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UPS 13000 'C' Top Up Kit contains a specially selected range of high performance laminate, adhesive and engineering repair products.

Product Features

- Ideal for emergency repairs to leaking pipework.
- Repairs with pressure tolerance up to 3000 psi.
- Contains 100% solids *UPS 19000 RH Standard Resin & Hardener*.
- Up to 20 repairs possible from one kit.
- Repairs to pumps and valves.
- Water activated pipe repair bandages (*UPS 19601/3/4/5 PR*).
- General purpose adhesive (*UPS 19002 A&B Cement*).
- Fast curing metal repair compounds (*UPS 120 XXF*).

UPS 13000 C Kit - Contents		
Product	Size	Quantity
UPS 19000 RH Standard Resin & Hardener	225gms	5
UPS 19003 A&B Cement	1kg	1
UPS 120 XXF Fast Curing Metal Fluid	200gm	2
UPS 19060 SG Stick Grade Metal	125gms	1
UPS 19060 SGUW Underwater Stick Grade Metal	125gms	1
UPS 19601 PR Pipe Repair Bandage	50mm X 1.8m	1
Glass Mat	0.5m	1
Sealer Filler	50gm	1
Fairing Compound	50gm	1
Masking Tape	Roll	1
Plastic Coated Paper	2m ²	1
UPS 19007 GT Glass Tape	50mm X 50m	1
Resin Removing Cream	100gm	1
Cellophane	250mm X 25m	1
Contour Cloth	250mm X 250mm	1
Linen Scrim	0.5m ²	1
Glass Cloth	1m ²	1
Disposable Gloves	Pair	1
Scissors	Pair	1
Brush	1" Width	1
Stirring Tool	-	2
Applicator Tool	-	1
Detailed Application Booklet	-	1



UPS 19000 RH Standard Resin & Hardener

It will be found that the containers in which the Resin is packed are not filled to the top. This is to allow space for the introduction of the Activator. Sufficient activator is included in each container to set the resin in each pack and this should be poured into the Base container shortly before it is required for use and stirred for at least 1.5 minutes using one of the stirring tools.

UPS 19003 A&B Cement

Equal quantities of the cement are to be taken from either the containers, and mixed together using the spatula provided. When using *UPS 19003 A&B* for repairs to leaking pipe, it is advisable to allow the cement begin to harden, before applying it to the cracked pipe.

Effects of Temperature on UPS 19000 RH

Once the *UPS 19000 RH* has been mixed, the rate of cure is dependent on the temperature to which it is allowed to rise. The hardness, strength and rapidity is increased the higher the temperature. In cold conditions it is advisable where possible, to apply an external source of heat to a repair to make sure that the cure reaction is complete and so reach its maximum strength.

Cleaning The Surface

It must be appreciated that the strength of a repair depends chiefly upon the strength of the adhesive bond between the *UPS 19000 RH* and the surface to which it is applied. The *UPS 19000 RH* will adhere best to a clean, grease free surface and it is therefore essential that before applying a repair to a surface it should be cleaned using *UPS CLEANER MEK*. In areas where it is impossible to clean the surface thoroughly, it is recommended that a layer of *UPS 19003 A&B* is smeared on the surface to be repaired and for a distance of 2" around.

Evenness of Lay Up

The principle strength of a repair lies in the tape or glass cloth layers, which are either wound or laid on the surface of the metal. When using tape it is customary to wind this with a half overlap and care should be taken to see that there are no kinks in the tape, as this will leave a path of weakness in the final repair, which the pressure from inside will attack and may cause a breakdown. It will sometimes be found to be difficult to keep the winding smooth and free from kinks, especially when the repair is over a bend section of a pipe. In these cases it is preferable to cut short lengths of tape and lap them one on the other, while winding over the bend.

Even Application of UPS 19000 RH

It is obviously necessary that a continuous line a resin must be applied to each layer of the tape wound around the repair.

Thorough Saturation of Glass Mat

The purpose of *Glass Mat* is to provide a rigid backing to the tape repair and also to enclose a considerable volume of *UPS 19000 RH*, which will heat up during cure and thereby make the adhesion to the metal considerably stronger. This objective will never be

attained unless the *Glass Mat* is thoroughly saturated. This can be achieved by working the resin up through the mat with the fingers. Particular attention should be paid to the edges of the mat strip.

