Fibreglass Repair Kit Guidance

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Before using the product, please familiarise yourself with the material by reading both the technical and safety data sheets (available for download via www.mbfg.co.uk under the technical and safety sheets tab of the fibreglass kit purchased). Work in a well-ventilated area and wear appropriate PPE (personal protective equipment); if you have any questions please get in touch.

Products explained

Resin

The resin provided in this kit is a high-quality Lloyds approved unsaturated polyester laminating resin with good UV and weathering resistance. The resin is ideal for boat and watercraft repairs. It may also be used for general applications such as automotive repairs, flat roof, pond lining, lawnmower deck repairs and more. Available in unpigmented and white. (Pigments may be added to the unpigmented resin system)





Matting

temperatures.

Catalyst (MEKP)

Chopped strand mat (CSM) is provided with each of our repair kits, this mat is an E-Glass which is a nonwoven material regularly used for lamination and repair work. Consisting of glass fibres spread in random orientation and held together with a binder. This mat is reasonably soft and conforms well to complicated shapes (when used with the laminating resin).

The catalyst provided is a medium reactivity catalyst to

cure unsaturated polyester laminating resins in ambient

(Below products are only included in the with tool kits)

Surface Tissue

A fine glass veil spread in random orientation bound together with a binder, can be used as a last layer to improve the look of a repair or as a first layer to mask the glass reinforcement pattern from showing through the gelcoat layer.

Acetone

Acetone is the standard solvent of the industry for cleaning tools and brushes while working in polyester, vinyl ester, and epoxy resins. It may be used to prepare surfaces that are to be bonded, repaired, or primed. Acetone will not remove cured resin from tools, brushes, etc. This product is highly flammable so ensure appropriate safety precautions are taken when using.

Preparing for use

Material requirements – Resin / Mat ratio.

A typical ratio of resin to mat is 1.8:1 to 2.8:1, in a more simplified format based on an average of the two ratios based on 1m²:

1m² of 300gm CSM would require approximately 750g

1m² of 450gm CSM would require approximately 1.12Kg

Ratios are highly dependent on application, boat, roof, or pond type repair; you would often use the higher end of the ratio to ensure a resin rich reinforcement to help with water resistance. You will also need to consider extra resin uptake on porous substrates such as OSB, ply and rendered



Brush

Smooth bristled brush for applying resin to the surface in a stippling action. The brushes have unpainted plastic handles, this avoids the issue of paint contamination caused by using painted handled brushes.

Consolidating roller

Consolidating rollers are used during the laminating process to help push resin into the reinforcement and expel air. Made of aluminium, these can be easily cleaned with acetone and a brush for later use. Consolidation rollers are available in many different shapes and sizes and are known by many names such as paddle rollers, fin rollers, slotted rollers, washer rollers etc. All work on the same principle with some variants better suited for specific applications, for the most part the standard 'paddle roller' will suit most general types of GRP work.



Cups

The cups provided are made of polypropylene and suited for holding polyester resins. While these cups do have graduation marks, they are not calibrated, and we would recommend weighing the resin using digital scales for accurate mixes. By volume mixes may be used however setting times / pot life may vary.

Polycloths

The cloths can be used for polishing as they are low lint but useful for general clean-up alongside the acetone for resin drips and small spills.

Gloves

The gloves provided help protect against resin drops and spray, they are not intended for immersion in the resin or solvent, for heavy contact with either resin or solvent a heavy-duty glove would be required.



finishes as these are likely to use a little extra. With the example of a race car type repair the tendency would be to use the lower end of the ratio for reduced weight etc. The uptake ocomposite/ metal surfaces of resin is usually a lot less than that of wood products, so resin usage can be marginally lower.

Surface Preparation

It is essential that the surface is clean and free of oils, grease, dust and loose material etc. Surfaces should also be dry, and material should be applied in ambient temperatures where possible. It is not recommended to use in direct sunlight as this can lead to tacky finishes. You will need to assess the situation and consider any potential issues that may arise. Unsatisfactory results are almost always down to improper use, if unsure, please get in









For Fibreglass Repair

Lightly key the surface with medium-grade abrasive paper such as 120g to remove the existing topcoat back to the original fibreglass layer or remove any paint layers back to the original fibreglass layer using the same process. Clear surface of any dust / loose material and clean with acetone Surface should now be ready for application.

Wood Products

Lightly key the surface with medium-grade abrasive paper such as 120g, ensure wood is free of any oil / grease contamination as this may aid delamination.

Clear surface of any dust / loose material and clean with acetone Apply a liberal coat of resin to the surface before continuing with the application.

Optional

Any additional step for aiding bonding of the grp to wood is to first apply

Application Steps

Material prep

Its best practice to prepare your materials and have your mat cut as required before attempting to mix the resin and catalyst as doing this after will only reduce the amount of working time you have before the resin starts to cure. Having all materials prepared prior to starting gives the best chances of a successful repair. Lack of preparatipon prior to starting is highly likely to lead to mistakes and potentially a poor / failed repair.

