedges and degrease with DILUENTE 6780.

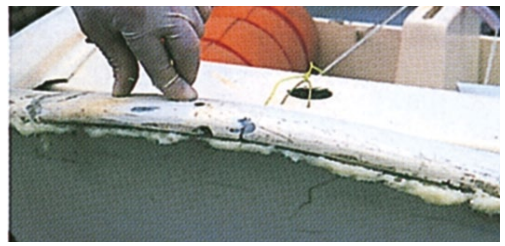


2 Disc-sand the areas to be glued

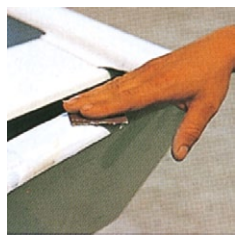
3 Mix RESINA 2000 with MICROFIBRE until the required viscosity is obtained.

4 Apply the mixture to the area to be glued with a spatula.

5 Remove the wedges and shims. Join the parts and apply light pressure.



6 Hold the glued parts in position with a clamp without squeezing and remove the surplus mixture with a spatula.



7 After gluing, fill the damaged area with RESINA 2000 and MICROSFERE in order to produce a smooth surface.

8 After sanding, apply 1 or 2 coats of epoxy undercoat and 2 coats of GEL GLOSS PRO.

REPAIR OF ACCESSORIES

Mixtures of RESINA 2000 with its additives are well suited for fitting deck accessories, by gluing them directly to the deck or by gluing of the fastening screws.
In the latter case, just impregnate the screw holes with resin prior to inserting the screws. Upon curing, the screw thread in the wood or GRP will be reinforced by the hardened RESIN 2000.

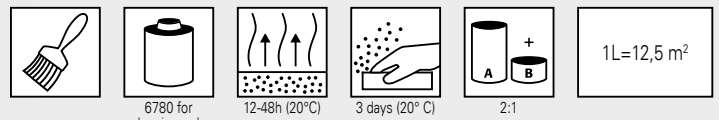
With the resin thickened with MICROFIBRE it also possible to reconstruct outworn threads. In order to facilitate the dismantling of fittings fastened with screws and RESINA 2000, the screws should be lubricated with wax, penetrating spray or grease, which, if applied to the screws before installation will avoid the screws to be locked. This procedure is often used for the reconstruction of damaged stanchion seats and for the fitting of boat equipment. Moreover, this procedure will make the screw holes watertight and avoid infiltrations.

CLEAR WOOD FINISHES

When you are painting wood on your boat, you can choose between two different products:
TIMBER GLOSS, a traditional one-pack varnish, suitable for interior and exterior surfaces, which provides a glossy coating with excellent leveling, flexibility and good resistance to marine climate. Timber gloss is recommended for painting all types of wood above the waterline and can be applied also to old varnishes in good condition.
WOOD GLOSS and WOOD MAT (only for interior surfaces) have better resistance to weathering than conventional varnishes, and therefore provide longer durability. If the wood is new, it should first be sanded and then impregnated with 1 coat of FIBRODUR, prior to the application of the finish. For best results, at least 6-8 coats of TIMBER GLOSS or WOOD GLOSS should be applied, with light sanding (360-400 grade sandpaper) between coats, to obtain a smooth, mirror-like surface. On some prominent boats, as many as 12 coats are applied in order to achieve superior finish and durability.
The first coats of varnish should diluted with 30% thinner, then the percentage of thinner should be reduced gradually. The final two coats should be applied without thinner. During application, always brush longitudinally to the grain of the wood.
If the wood is stained by water infiltration, you must remove the paint from the affected area and treat the wood with oxygenated water (80 volumes) or with TEAK 2, until the wood regains the original colour.

