Unique Polymer Systems Ltd, ThistleBond UK Division - Engineering Repair

The Unique Polymer Systems Group supply the Thistlebond Range of Products under the names of UPS, ThistleBond & Pipe Wrap.

Sole Distributor

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CONTENTS

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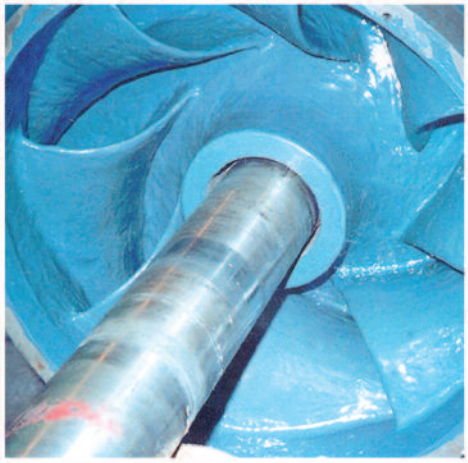
The Engineer's Choice

FOR HIGH PERFORMANCE ENGINEERING REPAIRS

Metal Repair

Elastomeric Repair



Ceramic Repair

REPAIR DON'T REPLACE

Metal Repair

ThistleBond has an extensive range of metal repair products which includes:

- Quick setting metal repair compounds
- Multi-purpose engineering grade metal repair systems
- Versatile metal rebuilding and resurfacing materials
- Fast setting pipe repair bandages
- Specialist engineers' repair kits

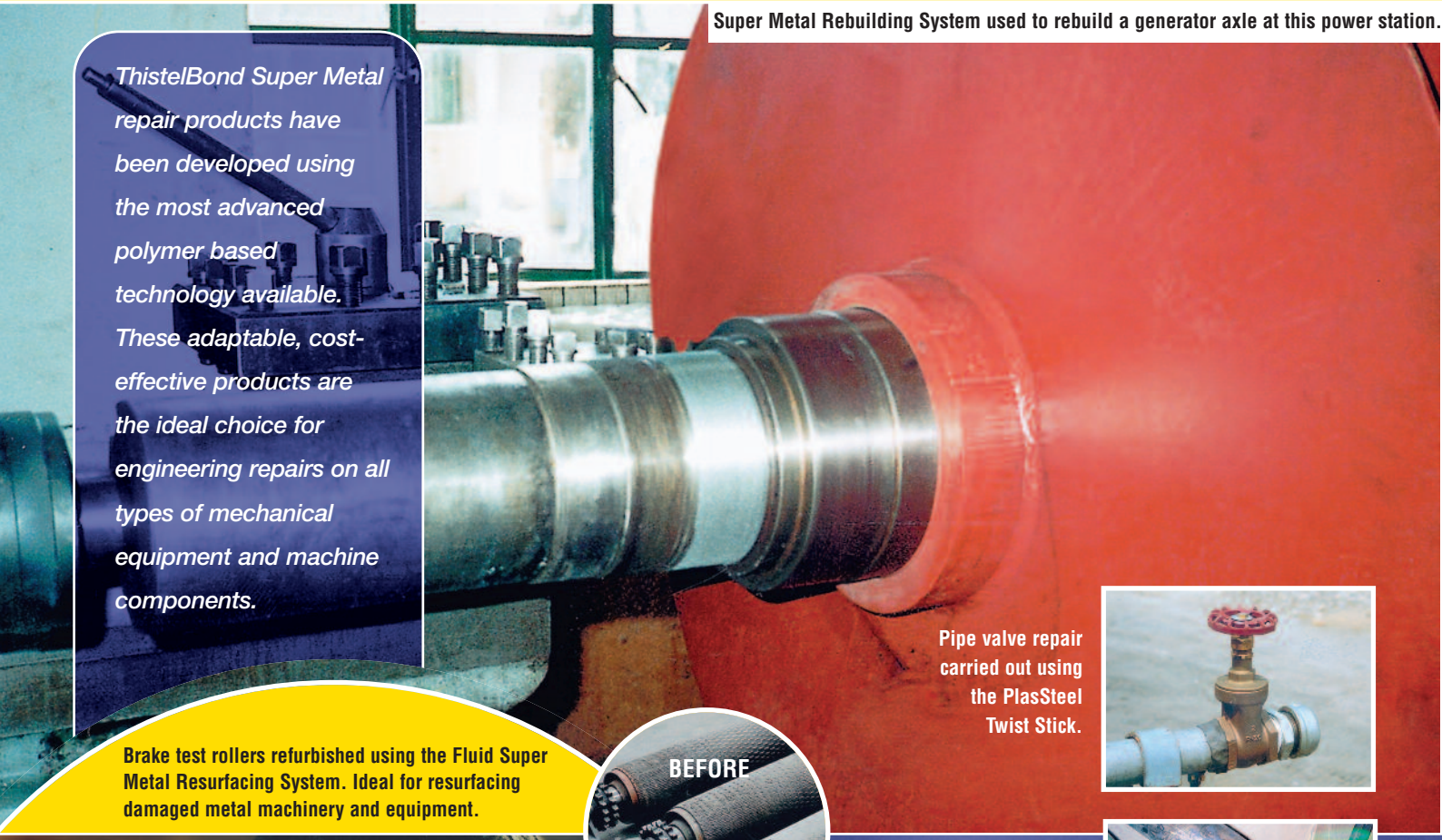
High performance engineering repair products for all types of equipment and components