UPS 19000 RH Standard Resin & Hardener

100% solids epoxy based resin, produces an extraordinarily strong resinous mass, having exceptional adhesive properties when applied to metals, wood, glass and synthetic materials.

UPS 19003 A&B Cement

A specially developed epoxide compound supplied in two separate packs Marked Base and Activator. When mixed together in equal portions by volume, the *UPS 19003 A&B* will cure to an extremely strong mass with a better adhesive bond that produced by *UPS 19000 RH*. Apart from its use as an adhesive for repairs it can be applied, prior to carrying out a *UPS* repair where difficult adhesion conditions exist.

Glass Cloth

A woven cloth 1m², 0.007" thick, which can be used for large repairs to tanks and pipework, specially developed for use with *UPS 19000 RH*.

Glass Mat

A random collection of glass fibre which will absorb a considerable amount of *UPS 19000 RH* and which, when set will give an extremely strong inflexible mass for backing up repairs.

Linen Scrim

An open woven linen fabric used as a backing to *Glass Mat* to make it easier to handle when being applied to a repair.

UPS 19007/9 GT Glass Tape

UPS 19007/9 GT is a specially treated glass fibre fabric that ensures the resin mix will fully permeate the fabric and is used, from the roll, for wind on pipe repairs.

Fairing Compound

Individual strands of glass fibre for mixing with *UPS 19000 RH* mix.

Sealer Filler

Strands of fibrous silicate, which, when mixed with *UPS 19000 RH* becomes a putty, ideal for repairing cracked pipes.

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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.

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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
<i>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.</i>	

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
<i>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.</i>	

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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UPS 19003 A&B Epoxy Cement is a high performance, two pack, solvent free epoxy repair system for use on metallic surfaces. UPS 19003 A&B is ideal for application where only minimal surface preparation can be carried out and is usually used in conjunction with UPS 19000 Standard Resin & Hardener.

Suitable for rebuilding corrosion pitting on metallic structures and in particular, as a fairing compound on pipework prior to wrapping with the UPS 19000 Pipe Repair System.

Product Features

- Can be used on any surface.
- Is suitable for use as a filler as well as an adhesive.
- Developed for repairs where difficult adhesion conditions exist.

Product Applications

Typically the material is used in conjunction with UPS Composite Repair Systems as a cost effective surface filler prior to application of UPS 1900 RH and UPS 19007/9 GT. The material can be used for filling of pitting and scarring on badly corroded or eroded metallic surfaces.

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

Surface Preparation

Ideal surface preparation for this material is abrasive blasted to ISO 8501/4 Standard SA2.5 (SSPC SP10 / NACE 2) and a minimum blast profile of 75 microns using an angular abrasive.

However this product has been designed for surfaces with less than ideal surface preparation.

Hand Tools – Use a wire brush or coarse sand paper to abrade the surface. Ensure all loose material and as much surface contamination is cleaned from the surface and ensure the surface is wiped with UPS CLEANER MEK prior to, and after abrading the surface.

Mechanical Tools – Use a handheld mechanical grinder with a coarse grinding pad or rotary wire brush. Ensure all loose material and as much surface contamination is cleaned from the surface. DO NOT POLISH THE SURFACE, ENSURE THAT THE SURFACE HAS A CROSS HATCH PATTERN. Ensure the surface is wiped with UPS CLEANER MEK, prior to and after abrading the surface.

UPS MiniBlaster – For the best mechanical surface preparation results, use the UPS MiniBlaster. Ensure all loose material and as much surface contamination is cleaned from the surface. Ensure the surface is wiped with UPS CLEANER MEK prior to, and after abrading the surface.

For salt contaminated surfaces the area must be abrasive blast cleaned as mentioned above and left for 24 hours to allow any ingrained salts to come to the surface. After this 24-hour period the surface must be washed with UPS CLEANER MEK prior to brush blasting to remove the surface salts. This process must be repeated until all ingrained contaminates have been sweated out of the surface.

Mixing & Application

Warm the Base component to 15 – 25°C (60 – 77°F) before mixing and do not apply when the ambient or substrate temperature is below 5°C (40°F) or less than 3°C (37°F) above the dew point.

Mixing of the product can be in full units or by part mixing. If mixing the whole unit please ensure as much of the Base and Activator is dispensed from the plastic container onto a clean plastic mixing surface and mix using a spatula until a uniform material free of any streakiness is achieved, whilst ensuring no unmixed material is left on the spatula or the mixing surface. From the commencement of mixing, the whole of the material should be used within 30 minutes at 20°C (68°F).

