

the epiglass[®] epoxy resin system

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Epiglass[®] products & their uses

Repairing with Epiglass[®] epoxy resins

- The Epiglass[®] system of epoxy resin, hardener and powder additives can be used for a wide variety of jobs on the boat.
- They have become an integral part of the building, restoring, repairing and maintaining process for all types of boats, both above and below the waterline.

APPLICATIONS:

Filling, Fairing, Sheathing, Laminating,
Sealing Wood, Glueing & Bonding.

Epiglass[®] Resin HT9000



Epiglass[®] Resin HT9000

- High strength, extremely durable epoxy resin
- Low viscosity for easy mixing and improved workability
- Compatible with wide range of additives
- No spill, convenient pump dispensing system
- Unique, low odour & easy to use formula
- No dangerous phenols

The Epiglass[®] resin mix

Immediately after being mixed in the correct 4:1 ratio (by volume):



Epiglass[®] Extenders

- The range of Epiglass[®] Extenders enables you to easily produce a variety of glues and fillers with different properties for different jobs.
- Recommended ratios (**by volume of extender to mixed Resin and Hardener**) for extending Epiglass[®] resin mix:

TYPE OF MIX REQUIRED	HT9000 Resin Mix	HT110 Glue Powder	HT220 Wood Fibres
Low viscosity glue mix	1	1	
High viscosity glue mix	1	1	1
Lightweight filler mix	1	1	
Fairing mix	1	1	

Epiglass[®] Glue Powder HT110



Epiglass® Glue Powder HT110

- **APPLICATIONS:**
add to filling and fairing mix to improve trowelling and feathering properties and prevent sagging.
- Produces high strength epoxy glue when mixed with Epiglass® resin mix.



Epiglass® Glue Powder HT110

- The viscosity of the glue can be varied by the volume of Glue Powder added.



Low Viscosity



High Viscosity

Glueing with Epiglass®

- Epiglass® Glue mix is not only very strong but adheres exceptionally well to most substrates:
 - Wood
 - Metal
 - Fibreglass
 - Most plastics
- Also very versatile:
 - Can be easily thickened from a thin resin to a paste to give a glue suited to the majority of repair and construction tasks.

3 important factors when glueing with Epiglass®

1. **Surface Preparation:**

sand thoroughly and wipe down with Epiglass® Epoxy Solvent.

2. **Mixture Preparation:**

accurate measurement of Epiglass® Resin and Hardener and thorough mixing; Glue Powder then blended in to desired viscosity.