- Cracked and leaking pipes
- Tank seams
- Cracked batteries, engine blocks & casings
- Stripped threads
- Scored hydraulic rams
- Worn or damaged shafts, drive rollers and radiators
- Bearing housings & flange faces
- Pumps & valves

ThistleBond Super Metal Repair Products - Engineering repairs to last

- Simple, safe and easy-to-use
- Superior adhesion to metals, fibre glass and mineral surfaces
- Easily machined, drilled and sanded
- Ideal for emergency on-site repairs
- Fast setting repair products available
- No shrinkage during curing
- Resistant to a wide range of industrial chemicals
- Suitable for total permanent immersion

ThistelBond Super Metal repair products have been developed using the most advanced polymer based technology available. These adaptable, cost-effective products are the ideal choice for engineering repairs on all types of mechanical equipment and machine components.



Super Metal Rebuilding System used to rebuild a generator axle at this power station.

Pipe valve repair carried out using the PlasSteel Twist Stick.

Brake test rollers refurbished using the Fluid Super Metal Resurfacing System. Ideal for resurfacing damaged metal machinery and equipment.

Super Metal Rebuilding System used with ThistleBond Reinforcement Tape to repair pipework welds.

Tank seams repaired using the Extended Life Super Metal Rebuilding System.

Fast-setting, moisture cured ThistleWrap Pipe Repair Tape used to repair a leaking pipe.

Elastomeric Repair

ThistleBond boasts a wide range of flexible repair systems including:

- Durometer 60-80 grade elastomers
- Fast curing rubber repair compounds
- Paste and fluid grade systems
- Abrasion resistant products
- Moulding and casting systems
- High performance sealants & joint fillers

Our rubber repair systems offer the ideal solution, where repairs to rubber components are an ongoing requirement

- Conveyor belts
- Rubber rollers
- Gaskets & valves
- Off road tyres
- Rubber impellers
- Chutes & hoppers
- Rubber hoses
- Expansion joints

ThistleBond Elastomeric Repair Systems - The wise choice when performance matters

- Advanced solvent free elastomer technology
- Superior tensile & tear strength
- Excellent elongation
- Suitable for use on almost any surface
- Good resistance to a wide range of industrial chemicals
- No environmental pollution
- Food grade sealants available

As a result of an ongoing intensive research & development programme, ThistleBond can offer a versatile range of Elastomeric repair systems ideal for the protection of all flexible components.

'80' Durometer Paste Elastomer - An engineering grade flexible repair system.

Butterfly valve seam being reinstated using the '80' Durometer Fluid Elastomer.

'60' Durometer Rapid Paste Elastomer used to carry out an instant repair on a conveyor belt at this log mill, which was back in service within 30 minutes.

'80' Durometer Fluid Elastomer used to reconstruct the worn seam of a slurry pump.

Front end loader tyre repaired using the '60' Durometer Paste Elastomer.