Resin / Catalyst Ratio's

The recommended ratio is between 1% & 2% MEKP catalyst to total weight of the resin. The mix ratio of the polyester resin and catalyst are also provided on the labels of each product. Polyester resins are relatively tolerant to slight variations in the mixing ratio. Whilst we recommend the product is weighed the mixing by volume can also be used however pot life and cure times can be affected. Its essential not over catalyse as this can lead to a much shorter pot life but also causing defects such as excessive shrinkage and warping when cured etc.

Ratios

Determine the quantity of resin to be mixed

Catalyst ratio chart

From the top row choose your weight of resin, directly below the chart will provide the quantity of catalyst required for your weight of the resin.

100g	250g	500g	1kg	2kg	5kg
Catalyst Requirements↓					
1g	2.5g	5g	10 g	20g	50g
1.5 g	3g	7.5 g	15 g	30g	75g
2g	5g	10 g	20g	40g	100 g
	100g 1 g 1.5 g 2g	100g 250g 1 g 2.5g 1.5 g 3g 2g 5g	100g 250g 500g Catalyst F 1 g 2.5g 5g 1.5 g 3g 7.5g 2g 5g 10 g	100g 250g 500g 1kg Catalyst Requirements 1 g 2.5g 5g 10 g 1.5 g 3g 7.5 g 15 g 2g 5g 10 g 20g	100g 250g 500g 1kg 2kg Catalyst Requirements↓ 1 g 2.5g 5g 10 g 20g 1.5 g 3g 7.5g 15 g 30g 2g 5g 10 g 20g 40g

With accuracte measuring the resin will perform to the specifications provided in the resin technical datasheet based on the specific test environment. Larger quantities of resin and different environmental conditions may cause a variance in pot life and setting time. If choosing to mix by volume, substitute grams for millilitres, this may lead to slight differences also.

Tips for success

Mix Ratio

Stay within the recommend 1% to 2% ratios for best results.

Temperatures

Ambient temperatures are best, stay between 15°c and 20°c, cooler conditions are going to slow the process down, try to work in the shade and stay out of direct sunlight where possible.

Surface condition

Clean / well prepped surfaces are required for good results, poor surface conditions can lead to repair failure or delamination etc.

Pot-life

Pot-life can vary due to multiple factors such as temperatures and quantities

Notice

bonda G4 Damp Seal and allow material to become tacky) before applying resin and matting. G4 Damp Seal is a single component polyurethane primer / sealer used extensively in the industry to aid adhesion and water resistance to wood and rendered substrates, very popular for use on deck replacements on boats and flat roofing application. Please refer to manufacturers technical sheet for further information.

Steel

Lightly key the surface with medium-grade abrasive paper such as 120g. New steel can have a heavy coating of oil from the factory, it is important to ensure the material is well degreased; this may require the use of detergents & water and followed by a wipe down with acetone.

Clear surface of any dust / loose material and clean with acetone Surface should now be ready for application.

Optional

G4 can also be used as a primer on steel prior to applying the fibreglass, G4 can aids adhesion and provide additional water resistance.

Applying resin

The basic method of application is to first apply a coat of resin to the surface / substrate and then set the matting into place, using the brush, gently press the mat into the resin so the mat stays in place. You can begin to stipple the resin into the mat. As the resin breaks down the binder you will notice the mat will start to become transparent (using the unpigmented system) as it does this, the mat will become pliable. If using the white resin system, you will unable to see te change, instead rely on the mat becoming pliable. After a few minutes, the binder should be broken down sufficiently enough that you can use a consolidation roller to push out trapped air and force the resin into the fibres. For large repairs, the consolidation roller can be invaluable, for small patches working the area using a short bristle brush can be a helpful alternative if one is not available but best results are usually achieved with a consolidation roller. Applying resin to the mat is often referred to as "wetting of the mat/ wetting out".

Consolidation, Corners, Joins

If applying multiple layers, a consolidation roller really should be used after each layer of mat before adding the next layer and continuing the process. In the case of joining sections together the use of the consolidation roller can really help to smooth out and blend the joint / overlap.

Once the resin has begun to break down the binder in the mat you can use the consolidating roller, light pressure and a steady pace is all that is required. Too much pressure or going too fast will cause issues in the laminate and throw resin off the back of the roller which isn't ideal from a safety point of view.

When overlapping or joining sections of matting it is good practice to use a feathered edge, if the mat has cut edges, simply tearing the glass by hand will leave a feathered edge.

Sharp internal and external right-angled corners will cause issues, and the layup will not sit well, you may need to fillet internal corners with a mix of resin and fibres / fillers, or potentially use a premade multifibre or suitable bridging compound to create a radius for an easy transition for the material from one plane to the other. External corners should also have a radius to allow for easy lamination.

Radius / Radiused = to give a rounded form to (a corner or edge).

of resin mixed at a time, container type. It's advisable to start with small batches of catalysed resin until you are familiar with the material before attempting to work with larger quantities.

Quality of mix

When mixing the resin and catalyst together, scrape the bottom and sides of the container thoroughly to ensure a good mix is obtained, poorly mixed product can leave sections and spots of uncured resin on the laminate.

Cure time

Multiple factors play their part in the cure times. Work in the right temperature range, quantities of resin, container type etc.

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