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The Engineer's Choice

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UPS 17000 LBRK Lifeboat Kit contains high performance, low viscosity, 100% solids materials designed for use as a resin repairs for polyester laminated hulls of lifeboats and life rafts.

The material is easy to use and because of its adhesion properties it can also be used to effectively repair metals, wood, glass and synthetic materials.

The materials are supplied as a kit contained in special watertight packaging to meet accepted marine industry standards.

Product Features

- Full range of accessories supplied in kit
- 100% solids coating
- Excellent adhesion & penetration properties
- Excellent over coating properties

Features & Benefits

- Ideal for repairs to cracked or holed GRP hulls & structures
- Contains 100% solids Resin & Hardener
- For use out of water
- Supplied in watertight container

UPS 17000 LBRK Lifeboat Repair Kit Kit Contents

UPS 19000 RH Resin & Hardener	225gms	2
Glass Mat	0.5m ²	1
Surface Tissue	0.35m ²	1
Cellophane	250mm X 2.5m	1
Sand Paper	280mm	1
Brush	1"	1
Stirring Tool	-	2
Putty Knife	-	1
Disposable Gloves	Pair	2
Resin Removing Cream	100gm	1
Instruction Booklet	-	1



Surface Preparation

All surfaces must be clean, dry and free from oil, grease and loose material.

Laminated Surfaces

Clean up the damage area, both internal and external. Extend the cleaned up areas approximately 100-150mm (4-6") all round onto the undamaged hull. The 'gel coat' on the outside of the hull should be thoroughly abraded. The edges of any holes should be leveled to obtain the best possible adhesion.

Other Surfaces

Surfaces should be thoroughly degreased and abraded with any resulting dust being removed by vacuum cleaning.

Mixing

UPS 19000 RH Standard Resin & Hardener is a two-component material consisting of a Base component and Activator component. The Base component should be poured into a suitable container and the Activator added and thoroughly stirred until a homogeneous mix is obtained.

The mixed material should be used within 30 minutes at 20°C (68°F). this time will be reduced at higher temperature and extended at lower temperatures.

Application

UPS 19000 RH Standard Resin & Hardener should be applied to the prepared surface by stiff brush or roller to give a uniform, even coating taking care to avoid excessive build up and ponding. On rough surfaces the product should be worked into the surface to ensure complete setting of the substrate.

These are two basic repair methods, which are both dependent on access to both sides of the damaged hull being obtainable.

Method 1

This is based on the approach to be taken when the repair is to be effected from the outside with or without a 'former' being applied to the outside.

Method 2

This is based on the approach to be taken when the repair is to be effected from the inside without a 'former' being applied in the outside.

Quality: All Unique Polymer Systems LTD Products are supplied under the scopes of the company's fully documented quality system.

Warranty: Unique Polymer Systems LTD warrants that the performance of the product supplied will confirm to the typical descriptions quoted within this Technical Data Sheet provided the material is stored correctly and used according to the procedures detailed in the Technical Data Sheet for the material.

Health & Safety: Please ensure good practice is observed at all times during the mixing and application of this product. Protective gloves must be worn during the mixing and application of this product. Before mixing and applying the material please ensure you have read the fully detailed Material Safety Data Sheet.

Legal Notice: The data contained within this Technical Data Sheet is furnished for information only and is believed to be reliable at the time of issue. We cannot assume responsibility for results obtained by others over whose methods we have no control. It is the responsibility of the customer to determine the products suitability for use. Unique Polymer Systems LTD accepts no liability arising out of the use of this information or the product described herein.



UPS 19000 RH Standard Resin & Hardener is a high performance, solvent free epoxy system designed for onsite repairs to metal, wood, glass and synthetic materials.

UPS 19000 is simple to use and when used in conjunction with Unique Polymers range of reinforcement products such as *UPS 19007/9 Glass Tape, Glass Cloth and Glass Mat* will result in an excellent repair medium having inherent strength and integrity.

Product Features

- **Adhesion** – Excellent to both blast cleaned and mechanically prepared surfaces.
- **Corrosion Resistance** – Excellent even under seawater immersion conditions.
- **Chemical Resistance** – Unaffected by short-term contact with industrial chemicals.
- **Temperature Resistance** – Suitable for use up to 100°C (212°F) dry heat.