Ceramic Repair

The ThistleBond range of polyceramic resurfacing systems includes:

- Heavy duty erosion/corrosion repair systems
- Fluid grade protection systems
- Abrasion resistant coatings
- High temperature resurfacing systems
- Smooth, low friction coatings
- Cavitation resistant compounds
- Potable water approved coatings

Durable protection against erosion and corrosion damage in fluid flow environments

- Pumps and valves
- Condenser tube sheets
- Heat exchangers
- Pipes, chutes & hoppers
- Impellers and propellers
- Tanks and valves
- Bow thrusters, kort nozzles & rudders
- Water boxes

ThistleBond Ceramic Carbide Repair Systems - Reducing downtime, saving money

- No sagging or slumping during application
- WRC and DWI approved
- Excellent adhesion to metal surfaces
- Outstanding impact & abrasion resistance
- Multi-purpose repair capability
- Unaffected by most industrial chemicals
- Good low temperature cure properties

Solvent free resurfacing & lining system for fluid flow environments.

ThistleBond Ceramic Carbide repair systems are the finest compounds for rebuilding and resurfacing components and equipment operating in the most aggressive industrial environments, which are subject to erosion and corrosion damage.

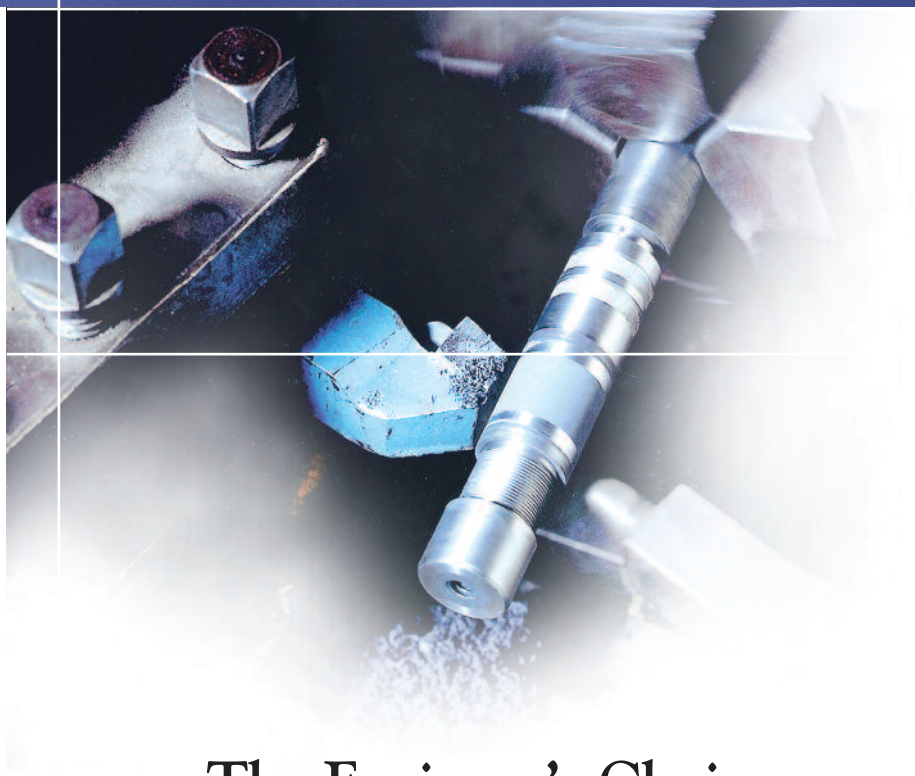
High Temperature Ceramic Carbide Compound used to resurface a gate valve. Ideal for resurfacing components operating in high temperature service conditions.

Heat exchanger tube sheets refurbished using the Super Low Friction Efficiency Coating.

Abrasion Resistant Ceramic Carbide Fluid used to resurface a pump component.

Pump body being rebuilt using the Heavy Duty Ceramic Carbide Compound.

Multi-purpose Ceramic Carbide Wearing Compound used to repair eroded areas of a cold water pump at this coal-fired power station. Pump lining reinstated using the Super Low Friction Efficency Coating.



The Engineer's Choice

ThistleBond engineering repair and maintenance products are based on the very latest polymer technology.

ThistleBond products are safe, easy-to-use and due to their simple packaging and indefinite storage life, they can be used anytime, anywhere to rebuild and repair worn or damaged machinery and equipment operating in aggressive industrial environments.

Numerous independent tests have shown that the ThistleBond products in this range have no equal anywhere in the world.

Through our international network of agents and distributors, we are able to offer instant, on the spot advice for any engineering repair or maintenance problem - without obligation.