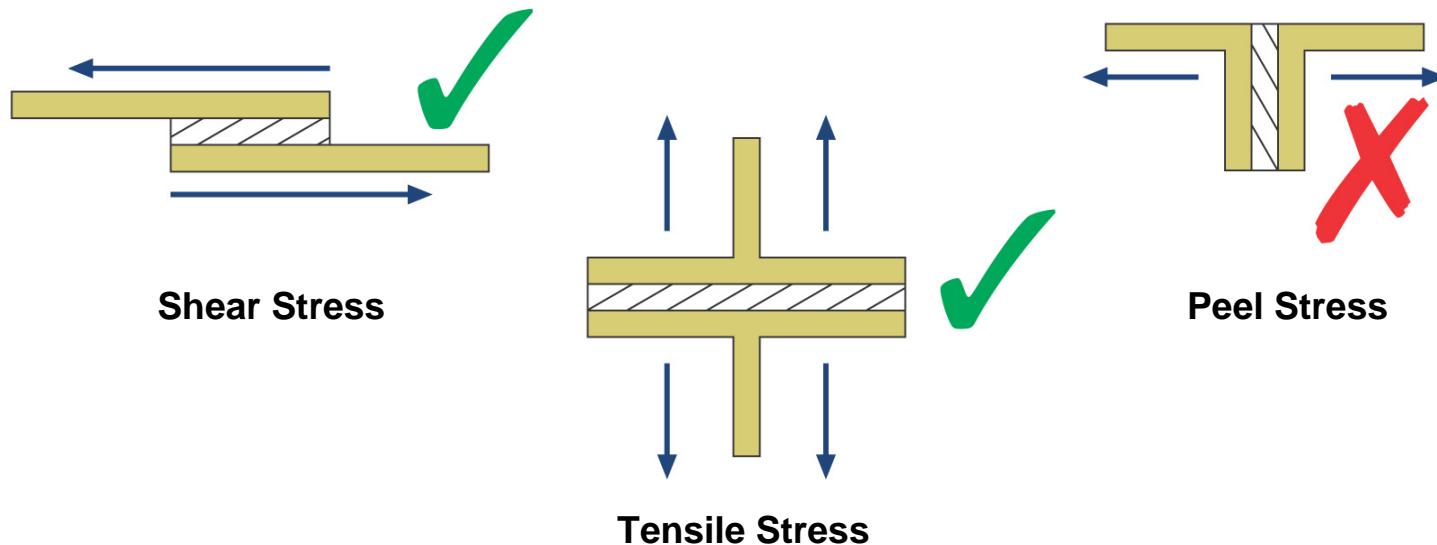
3. **Attention to 'Wet-out':**

Wet-out is the ability of the Resin to penetrate deeply into the surface (e.g. wood fibres), leaving enough glue to ensure maximum bonding.

- For low density or open-grain timbers, apply a pre-coat of Epiglass® to ensure an optimum bond.
- Addition of Wood Fibres will ensure Resin is kept at the glue joint.

Glueing with Epiglass®: joint design

- Before bonding, it is important to consider the likely load that the joint could undergo.
- **Shear** or **Tensile** loading produces sound joints, whilst **Peel** stresses should be avoided as they fracture easily and then fail.