For part mixing, using a spatula, place equal measures of the Base and Activator onto a clean plastic mixing surface, cleaning the spatula thoroughly between the taking of each measure. Mix as above.

Using a spatula or applicator tool, or for larger areas, a float, apply the material to the prepared surface, ensuring the material is pressed into any pitting or other defects and profile the repair to a smooth finish.

Where the material is to be over coated, this can be done as soon as it is touch dry and at any time up to 24 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.

When UPS 19003 A&B is being used to bond two surfaces together, both surfaces should be coated with the material. The two pieces should then be pressed firmly together and clamped in position into the product has set, any excess material squeezed out should be scraped away before the UPS 19003 A&B begins to cure.

Where a repair is to be carried out on a cracked pipe then UPS 19003 A&B should be troweled into the crack before proceeding with the repair. Where the crack is still leaking a little, then it is recommended that UPS 19003 A&B should be left to cure partially before being re-troweled into the crack.

Once UPS 19003 A&B has cured for a minimum of 2 hours at 20°C (68°F), sanding, grinding and machining etc., can be carried out.

Technical Data & Performance

Characteristics

Coverage Rates

1KG (2.2LB) of fully mixed product will give the following coverage rates -	
0.625m ² at 1mm	6.7ft ² at 40mil
0.313m ² at 2mm	3.3ft ² at 80mil
0.208m ² at 3mm	2.2ft ² at 1/8"
<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	30 minutes
Movement Without Load or Immersion	2 hours
Light Loading	6 hours
Full Loading	2 days
Immersion	3 days
<i>Once hardener, the material should be left for the following periods of time at 20°C (68°F) before being subjected to the conditions indicated. These times will be doubled at 10°C (50°F) and halved at 30°C (86°F)</i>	

Appearance

Mixed Material Colour	Dark Brown
Base Component Colour	Dark Grey
Activator Component	Light Brown

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 24 hours
<i>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.</i>	

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	1	1
By Volume	1	1

Density

Base	1.60
Activator	1.60
Mixed	1.60

Volume Capacity

625cc/Kg

Solids Content

100%

Slump Resistance

Nil at 2.0cm

Pack Sizes

This product is available in the following pack sizes; 200GM, (0.44LB), 1KG (2.2LB), 3KG (6.6LB)

Useable Life

10°C (50°F)	50 – 60 minutes
20°C (68°F)	25 – 30 minutes
30°C (86°F)	15 – 20 minutes

Mechanical Properties

Tensile Shear Adhesion ASTM D1002 (Abrasive Blasted Mild Steel with 75 micron profile)	185kg/cm ² (2,630 psi) 129kg/cm ² (1,834 psi) Manually Prepared
Compressive Strength ASTM D695	735kg/cm ² (10,4500 psi)
Corrosion Resistance ASTM B117	Minimum 5000 hours
Flexural Strength ASTM D790	298kg/cm ² (4,250 psi)
Hardness Rockwell R ASTM D785	100
Heat Distortion ASTM D648 At 264psi Fibre Stress	20°C (68°F) Cure – 58°C (136°F) 100°C (212°F) Cure – 98°C (208°F)

Heat Resistance

Suitable for long-term water immersion at temperatures up to 70°C (158°F).

Resistant to dry heat in excess of 150°C (302°F) dependent on load.

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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UPS 19007/9 Glass Tape is a high performance unique braided Glass Fibre Tape that, when used in conjunction with the UPS 19000 RH offers the ultimate in both Leak Sealing and Pipe Protection.

Applications

Ranging from the sealing of leaks on any size pipe, to the protection of lagging to prevent under lagging corrosion that can lead to hidden pipe defects that can leak at any moment, to the wrapping of pipes that are old and damaged and can lead to extending their operating life by many years.

Other uses of the Unique system is the protection of off-shore facilities that suffer from corrosion – erosion and salt water damage through either constant immersion or periodic immersion coupled with the aggressive nature of wave power.