This advice comprises information on mechanical strengths, chemical resistance, recommended surface preparation and full working system recommendations.

Our aim is to provide ThistleBond customers with a range of engineering repair and maintenance products, which are cost-effective, environmentally friendly and offer outstanding performance.

"Committed to research and development, product excellence and customer care"

Metal Repair

Elastomeric Repair

Ceramic Repair

The products highlighted in this brochure are just part of the ThistleBond industrial and marine maintenance range.

The full range includes:

- Super Metal Repair Systems
- Ceramic Carbide Repair Systems
- Elastomeric Repair Systems
- Roof Repair/Resurfacing Systems
- Adhesives
- Laminates
- Topside & Below Waterline Repair Systems

- Concrete Repair Systems
- Safety Surfacing Systems
- Chemical Protection Systems
- Corrosion Protection Systems

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Product Listing
2014 – Engineering Repair

Mechanical Repair – Application for Metal Surfaces

Code	Product Name	Product Description	Pack Size	Colour	Solid	Applications	Surface Preparation	Coverage Rate
UPS 105 EG	Metal Repair Paste	Two pack, Solvent free epoxy repair paste	4 X 1kg 4 X 2kg 4 X 3kg 4 X 5kg 1 X 30kg	Dark Grey	100%	Rebuild pumps, valves, casings, leaking pipes, flange faces, hydraulic rams, engine blocks, worn shafts, damaged shafts	Mechanical Abrasive Blasting	N/A
UPS 110 FG	Metal Repair Fluid	Two pack, Solvent free, Epoxy repair fluid	4 X 1kg	Dark Grey	100%	Resurfacing damaged or worn metallic surfaces, Can be used for anti-slip systems when used with aggregates	Mechanical Abrasive Blasting	1.8m² per 1kg unit @ 250 microns (10mils) dft
UPS 115 XG	Extended Life Metal Repair	Versatile repair and rebuilding system with extended working life after mixing	4 X 3kg 1 X 4kg	Dark Grey	100%	For use when extended life is required after mixing for application	Mechanical Abrasive Blasting	N/A
UPS 19060 SG	Metal Repair Stick Grade	Fast curing metal repair, Solvent free putty	10 X 0.125kg	Dark Grey	100%	Emergency repairs to leaking pipes, valves, tanks, flanges, valve castings	Wire Brush Mechanical	N/A

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Product Listing
2014 – Engineering Repair

Code	Product Name	Product Description	Pack Size	Colour	Solid	Applications	Surface Preparation	Coverage Rate
UPS 19060 SGUW	Metal Repair Stick Grade Underwater	Fast curing metal repair, Solvent free putty for wet surface repairs	10 X 0.125kg	Cream	100%	Emergency repairs to metallic surfaces underwater	Wire Brush Mechanical	N/A
UPS 19065 RG	Repair Setting Metal Repair Paste	Repair Setting Metal Repair System	10 X 0.125kg 6 X 0.5kg	Dark Grey	100%	Repaid repairs to leaking pipes, Radiators, Tanks, Fuel Tanks, Cracked Batteries, Dissimilar Metals, Stripped Threads, Sumps, Casings	Mechanical Abrasive Blasting	N/A

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Product Listing
2014 – Engineering Repair

Fluid Flow Repair – Suitable for Metallic Surfaces Subject to Abrasion and Impact

Code	Product Name	Product Description	Pack Size	Colour	Solid	Applications	Surface Preparation	Coverage Rate
UPS 200 EG	Ceramic Repair Paste	Two pack solvent free epoxy repair paste	4 X 2kg 1 X 30kg	Dark Grey	100%	Repair of erosion/corrosion damage on condenser tube sheets, valve bodies, impellers, pump casings, valve discs, pipe bends, flanges, condensers end plates, tank outlets, inlets, dissimilar metals	Abrasive Blast	N/A
UPS 205 FG	Fluid Grade Ceramic	Two pack solvent free epoxy repair fluid	4 X 1kg 4 X 3kg 1 X 27kg	Greys Blue Brown	100%	Prevention of erosion/corrosion on pipe bends, elbows, pump impellers, casings, valve discs and bodies, condenser boxes, condenser tube sheets, tank surfaces	Abrasive Blast	2.18m² each 1kg unit @250 microns (10 mils) dft
SPRAY VERSION UPS 205 FG – AIRLESS SPRAY								
UPS 210 CR	Super Flow Ceramic Fluid	Two pack solvent free epoxy fluid	4 X 1kg 4 X 3kg 1 X 30kg	Blue Greys Red	100%	Flow efficiency coating for pumps valves casings, tube end plates, propellers, impellers, condenser tube sheets, separators, pipes, valves, rudders	Abrasive Blast	2.62m² each 1kg unit @250 microns (10 mils) dft
SPRAY VERSION UPS 210 CR – AIR SPRAY								