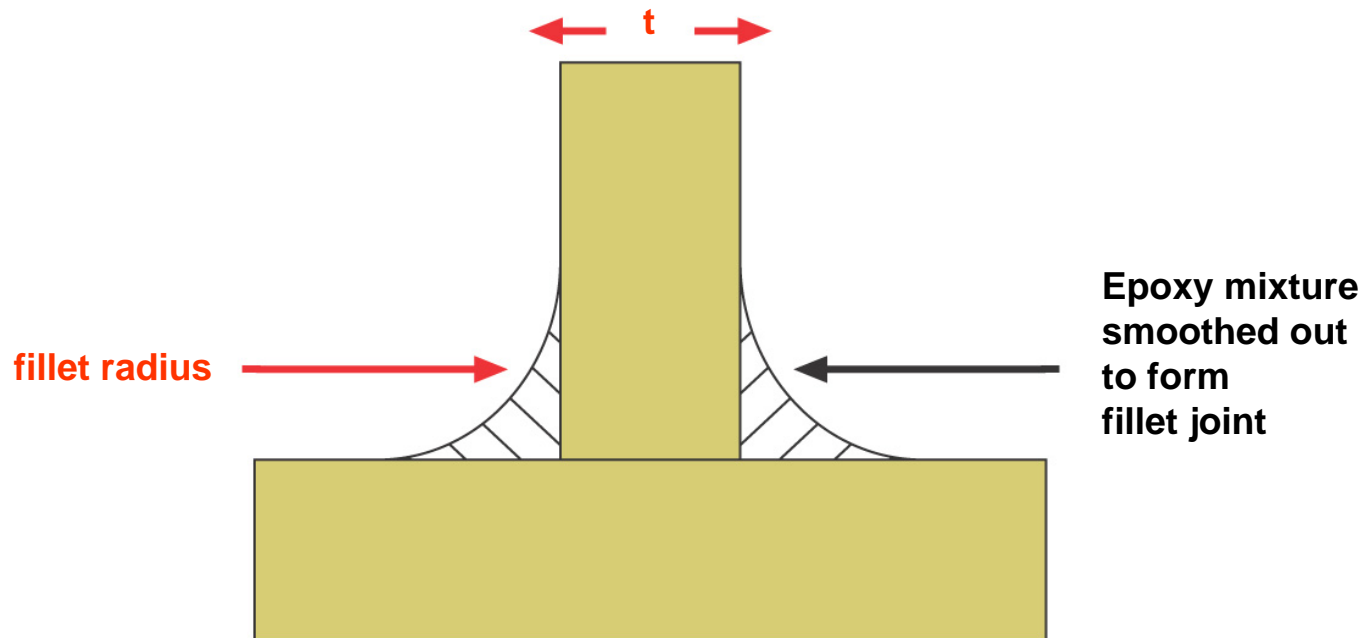


Epiglass® Wood Fibres HT220



Epiglass[®] Wood Fibres HT220

- **APPLICATIONS:**
white cellulose fibre for adding to glue mix when bonding wood.
- Especially suitable for fillet bonding:



Fillet bonding with Epiglass®

- Fillet bonds are a simple and effective way of bonding two parts of a structure together e.g. bulkhead/hull joint.
- Can also be used for joining plywood of less than ¼ inch thick. (With thicker grades, the effectiveness of the joint is reduced as the **fillet radius** increases).
- The general rule for fillet bonding is:
fillet radius = 2.5 to 5 times timber thickness (**t**).

Fillet bonding with Epiglass®



Construction of a test fillet is recommended to ensure that when loaded to failure (after full curing), the failure occurs in timber and not the joint.

*Always ensure that all imperfections in bond surface are filled and sanded prior to filleting. After sanding, all dust should be removed by wiping with Epiglass® Solvent **BEFORE** applying the fillet mixture.*

Epiglass[®] Epoxy Solvent HT901

- For cleaning and degreasing of surfaces plus thinning the epoxy when necessary.



DIY repair with Epiglass[®] products

DIY repair



Nine foot GRP sailboat repair project

Equipment for this job



Personal safety:
glasses, gloves, overalls and dust filter masks

Starting point



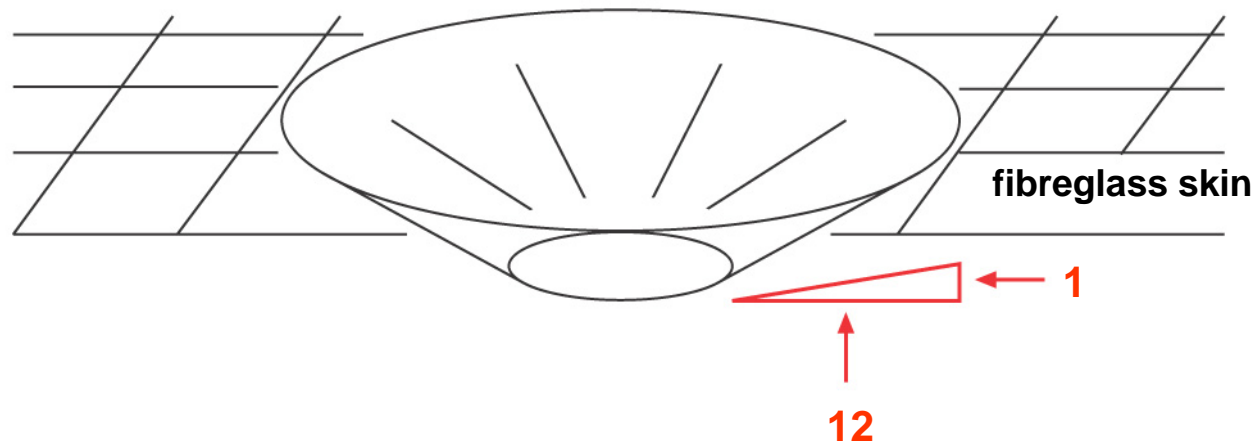
External & internal damage

Step 1



Grind out damaged material to achieve circular hole with 12:1 bevelled edge

Diagram 1



Ground out 12:1 bevelled edge profile surrounding evacuated hole

Step 2



As the hole penetrates laminate,
use braces to support the structure

Step 3



Cut appropriate pieces of Epiglass® Fibreglass Cloth to match the bevelled hole

Step 4



After mixing Epiglass® Epoxy Resin and Hardener correctly with Glue Powder, pre-coat the surface