Product Applications

Suitable for encapsulating long lengths of large diameter pipework, bonding dissimilar materials and injection into voids and cracks from 1 to 20mm (40 to 788 mil).

Before proceeding please read the following information carefully to ensure that the correct proper application procedure is fully understood.

Surface Preparation

All surfaces must be clean, dry, and free from oil, grease and loose material.

Metal surfaces; All loose material, rust and surface contaminates, including existing coatings, must be removed and the surface roughened by using an angle grinder, needle gun, UPS MiniBlaster or abrasive blasting. Where grinding or needle gunning is used, the surface should be cross-scored to improve adhesion. Care must be taken, when angle grinding, to avoid polishing rather than roughening metal surfaces.

GRP and Wooden Surfaces; All loose or rotten material must be removed to a sound edge. Flaking paint or lacquer scraped clear and sound paintwork thoroughly sanded to provide an effective key.

Where it is not possible to clean the surface thoroughly the application of *UPS 19003 A&B Cement* could possibly improve the bond of the final repair.

Mixing

UPS 19000 RH is a two component material comprising of a Base component and Activator component. The Base component should be poured into a suitable mixing container and the Activator added and thoroughly stirred until a homogeneous mix is obtained.

The mixed material should be used within 30 minutes of mixing at 20°C (68°F). This time will be reduced at higher temperatures and extended at lower temperatures.

Application Procedures

UPS 19000 RH should be applied to the prepared surface by stiff brush or roller to give a uniformly even coating, taking care to avoid excessive build up and ponding. On rough, pitted surfaces the product should be worked into the surface to ensure complete wetting of the substrate. To maximize the strength of the repair, it is essential that a complete coating of the resin mix is applied prior to the laying up of each layer of glass fabric. By doing so, a homogeneous glass fibre resin laminate will be achieved.

Laying up of Glass Fabrics: The principal strength of the glass fibre resin laminates lies in the Tape or Cloth layers which are either wound or laid on the surface of the repair. When using Tape, this should be wound with a 50% overlap and care must be taken to ensure that it is applied evenly and flatly. This will eliminate a possible cause of weakness in the laminate. When applying multiple layers of Tape each subsequent layer should be applied in the reverse direction and the Tape should not be cut at the end of each pass.

It will sometimes be difficult to keep the winding smooth, e.g. when the repair is on a bend in a pipe. In these instances, it is better to cut short lengths of Tape and lap them one on the other. The same comments generally apply when Glass Cloth is being used.

Application of Sealer Filler Resin Mix; Sealer Filler is a non-asbestos powder supplied with sufficient material to add to one unit of *UPS 19000 RH*. Mix the *UPS 19000 RH* then transfer to a clean mixing vessel. The Sealer Filler should be added to the resin mix and stirred until the Sealer Filler is thoroughly dispersed. The resultant paste should be applied to the repair, as required, using a troweling tool. The mix can be applied to operate at temperatures up to approximately 180°C (356°F). When it is applied as a pre-coat, prior to carrying out a repair, it will help insulate the resin laminate from the operating temperatures of the parent body.

Application of Fairing Compound Resin Mix; Fairing Compound is a filler which consists of glass fibre strands supplied with sufficient material to add to one unit of *UPS 19000 RH*. The methods of mixing application are similar to the Sealer Filler Resin Mix. The main purpose of this mix is to fill in undulations prior to the application of repair.

Injection Applications

Once the material has been mixed, dispense the product into a one component cartridge up to 1lt volume (0.25 US Gallon). Using a single component injection pump, air fed, the material can be injected into gaps to bond concrete to metal, metal to metal, plastic to concrete, plastic to metal.

Encapsulation Using Technical Fabrics

The mixed product can be used in conjunction with Glass Tape, Glass Cloth, Chop Stand Matting and Linen Scrim. The use of a technical fabric is dependent on the type of repair to be performed. Typically the following repairs are performed with these materials;

3 Layer Pipe Wrapping

1. Apply *UPS 19000 RH* at 1mm (40mil) WFT.
2. Wrap 50/100mm Glass Tape around pipe with 50% overlap.
3. Apply *UPS 19000 RH* at 1mm (40mil) WFT.
4. Wrap 50/100mm Glass Tape around pipe with 50% overlap.
5. Repeat Step 2, and finish with a 500 microns (20mil) coat of *UPS 19000 RH*.