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Product Listing
2014 – Engineering Repair

Code	Product Name	Product Description	Pack Size	Colour	Solid	Applications	Surface Preparation	Coverage Rate
UPS 220 HTX	High Temperature Corrosion Protection Systems	Two pack solvent free epoxy fluid with HIGH TEMPERATURE RESISTANCE	4 X 0.8kg 4 X 3kg	Dark Grey	100%	Prevention of carrion for high temperature immersion. Ideal for water separators	Abrasive Blast	0.8m² each 800 gram unit @ 750 microns. 3.12m² each 3kg unit
UPS 226 HTA	High temperature at elevated temperature ceramic	Two pack solvent free epoxy fluid with HIGH ACID resistance at elevated temperatures	4 X 1kg 4 X 3kg	Dark Grey	100%	Resurfacing of metal surfaces subject to acid erosion at elevated temperatures	Abrasive Blast	1.75m² each 1kg unit @ 250 microns
UPS 230 EG	Thixotropic Urethane Base CAVITATION Resistant Rebuild Ceramic	Two Pack urethane based Ceramic Paste Solvent Free	4 X 1kg	Black	100%	For rebuilding metal surfaces subject to sever erosion and cavitation attack. Designed for use on pumps, impellers, propellers, turbine blades etc. where cavitation is an on going problem	Abrasive Blast	0.42m² each 1kg unit @ 1mm

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Product Listing
2014 – Engineering Repair

Code	Product Name	Product Description	Pack Size	Colour	Solid	Applications	Surface Preparation	Coverage Rate
UPS 235 BG	Brush Grade Flexible Urethane Ceramic System	Flexible ceramic coating designed for lining and resurfacing fluid flow equipment	4 X 1kg	Black	100%	Primary designed for use on propellers, kort nozzles, guide turbines etc. Once applied it provides good characteristics against cavitation and erosion	Abrasive Blast	0.42m² each 1kg unit @ 2mm
UPS 240 HG	High Abrasion Resistant Ceramic Lining	Two pack solvent free ceramic with added ceramic beads	4 X 1.5kg 1 X 5kg 1 X 25kg	Grey	100%	Rebuilding of substrates subject to heavy abrasion or impact such as dredging pumps, chutes, hoppers	Abrasive Blast	N/A

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Product Listing
2014 – Protective Coatings

Chemical Protection Systems

Code	Product Description	Pack Size	Colour	Solids	Applications	Surface Preparation	Coverage Rate
UPS 401 CR	Epoxy chemical protection system designed to protect steel & concrete surfaces	5lt 20lt	Light Grey Red Oxide	100%	UPS 401 CR has been designed to protect steel & concrete surfaces including water tanks, bund walls & concrete subject to chemical attack	Abrasive Blast	12.5m^2 / 5lt 50m^2 / 20lt ALL @ 400 microns
UPS 402 EP	Economical epoxy coating offering long term protection	5lt 20lt	Light Grey Black	100%	UPS 402 EP offers long term protection to steel and concrete surfaces subject to aggressive acids and industrial chemicals	Abrasive Blast	12.5m^2 / 5lt 50m^2 / 20lt ALL @ 400 microns
UPS 403 UC	Two component Epoxy coating with good chemical resistance	2kg 5kg 20kg	Light Grey Dark Grey	100%	UPS 403 UC provides excellent protection to steel and concrete surfaces subject to aggressive acids, solvents and industrial chemicals	Abrasive Blast	4m^2 /2kg 10m^2 / 5kg 40m^2 / 20kg ALL @ 500 microns
UPS 403 UCPG	Paste grade version of UPS 403 UC	2kg	Light Grey Dark Grey	100%	UPS 403 UC provides excellent protection to steel and concrete surfaces subject to aggressive acids, solvents and industrial chemicals	Abrasive Blast	N/A
UPS 404 SR	Two component Epoxy coating with good solvent resistance	1.8lt	Light Grey	100%	UPS 404 SR provides protection to surfaces subject to prolonged solvent contact	Abrasive Blast	4m^2 / 1.8lt @ 500 microns