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EPOXY RESIN

Step 5



Lay the cloth into repair area, using largest first, wetting out each layer in turn

Avoiding amine blush & improving surface texture

- An amine blush may form on the Epiglass® surface as it cures, particularly in cold, damp conditions.
- Solvents will not remove this surface stickiness.
- Instead, wash using a scotch brite sponge and freshwater before applying anything else.
- Alternatively, Peel Ply* can be used.
- This ensures a smoother surface with a higher fibre to resin content.

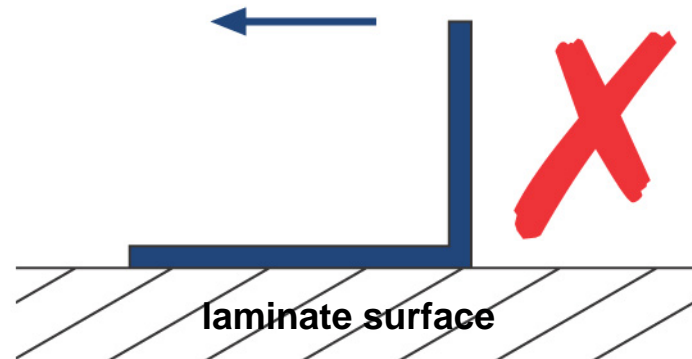
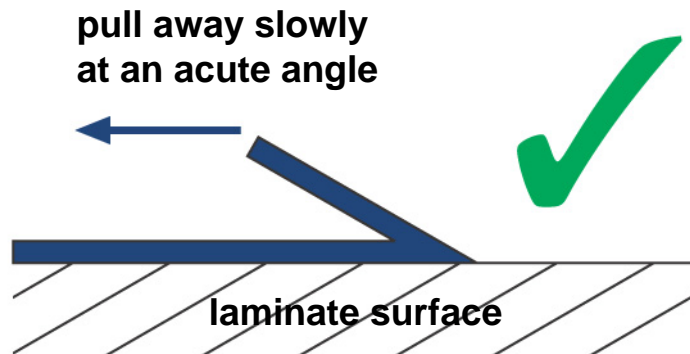
**Peel Ply is a removable outside fabric ply moulded onto the surface of a laminate to provide a chemically clean surface for bonding when it is removed.*



Correct removal of Peel Ply



*When tearing Peel Ply off the laminate, do not pull off at right angles, but with great care at an **acute angle**.*



Step 6



Repeat steps 3 - 5 for the internal surface

Step 7



Sand and overcoat with a sealer coat of Epiglass® Resin

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Step 8



Once cured, the sealer coat should be overcoated with a primer before finishing/antifouling

The end result



A successful repair

Professional construction with Epiglass[®] products

Professional construction with Epiglass® products

OEM construction of a 57-foot Spencer Custom Yacht.



Spencer laminated wood yacht construction

- Cold molded construction utilising Epiglass® Epoxy Resin, fibreglass cloths, thickeners and fillers, for glueing, laminating and coating of and over wood allows specialist builders like Spencer Yachts to produce light but strong, high quality custom yachts at a reasonable cost.
- The use of lightweight woods, which are laminated with Epiglass® epoxy resin then over coated with several layers of fibreglass cloths and Epiglass® epoxy resin, is an excellent match to allow for both stiffness and strength without the need to over-build the vessel the use of only solid fibreglass would entail.
- The cold moulded construction ensures optimum strength to weigh ratio in the structure; whilst the Epiglass® epoxy fibreglass exterior of the vessel's bottom allows for the same low maintenance as a production vessel but without the chance of gelcoat blistering.