FIBRODUR - Sealer for wood

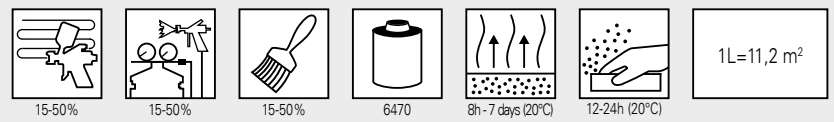
A two-pack primer for wood with excellent sealing properties. Fibrodur penetrates deeply into the wood fibers producing a highly impermeable and hard surface. This product is recommended for new and stripped wood. When applied properly in a single coat, it does not form a film but penetrates into the surface. The clear Fibrodur does not alter the original colour of the wood and does not yellow when aging. Fibrodur can be over-coated with a wide range of products such as Eurogel, Epoway, Resina 2000 Ticoprene, Timber Gloss, Wood Gloss, Wood Mat and Resina 2000. Colours: clear, teak, mahogany, walnut. Packaging: 0.75 L



6780 for cleaning only | 12-48h (20°C) | 3 days (20° C) | 2:1

TIMBER GLOSS - Glossy wood varnish

A one-pack modified alkyd varnish, easy to apply, for exterior and interior surfaces. Varnish with excellent gloss, good levelling properties, flexibility and resistance to marine environment, easy to apply with brush. Recommended for all wooden surfaces above waterline and for over-coating old varnishes. Colour: clear. Packaging: 0.75 L/ 2.50 L.



15-50% | 15-50% | 15-50% | 6470 | 8h - 7 days (20°C) | 12-24h (20°C)

For additional information please consult the technical data sheet. Pictures and size of packages are only indicative.

HIGH PERFORMANCE SYSTEM FOR CLEAR WOOD FINISHES

1 For high resistance painting systems, first of all impregnate the the new or stripped wood with FIBRODUR, a two-pack polyurethane sealer, which is available with the following colours: clear, teak, mahogany, walnut.

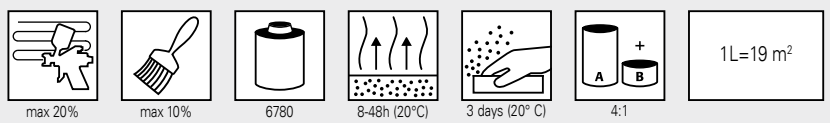
2 After a drying time of at least 12 hours, sand with 180 grade paper and remove any residues. Apply 2 coats of RESINA 2000 with brush or short hair roller and a recoat time of 8/10 hours.

3 Apply 6 to 12 coats with brush or spray-gun of WOOD GLOSS, a high gloss clear finish for interior and exterior surfaces. The recoat time is 8 hours minimum. For best results sand with 300 –600 grade paper between coats.

WOOD IMPREGNATED WITH FIBRODUR

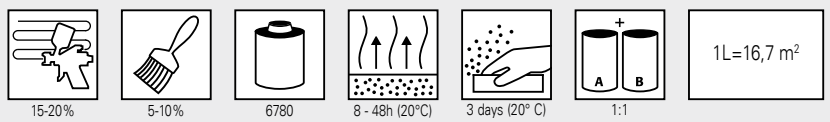
WOOD GLOSS - High-gloss wood finish

A clear, two –pack glossy varnish. Exceptionally resistant against atmospheric agents and the marine environment. Excellent levelling properties and high abrasion resistance. Wood Gloss enhances the beauty of wood without shrinking problems after application. Particularly recommended for clear finishes on exterior and interior surfaces. Not suitable for areas below the waterline. Apply several coats to obtain a perfect finish with high durability in aggressive environment. Packaging: 0.75 L



WOOD MAT - Semi-glossy wood finish

A clear, semi-glossy two-pack wood varnish with high resistance against the marine environment. Particularly recommended for clear finishes of bulkheads, furniture and all internal wood surfaces. Excellent levelling properties and wear resistance. Easy to apply. Not suitable for areas below the waterline. Well suited for wooden decks and plancking. Packaging: 0.75 L



For additional information please consult the technical data sheet. Pictures and size of packages are only indicative.

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