3 Layer Pipe T-Joint

1. Apply *UPS 19000 RH* at 1mm (40mil) WFT.
2. Cut the Glass Tape into strips and lay over the surface where the 2 pipe meet.
3. Ensure there are at least 3 layers of *UPS 19000 RH* and Glass Tape around the joint area.
4. Once all the T-Joint area has been coated, apply *UPS 19000 RH* at 1mm (40mil) WFT to all the repair area.
5. Wrap 50/100mm Glass Tape around the pipe with a 50% overlap.
6. Repeat Step 2, and finish with a 500 microns (20mil) coat of *UPS 19000 RH*.

Leaking Tank Seams

1. Apply *UPS 19000 RH* at 1mm (40mil) WFT, ensure the repair area is oversized by 300mm (8") in all directions.
2. Cut a section of Glass Fibre Matting to cover the leaking seam.
3. Apply *UPS 19000 RH* at 1mm (40mil) onto the Glass Fibre Matting.
4. Apply a 2nd layer of Glass Fibre Matting.
5. Seal the repair with a final coat of *UPS 19000 RH* at 500 microns (20mil).

Technical Data & Performance

Characteristics

Coverage Rates

225GM (0.5LB) of fully mixed product will give the following coverage rates -	
0.50m ² at 500 microns	5.3ft ² at 20mil
0.25m ² at 1mm	2.7ft ² at 40mil
<i>Please note that the coverage rates quoted are theoretical and do not take into consideration the profile or condition of the surface being repaired.</i>	

Drying & Cure Times at 20°C (68°F)

Useable Life	25 minutes
Movement Without Load or Immersion	2 hours
Light Loading	16 hours
Full Loading	5 days
At 20°C (68°F) the applied materials should be allowed to harden for the times indicated below before being subjected to the conditions indicated. These times will be extended at lower temperatures and reduced at higher temperatures.	

Appearance

Mixed Material Colour	Opaque
Base Component Colour	White Gel
Activator Component	Light Yellow Gel

Over Coating Times

Minimum	The applied material can be over coated as soon as it is touch dry
Maximum	The over coating time should not exceed 8 hours
Where the maximum over coating time is exceeded, the material should be allowed to harden before being abraded or flash blasted to remove surface contamination.	

Shelf Life

5 years if unopened and store in normal dry conditions (15-30°C / 60-86°F)

Mixing Ratio

Component	Base	Activator
By Weight	2	1
By Volume	2	1

Density

Base	1.15
Activator	1.15
Mixed	1.15

Volume Capacity

869cc/Kg

Solids Content

100%

Slump Resistance

Nil at 3mm

Pack Sizes

This product is available in the following pack sizes; 225GM (0.5LB), 6KG (13.2LB)

Mechanical Properties

Compressive Strength ASTM D695	1034kg/cm ² (14,700 psi)
Tensile Shear Adhesion ASTM D1002 (Abrasive Blasted Mild Steel with 75 micron profile)	148kg/cm ² (2,100 psi)
Flexural Strength ASTM D790	912kg/cm ² (13,000 psi)
Hardness Rockwell R ASTM D785	85
Corrosion Resistance ASTM B117	Minimum 5000 hours
Heat Distortion ASTM D648 At 264psi Fibre Stress	20°C (68°F) Cure – 70°C (158°F)

Maximum Operating Temperatures

Dry Heat	100°C (212°F)
Sealer Filler Resin Mix	180°C (356°F)
In Conjunction with Glass Tape	170°C (338°F)

Operating Pressures

Operating Pressures	
Low Pressure Repair	35kg/cm ² (500 psi)
High Pressure Repair	112kg/cm ² (1600 psi)
See application manual for full details	

Corrosion Resistance

Excellent even under seawater immersion conditions

Chemical Resistance

The product resists attack by a wide variety of inorganic acids, alkalis, salts and organic media. Refer to the Unique Polymer Systems LTD Technical Centre for advice.

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