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Product Listing
2014 – Protective Coatings

Code	Product Description	Pack Size	Colour	Solids	Applications	Surface Preparation	Coverage Rate
UPS 405 CRSG	Two pack solvent free epoxy coating	3.4lt 16lt	Light Grey Blue	100%	High build chemical coating for steel structures, bunds, containment areas, tank linings, capable of brush or spray application	Abrasive Blast	$2m^2$ / litre @ 500 microns
UPS 406 CRXF	Fast curing version of UPS 405 CRSG	3.4lt	Light Grey Blue	100%	High build chemical coating for steel structures, bunds, containment areas, tank linings, capable of brush or spray application	Abrasive Blast	$2m^2$ per litre @ 500 microns

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Product Listing
2014 – Protective Coatings

Corrosion Protection Systems

Code	Product Description	Pack Size	Colour	Solid	Applications	Surface Preparation	Coverage Rate
UPS 501 LV	High build Epoxy system suitable for application to manually cleaned steel in adverse conditions	5lt 20lt	White Greys Black Green Blue	100%	High build system suitable for application to manually cleaned steel in adverse conditions. Also suitable for ballast tank coating. Brush / roller grade	Manually Prepared surfaces	$2m^2$ / 5lt $80m^2$ / 20lt ALL @ 250 microns
UPS 501 SFE	Spray grade version of UPS 501 LV	5lt 20lt	Greys Blue Black Green	100%	High build system suitable for application to manually cleaned steel in adverse conditions. Also suitable for ballast tank coating	Manually Prepared surfaces	$2m^2$ / 5lt $80m^2$ / 20lt ALL @ 250 microns
UPS 502 Poly-Nox	Acrylic Encapsulation System	20lt	Black Greys White (Others)	55%	Anti-corrosive encapsulation protection of coated steelwork and coated concrete	Manually Prepared Surfaces	$31m^2$ / 20lt @ 350 microns (Applied by spray)
UPS 503 XF	Solvent based polyurethane high gloss with outstanding colour and gloss retention	3.5lt 17.5lt	White Black Greys Red Oranges Yellows Other colours	56%	UPS 503 XF is used as cosmetic finish coat for UV stability	Previously coated with appropriate UPS coating	$38.5m^2$ / 3.5lt $192.5m^2$ / 17.5lt All @ 50 microns

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Product Listing
2014 – Protective Coatings

UPS 504 MP	Two coat solvent based epoxy coating	1lt 2lt 5lt	Silver Black	88%	High build one coat steel protection coating designed for use on manually prepared surfaces. Can be applied by brush, roller or spray and provides long-term protection in one coat.	Manually Prepared	$7m^2$ / litre @ 125 microns
UPS 505 DWPU	**WRAS approved** Polyurethane high build PU coating	1lt 5lt 20lt	Blue Light Grey	100%	**WRAS approved** high build PU coating for steel or concrete structures. Ideal for tanks, pumps, valves and fittings	Abrasive Blast	$1m^2$ / litre @ 1mm

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Product Listing
2014 – Protective Coatings

Thermal Barrier & Pipe Coatings

Code	Product Description	Pack Size	Colour	Solid	Applications	Surface Preparation	Coverage Rate
UPS 550 TB	Thermal barrier 10-50	5lt 20lt	Grey	100%	High build coating capable of being applied to hot surfaces ranging from 10°C - 50°C	Manual Mechanical	3.6m^2 per litre @ 250 microns
UPS 555 TB	Thermal barrier 50-100	5lt 20lt	Grey	100%	High build coating capable of being applied to hot surfaces ranging from 10°C - 50°C	Manual Mechanical	3.6m^2 per litre @ 250 microns
UPS 560 TTLG	Fire resistant single pack water based acrylic high build coating	20lt	White	55%	High build membrane with added fire resistance for protection of pipeline insulation and eradication of under insulation corrosion	Manual Mechanical	0.9m^2 per litre @ 1mm