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

Tape Specifications

- Glass tape is made to DIN 61854
- Material of WARP and WEFT is woven from poly-glass yarn to EC 9-34 tex PPG 1383 / Vetrotex TD22, which will blend with the Resin and Hardener to provide extreme strength and physical properties.
- This glass tape has better rating against ageing from contact with high UV exposure compare with other tapes.
- The tape supplied is woven to a WARP of 20 yards/cm and WEFT 10 x 2 yarns/cm.
- WEFT > 300 N/cm ±20%
- Yarn Number Capture; 1 yarn.at.edge, polyester 76 dtex
- Surface Weight; approx. 140 gm/m² (±5%)
- Thickness; Approx 0.12mm (±0.02mm)
- Weave Pattern; 1/1 plain weave
- Weave Tolerance; ±1mm
- Tensile Strength; Wrap >200 N/cm (±20%)

Technical Data & Performance

Characteristics

Coverage Rates

UPS 19007 GT 50mm x 50m	1.25m ² per Roll with 50% overlap	13.45ft ² per Roll with 50% overlap
UPS 19009 GT 100mm x 50m	2.5m ² per Roll with 50% overlap	27ft ² per Roll with 50% overlap
<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>		

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

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

Mechanical Properties

Compressive Strength ASTM D695	1019kg/cm ² (14,500 psi)
Flexural Strength ASTM D790	956kg/cm ² (13,600 psi)
Tensile Strength ASTM D4060	644kg/cm ² (900 psi)

Corrosion Resistance – Excellent even under seawater immersion conditions

Chemical Resistance – Unaffected by short-term contact with industrial chemicals.

Full chemical resistance chart available on request.

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UPS 19601/3/4/5 PR Emergency Pipe Repair Bandage is a high performance rapid curing moisture activated repair bandage, specifically developed for the repair of leaking pipes, which is activated by immersion in water.

UPS 19601/3/4/5 PR is ideal for pipe repairs to low pressure systems. As a general guide, a repair built up to a thickness of approximately 12mm (½") will withstand a maximum service pressure of 10 bar (150 psi). Higher pressures, up to 50 bar, can be achieved by first applying a 'plug' of UPS 19060 SG as described herein, always at users discretion.

Product Features

- Easy to apply, requiring no special tools or equipment.
- Specially selected woven polyester fabric impregnated with a polyurethane resin, which is activated by immersion in water.
- Ideal for repairing pipes operating at low pressures.
- Designed for use for repairs up to 500mm diameter.
- Can be used on a wide variety of surfaces, including all metals and many types of plastics.
- WRAS approved product.

Correct bandage size is relevant to pipe dimension (with holes approximately 3 - 6mm (118 – 236mil) diameter).

Surface Preparation

All pressure should be removed from the pipe. For leaks where pressure cannot be removed, holes should be stopped using a pipe repair clamp or UPS 455/456 TA. Remove all oil, grease, loose rust scale, sealant tape and paint from the repair area. Rough score a 10cm (4 inch) patch around the pipe centering on the leak site.

If the pipe is pitted with rust, surfaces must be wire brushed to remove the loose scale. If the surface is smooth, as with copper or stainless steel, surfaces should be roughened with a course file, rasp or saw blade. For plastic pipe, the external mold release must be removed. Abrade surfaces with coarse grit sandpaper. A saw blade may also be used to create a crosshatch pattern. This is particularly useful on polypropylene and PVDF piping.

Application Procedures

Before and during application, lightweight disposable gloves should be worn to protect the hands.

UPS 19601/3/4/5 PR is a single component material, which should be immersed in water and squeezed two or three times for about five seconds prior to use.

Remove roll from water and wrap quickly and tightly as follows.

Centre tape over leak site, wrap from bottom of roll, pulling firmly throughout application. After 5-7 passes, resin foam will come through the tape, which is desirable and aided by pulling tightly. Continue until entire roll is applied, building to a minimum thickness of 12mm (½"); use a second roll if necessary. Firmly press and smooth end of roll into wrap in the direction of application. Wet gloves in water, smooth and firmly press the wet resin back into the wrap.

When used in conjunction with a 'plug' of UPS 19060 SG repair using the above instructions but having first plugged the hole.

Knead a bead of putty in a gloved hand and flatten out into a disc placed centrally over the hole pressing gently and feathering the edges. Leave to semi-harden (full cure 20 minutes) before applying the tape, although the tape may be applied immediately if necessary.

KEEP HANDS MOVING QUICKLY AND WET GLOVES FREQUENTLY TO AVOID STICKING

Continue rapid hand movement pressing and polishing resin in motions around and parallel to the pipe. Continue process until resins are no longer tacky. The repair should now have a smooth, hard surface and an enamel-like appearance with no fabric protruding though the surface.

