

TECHNICAL DATA SHEET

UPS 110 FG FLUID METAL REPAIR



**UNIQUE POLYMER
SYSTEMS LTD**

INNOVATE | REBUILD | ENHANCE

UPS 110 FG Fluid Metal Repair is a two-component epoxy high-performance, synthetic metal compound, specially developed for resurfacing, and reforming damaged metal equipment, machinery and surfaces.

Product Information

Product Features

- Designed for application by stiff brush or squeegee.
- Apply to mechanically & abrasive blasted cleaned surfaces
- Provides outstanding slip resistance in combination with *UPS Aggregates* on drive rollers.
- Primarily designed for resurfacing and recasting metal components; such as damaged flanges, leaking tank seams and damaged hulls on vessels.
- Exhibits excellent adhesion to correctly prepared metal surfaces.

Product Applications

UPS 110 FG can be applied to any damaged component and provides an excellent slip resistant surface in combination with UPS Aggregates and is ideal for drive rollers and brake test rollers where drip is essential. Suitable for;

Resurfacing damaged and worn pump casings, valve bodies, worn bearing housings, damaged flanges, etc.



Surface Preparation
Manual –
Mechanical –
Abrasive Blast



Machining
in just 2
hours



Long-term
water
immersion
up to 60°C
(140°F)



Cost Effect
Solution

Surface Preparation

Metallic Substrates – Mechanical abrasion

1. All oil and grease must be removed from the surface using an appropriate cleaner such as UPS 9918 MEK Cleaner.
2. All surfaces must be mechanically abraded using handheld grinders to **ISO 8501/4 ST3 (SSPC SP3 ST3)**
3. Once abraded, the surface must be degreased and cleaned using UPS 9918 MEK or similar type material.
4. All surfaces must be coated before flash rusting or oxidation occurs.

Metallic Substrates – Abrasive blast

1. All oil and grease must be removed from the surface using an appropriate cleaner such as UPS 9918 MEK Cleaner.

2. All surfaces must be abrasive blasted to **ISO 8501/4 Standard SA2.5 (SSPC SP10 / NACE 2)** minimum blast profile of 75 microns (3mil) using an angular abrasive.
3. Once blast cleaned, the surface must be degreased and cleaned using UPS 9918 MEK or similar type material.
4. All surfaces must be coated before flash rusting or oxidation occurs.

PLEASE NOTE: For salt contaminated surfaces the area must be abrasive blast cleaned as above, as well as left for 24 hours to allow any ingrained salts to come to the surface. After the 24-hour period the surface must be washed with UPS 9918 MEK Cleaner prior to brush blasting to remove the surface salts. Repeat this process until all ingrained contaminants have been sweated out of the surface.

Where abrasive blast cleaning is not possible (excluding salt contaminated surfaces) the surface should be roughened by UPS MiniBlaster, Needle Gun or Grinding.

In areas where the product should not adhere, a thin layer of UPS 9921 Release Agent should be applied taking care not to contaminate other areas.

Mixing

Prior to mixing please ensure the following:

1. The base component is at a temperature between 15-25°C (60-77°F).
2. The ambient & surface temperature is above 5°C (41°F°).

Then proceed with mixing the product:

1. Mix all the Base and Activator together on a clean plastic mixing surface
2. Using a spatula, mix the 2 components until a uniform material free of any streaks is achieved.
3. From the commencement of mixing the whole of the material should be used within 20-30 minutes at 20°C (68°F°).

Application

Stiff brush or squeegee applications -

1. The mixed material should be applied the area as soon as possible after surface preparation (on the same day to prevent flash rusting). If flash rusting does occur, the surface should be re-prepared.
2. As soon as possible after the application of the first layer (no longer than 6 hours) apply a further coat as above. If the maximum over coating time is exceeded, the first layer should be brush blasted or abraded before applying the second coat.

Fairing Compound –

When filling badly pitted or scarred surfaces, apply the material using a rubber float across the repair surface ensuring the product is pressed into any holes or cracks.

Anti-Slip System –

For conveyor rollers, steps or ramps, apply the material to the surface at a Wet Film Thickness of 500 microns (20mil) and then broadcast UPS Aggregates onto the surface (Aluminum Oxide or equivalent). Once cured brush off any excess aggregate.

Anti-Slip System 0.88m² at 500 microns 9.5ft² at 20mil

Resurfacing –

If applying as a resurfacing material to repair worn or damaged surfaces the application should be carried out in two coats.

The material must be applied at target Wet Film Thickness of 500 microns (20mil) per coat. Once the whole material is mixed this should be used within 30 minutes at 20°C (68°F

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Technical Data & Performance

Coverage Rates

1KG (2.2LB) of fully mixed material will give the following coverage rates –	
0.440m ² at 1mm	4.73ft ² at 40mil
0.220m ² at 2mm	2.37ft ² at 80mil
0.146m ² at 3mm	1.57ft 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) allow the applied materials to harden for the times shown below. Before subjecting them to the conditions indicated. These times will be doubled at 10°C (50°F) and halved at 30°C (86°F)

Useable Life	30 minutes
Movement Without Load or Immersion	1.5 hours
Machining & Light Loading	2 hours
Full Loading	2 days
Immersion	3 days

For Optimum Performance

After an initial curing period of at least 4 hours at 20°C (68°F), raising the cure temperature progressively to 60-100°C (140-212°F) for up to 8 hours will result in improved mechanical, thermal and chemical resistance properties.

Appearance

Mixed Material Colour	Mid Grey Fluid
Base Component Colour	Dark Grey Paste
Activator Component	Amber Fluid

Available Colours

Grey

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 6 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.

Mixing Ratio

Component	Base	Activator
By Weight	8	1
By Volume	3	1

Density

Base	2.70
Activator	1.00
Mixed	2.50

Volume Capacity

440cc/Kg

Solids Content

100%

Slump Resistance

Nil 3mm

Useable Life

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

Pack Sizes

1KG (2.2LB)

Shelf Life

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

Mechanical Properties

Abrasion Resistance	Taber CS17 Wheels/ 1 KG load 22m ² loss / 1000 cycles
Adhesion Tensile Shear ASTM D1002 (Abrasive Blasted Mild Steel with 75-micron profile)	185 kg/cm ² (2,630 psi)
Pull of Adhesion ASTM D1002 (Abrasive Blasted Mild Steel with 75-micron profile)	244 kg / cm ² 3840psi
Compressive Strength ASTM D695	1,075kg/cm ² (15,300 psi)
Corrosion Resistance ASTM B117	Minimum 5000 hours
Flexural Strength ASTM D790	703kg/cm ² (10,000 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 60°C (140°F)

Resistant to dry heat in excess of 200°C (392°F) dependent on load.

Chemical Resistance

The product demonstrates resistance to a wide variety of inorganic acids, Alkalies, salts and organic media. Refer to the Unique Polymer Systems Technical Centre for advice.

Global Availability

UPS 110 FG Fluid Grade Metal is available from a network of Global Distributors for prompt delivery.

For further details and the location of your local distributor, please contact Unique Polymer Systems on:

+44(0) 1531 636300 | sales@uniquepolymersystems.com

Technical Service

Complete technical assistance is available. Please contact Unique Polymer Systems with your requirements:

+44(0) 1531 636300 | sales@uniquepolymersystems.com

The products that we supply are for professional use only, it is your responsibility to read the technical data sheets before you place an order and prior to application of the product.

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

Warranty: Unique Polymer Systems warrants that the performance of the product supplied will conform 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 always observed 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 accepts no liability arising out of the use of this information or the product described herein.