Spencer laminated wood yacht construction

The backbone of the boat incorporates hardwoods such as fir or teak laminated with Epiglass[®] resin to produce the soft curves and radiuses used in determining the final shape of the hull.



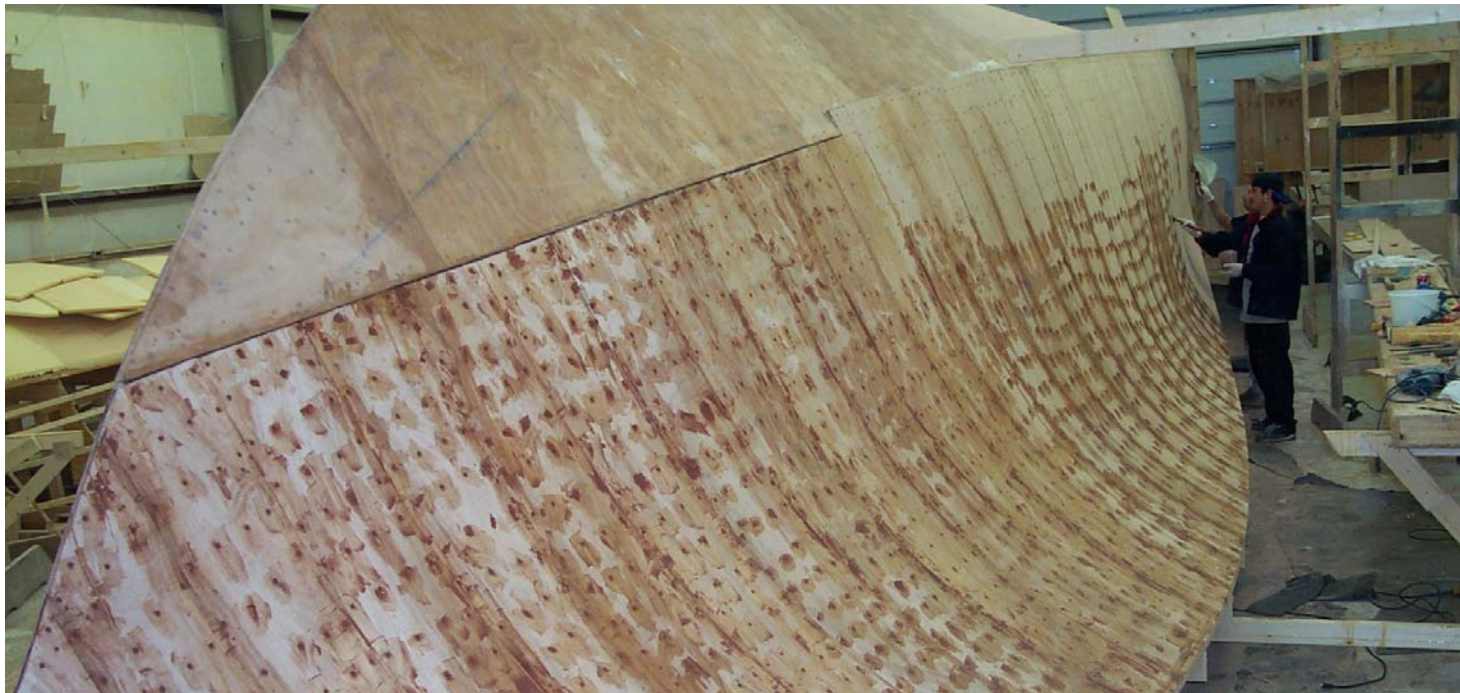
Spencer laminated wood yacht construction

Three layers of 6mm thick Kume plywood are laminated together using screws, Epiglass[®] resin, thickeners and fillers, followed by the first layer of fibreglass cloth on the bottom.