NOTE: If a thicker application is needed, spend a little less time finishing the first roll and immediately begin the application of the next. Finish the final roll as if a single roll application.



Technical Data & Performance

Characteristics

Which Size Bandage Do I Need?

Bandage Size	Pipe Nominal Diameter
UPS 19601 PR 50mm X 1.8m	>100mm (3 15/16")
UPS 19603 PR 50mm X 3.6m	>200mm (7 7/8")
UPS 19604 PR 75mm X 3.6m	>300mm (11 13/16")
UPS 19605 PR 100mm X 3.6m	>400mm (15 3/4")

Drying & Cure Times at 20°C (68°F)

Useable Life	2 – 3 minutes
Initial Set	5 minutes
Full Mechanical Cure	30 minutes
<i>Once hardener, the material should be left for the following periods of time at 20°C (68°F) before being subjected to the conditions indicated. These times will be doubled at 10°C (50°F) and halved at 30°C (86°F)</i>	

Appearance

Single Pack	White
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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 30 minutes
<i>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.</i>	

Shelf Life

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

Solids Content

100%

Pack Sizes

This product is available in the following pack sizes;
 UPS 19601 PR 50mm X 1.8m Pack of 10
 UPS 19603 PR 50mm X 3.6m Pack of 5
 UPS 19604 PR 75mm X 3.6m Pack of 5
 UPS 19605 PR 100mm X 3.6m Pack of 5

Maximum Heat Resistance

270°C (500°F)

Maximum Service Pressure

10 bar (150 psi) - ½ inch / 12mm thick repair
 27.5 bar (400 psi) – 1 inch / 25mm thick repair

Mechanical Properties

Flexural Strength ASTM D790	32Mpa (4,640 psi)
Tensile Strength ASTM D6382	19Mpa (2,740 psi)
Shore D Hardness ASTM D2240	82

Adhesion (Bond Strength)	14Mpa (2,000 psi)
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Chemical	Resistance
Citric Acid <10%	R
Crude Oil	R
Diesel	R
Formic Acid <10%	R
Zinc Chloride	R
Phosphoric Acid < 10-20-75%	R
Potassium Carbonate	R

Key: R – Resistant for continuous immersion.

Part of Chemical Resistance Chart – Full Resistance Chart Available on Request.

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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.



UniquePolymerSystems.com

The Engineer's Choice

... for Solutions

UPS 120 XFF Fast Curing Metal Fluid is a fast curing two component solvent free epoxy metal repair fluid. The product has been designed for use on a wide range of metallic surfaces where surface preparation is restricted and where the surface is contaminated with oil or grease.

Product Features

- Touch dry in 25 minutes.
- Highly machinable.
- **Recommended for transformer repairs, as adhesion to Transformer Oil is exceptional.**

Product Applications

Suitable for emergency repairs or part of planned maintenance to equipment such as damaged flanges, leaking tank seams and pipework.

Ideally suited for the repair and resurfacing of transformers where weeping or leaking oil is contaminating the repair surface.

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

Surface Preparation

Damaged components or equipment – Ideal surface preparation for this material is abrasive blast cleaning to **ISO 8501/4 Standard Sa2.5 (SSPC SP10/NACE 2)** and a minimum blast profile of 75 microns using angular abrasive. However this product has been designed for surface with less than ideal surface preparation.

Hand Tools – Use a wire brush or coarse sand paper to abrade the surface. Ensure all loose material and as much surface contamination is cleaned from the surface. Ensure the surface is wiped with UPS CLEANER MEK prior to and after abrading the surface.

Mechanical Tools – Use a handheld mechanical grinder with a coarse grinding pad or rotary wire brush. Ensure all loose material and as much surface contamination is cleaned from the surface. **DO NOT POLISH THE SURFACE, ENSURE THAT THE SURFACE HAS A CROSS HATCH PATTERN.** Ensure the surface is wiped with UPS CLEANER MEK prior to and after abrading the surface.

UPS MiniBlaster – For the best mechanical surface preparation results are as UPS MiniBlaster. Ensure all loose material and as much surface contamination is cleaned from the surface. Ensure the surface is wiped with UPS CLEANER MEK prior to and after abrading the surface.

Leaking Transformer Surfaces – Re repair a weeping / leaking transformer surface mixed UPS 120 XFF must be applied with 10-15 second of the surface being cleaned. **DO NOT ABRAD THE SURFACE WITH ANY MECHANICAL TOOLS.** If possible use a wire brush to take off any loose corrosion or coating, then wipe the surface with a solvent wipe and take away as much excess oil as possible.

Mixing & Application

Warm the Base component to 15 – 25°C (60 – 77°F) before mixing and do not apply when the ambient or substrate temperature is below 5°C (40°F) or less than 3°C (37°F) above the dew point.

Mixing of the product can be on full units or by part-mixing. If mixing the whole unit please ensure as much of the base and activator is dispensed from the plastic container onto a clean plastic mixing surface and mix using a spatula until a uniform material free of any streakiness is achieved while ensuring no unmixed material is left on the spatula or the mixing surface. From the commencement of mixing the whole of the material should be used within 5 minutes at 20°C (68°F).

For part mixing, using a spatula place equal measures from the Base unit onto a clean plastic mixing surface. Clean the spatula thoroughly and then take one equal measure from the Activator unit and place alongside the Base measure. Mix as above.

Damaged Components & Equipment Repairs – Using a brush or applicator tool, apply the material to the prepared surface, ensuring the product is pressed into any scars or cracks and profile the repair to a smooth finish. If required the product can be used in conjunction with reinforcement tape and used to wrap round leaking pipe work.

Leaking Transformer Surfaces – Use the applicator tool to scrape the mixed material off the mixing board, apply UPS 120 XFF onto the surface, press the material onto the weeping / leaking surface. Apply the material to a target thickness of - 3mm (up to 1/8"). Do not overwork the material on the repair surface. Once in place on the repair surface allow to cure for 20-30 minutes.

Technical Data & Performance

Characteristics

Coverage Rates

800GM (1.6LB) of fully mixed product will give the following coverage rates -	
0.444m ² at 1mm	5.9ft ² at 40mil
0.222m ² at 2mm	3ft ² at 80mil
0.148m ² at 3mm	2ft ² at 1/8"
<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	5 minutes
Movement Without Load or Immersion	45 minutes
Machining & Light Loading	2 hours
Full Loading	8 hours
Immersion	8 hours
<i>Once hardener, the material should be left for the following periods of time at 20°C (68°F) before being subjected to the conditions indicated. These times will be doubled at 10°C (50°F) and halved at 30°C (86°F)</i>	

Appearance

Mixed Material Colour	Mid Grey Fluid
Base Component Colour	Black Fluid
Activator Component	White Fluid

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 4 hours
<i>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.</i>	

Shelf Life

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

Mixing Ratio

Component	Base	Activator
By Weight	1	1
By Volume	1	1

Density

Base	1.8
Activator	1.8
Mixed	1.8

Volume Capacity

444cc/Kg

Solids Content

100%

Slump Resistance

Null at 3mm

Pack Sizes

This product is available in the following pack sizes; 200GM (0.4LB), 800GM (1.6LB)

Useable Life

10°C (50°F)	10 minutes
20°C (68°F)	5 minutes
30°C (86°F)	2.5 minutes

Mechanical Properties

Tensile Shear Adhesion ASTM D1002 (Abrasive Blasted Mild Steel with 75 micron profile)	185kg/cm ² (2,630 psi)
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Compressive Strength ASTM D695	185kg/cm ² (2,630 psi)
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Corrosion Resistance ASTM B117	Minimum 5000 hours
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Lap Shear ISO 4587	240kg/cm ² (3,400 psi)
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Hardness Rockwell R ASTM D785	85
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Heat Distortion ASTM D648 At 264psi Fibre Stress	20°C (68°F) Cure – 60°C (140°F)
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Heat Resistance

Suitable for long-term water immersion at temperatures up to 60°C (140°F).

Resistant to dry heat in excess of 130°C (266°F) dependent on load.

Chemical Resistance

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

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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 19060 SG Stick Grade Metal is a specially packaged rapid curing synthetic metal repair compound for on site repairs to metal components such as leaking pipes, tanks, ducts, radiators, etc.,

Product Features

- Simple to use; only requiring simple hand mixing to activate reaction between the concentrically packed components.
- Designed for application by gloved hand, putty knife or spatula.
- Can be applied to any damaged metal surface, plus glass, fiberglass and other composite surfaces.
- Designed for rapid repairs to cracked casting, leaking pipes, tanks, flanges, etc., minimizing downtime.
- Exhibits excellent adhesion to correctly prepared metal surfaces.