Spencer laminated wood yacht construction

The same procedure is followed on the sides but with strips being applied in a reverse angle pattern for each layer.



Spencer laminated wood yacht construction

This type of construction produces a lightweight skin with excellent weight to strength properties.



Spencer laminated wood yacht construction

This lightweight skin is then sealed with several more layers of Epiglass® resin and varying weights of fibreglass cloth.



Spencer laminated wood yacht construction

This gives the hull both high tensile strength plus protection from moisture absorption.



Spencer laminated wood yacht construction

The entire hull is cleaned, sanded with 60-grit power grinders and over coated with a coat of Interprime® 820 primer.



Spencer laminated wood yacht construction

The entire hull is then faired using the Interfill® 830 (where needed) and Interfill® 833 trowable fairing compounds. Once cured, these are block sanded with 36-grit long-boards to get the semi-fairing of the hull.



Spencer laminated wood yacht construction

The above waterline hull gets a coat of the Interfill® 835 Sprayable Fairing Compound, which is then long-boarded using 80-grit paper to achieve the final fairness.



Spencer laminated wood yacht construction

The entire hull receives a coat of Interprime® 850 grey primer followed by a coat of Interprime® 850 white primer above waterline only. The dark grey bottom is sanded with 80-grit paper to await Interprotect® epoxy primer application and the above waterline hull is long-boarded with 100-grit sandpaper in preparation for the finish primers.



Spencer laminated wood yacht construction

After the Interprotect® is applied to the underwater areas, lifting eyes are attached and the hull is moved outside to be turned over.



Spencer laminated wood yacht construction

The hull is righted so work can begin on the interior of the hull. Note the stiffness and strength of the hull to be able to survive the tremendous strain of this procedure without breaking, or even cracking.



Spencer laminated wood yacht construction

Once the hull is righted, the jigs are removed and construction can continue on the interior.



Spencer laminated wood yacht construction

The top deck is now attached to the hull and finish coats have been applied. The vessel is ready for bottom paint and finish work.



Spencer laminated wood yacht construction

The teak decks, combings and washboards are installed using Epiglass® resin, fillers and thickeners.



Spencer laminated wood yacht construction

By combining quality materials such as Epiglass® epoxy resin with uncompromising craftsmanship and a fierce dedication to build one of the best custom Sportsfishing machines available anywhere, Spencer Yachts produces yachts which are not only beautiful to the eye, but strong enough to take you to where the big ones live, and bring you home again with speed, style, and comfort.



Spencer laminated wood yacht construction

Grateful acknowledgements to Spencer Yachts Inc. for all photography in this section.

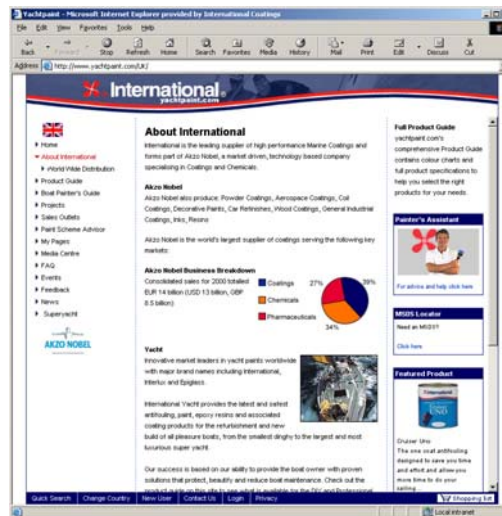
A quote from Paul Spencer:

“With our building custom sports fishing yachts, some capable of speeds in excess of 50 mph, there will be no chances taken when it comes to the quality of the materials we use for the construction of a Spencer Yacht hull.”

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For further information on any of the topics dealt with in this presentation or for detailed product information on International® products, please visit our website:

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Thank you for your attention



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