Product Applications

Suitable for emergency repairs or part of planned maintenance to equipment such as; worn or damaged pump shafts, cracked pump or valve casings, scored hydraulic rams, worn bearing housings, damaged flanges, leaking tank seams, worn keyways, cracked engine blocks, etc.,

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

Surface Preparation

All oil and grease must be removed from the surface of the using UPS CLEANER MEK.

The material is suitable for application to manually prepared surfaces such as hand wire brush, sanding, mechanical grinding or wire brush.

All loose material such as rust or flaking paint must be removed prior to the application of this product.

Mixing & Application

The product is supplied in stock form and therefore the Base and Activator components are pre-measured.

Simply break off the required amount of material from the stick and using gloved hands, knead the product until the black and grey components become a consistent mid grey.

The product once fully mixed has a useable life of 3-5 minutes at 20°C (68°F).

Technical Data & Performance

Characteristics

Drying & Cure Times at 20°C (68°F)

Useable Life	5 minutes
Hard Dry	30 minutes
Machining & Light Loading	30 minutes
Full Loading	1 hour
Immersion	1 hour
<i>Once hardener, the material should be left for the following periods of time at 20°C (68°F) before being subjected to the</i>	

conditions indicated. These times will be doubled at 10°C (50°F) and halved at 30°C (86°F)

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 3 hours
<i>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.</i>	

Shelf Life

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

Mechanical Properties

Compressive Strength ASTM D695	5000 psi
Tensile Shear Adhesion ASTM D1002 (Abrasive Blasted Mild Steel with 75 micron profile)	650 psi
Flexural Strength ASTM D790	3,250 psi
Hardness Rockwell R ASTM D785	85
Corrosion Resistance ASTM B117	Minimum 5000 hours

Heat Resistance

Suitable for long-term water immersion at temperatures up to 140°C (284°F).

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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.

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UPS 19060 SGUW Stick Grade Metal Under Water is a two-component repair material in stock form which cures underwater after mixing. It is a metal repair adhesive which develops high mechanical strength in a short period of time.

Product Features

- Simple to use; only requiring simple hand mixing to activate reaction between the concentrically packed components.
- Designed for application by gloved hand, putty knife or spatula.
- Can be applied to any damaged metal surface, plus glass, fiberglass and other composite surfaces.
- Designed for rapid repairs to cracked casting, leaking pipes, tanks, flanges, etc., minimizing downtime.
- Exhibits excellent adhesion to correctly prepared metal surfaces.

Product Applications

Suitable for emergency repairs or part of planned maintenance to equipment such as; worn or damaged pump shafts, cracked pump or valve casings, scored hydraulic rams, worn bearing housings, damaged flanges, leaking tank seams, worn keyways, cracked engine blocks, etc.,

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

Surface Preparation

The material is suitable for application to manually prepared surfaces, all loose material such as old coatings and repair materials must be cleaned from the surface prior to application.

Mixing & Application

The product is supplied in stock form and therefore the Base and Activator components are pre-measured.

Simply break off the required amount of material from the stick and using gloved hands, knead the product until the green and cream components become a consistent light green

The product once fully mixed has a useable life of 15 minutes at 20°C (68°F).

Once a consistent mix has been achieved apply the material by pressing the putty into the prepared surface.

Technical Data & Performance

Characteristics

Drying & Cure Times at 20°C (68°F)

Useable Life	15 minutes
Hard Dry	45 minutes
Machining & Light Loading	45 minutes
Full Loading	90 minutes
Immersion	90 minutes
<i>Once hardener, the material should be left for the following periods of time at 20°C (68°F) before being subjected to the conditions indicated. These times will be doubled at 10°C (50°F) and halved at 30°C (86°F)</i>	

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 3 hours
<i>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.</i>	

Shelf Life

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

Mechanical Properties

Compressive Strength ASTM D695	446kg/cm ² (6,350 psi)
Tensile Shear Adhesion ASTM D1002 (Abrasive Blasted Mild Steel with 75 micron profile)	70kg/cm ² (1,000 psi)
Flexural Strength ASTM D790	510kg/cm ² (7,275 psi)
Hardness Rockwell R ASTM D785	85
Corrosion Resistance ASTM B117	Minimum 5000 hours

Heat Resistance

Suitable for long-term water immersion at temperatures up to 140°C (284°F).

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.

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