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Comparison List Between UNIQUE POLYER SYSTEMS Vs Everyone

	UNIQUE POLYMER SYSTEMS	Belzona	Devcon	Chesterton	Loctite	Enecon
Metal Repair	UPS 105 EG	1111-Super Metal/1131	10765 / 10271 / 10115	ARC 10	3478 / 3471	MetalClad Duralloy
	UPS 110 FG	8210 / 1821 Fluid Metal	10211 / 215 / 217	ARC 12	3472	
	UPS 115 XG	1121 Super XL Metal	N/A			
	UPS 19060 SG	1291		ARC4 RS	3463	
	UPS 19060 SGUW					
	UPS 19065 RG	1221 / 1211 E Metal	10241 Steel Putty	ARC 5	3473	
Ceramic Repair	UPS 200 EG	1311 Ceramic R Metal	11411	ARC 858	7218	MetalClad Ceramalloy
	UPS 205 FG	1321 Ceramic S Metal	11762	ARC 855	7227 / 7228	MetalClad Ceramalloy CL
	UPS 210 CR	1341 SuperMetal Glide	11762	ARC S2/855	7226	ChemClad SC
	UPS 220 HTX	1391	10361		7229 / 7234	
	UPS 226 HTA	1392				
	UPS 235 BG					
	UPS 240 HG	1811 / 1812		ARC 890/897	7219	CeramAlloy CBX
Elastomeric Repair	UPS 300 FG '60'	2221 MP Elastomer	15200 / 210 / 212			DuraTought DL
	UPS 305 EG '60'	2211 MP HB Elastomer	15821 / 046			DuraTought DP
	UPS 310 RG '60'	2311 SR Elastomer	15050 / 810 / 812			
	UPS 315 FG '80'	2131	15800 / 810 / 262			
	UPS 320 EG '80'	2111				
	UPS 325 BG '80'	2121 Hi Coat Elastomer	1535			
	UPS 075 RG	2311 SR Elastomer				
	UPS 80XRG					
Pre-Packed Engineering Kits	UPS 11000 A Kit	General Engineering Kit*				
	UPS 13000 C Kit					
	UPS 17000 LifeBoat Kit					
	UPS 19500 Small Pipe Kit					
	UPS 2006 Large Pipe Kit					

GRP & Adhesives	**UPS 19000**	
	UPS 19001	
	UPS 19002/3	**8111/1831**
Pipe Repair	**UPS 19601**	**SuperWrap**
	UPS 19603	
	UPS 19604	
	UPS 19605	
	UPS 19606	
	UPS TTLG	**3211 Lagseal Membrane**
	UPS 445	**N/A**
Chemical Protection	**UPS 401 CR**	
	UPS 402 EP	**5811 Immersion Grade**
	UPS 403 UC	**4311 Magma CR1 / 4321 Magma CR2 / 4341**
	UPS 404 SR	
	UPS 405 CRSG	
	UPS 406 CRXF	
	UPS 407	**4341 C4**
Corrosion Protection	**UPS 501 LV**	
	UPS 501 SFE	
	UPS 502 Poly-Nox	
	UPS 503 XF	
	UPS 504 AP	
	UPS 505 DWPU	
	UPS 506 UVPU	
External Wall	**UPS 601 PU**	
	UPS 602 FP	**5151 Hi-Build Cladding**
	UPS 603 WP	**5122 Clear Cladding**
Internal Wall	**UPS 604 UV**	**5111 Ceramic Cladding**
	UPS 605 CSM	

Floors	**UPS 701 FB**	
	UPS 702 HB	
	UPS 703 XF	
	UPS 704 LXF	**4411 GranoGrip**
Screeds	**UPS 705 RS**	**4131 Magma Screed**
	UPS 706 XSL	
Concrete	**UPS 801 LW**	**4141 Magma Build**
	UPS 802 PR	**4231 Rapid Quartz**
	UPS 803 GT	**4111 Magma Quartz**
Roofing	**UPS 771 EC**	**3111 Flex Membrane**
	UPS 772 UV	**3131 WG Membrane**
	UPS 773 WG	
	UPS 774 AW	**3121 MR7**
	UPS 775 LS	
	UPS 776 RG	**5131 EG-Cladding**
Primers	**UPS 901 CS**	**5211 Super Clear Laminate**
	UPS 902 SP	
	UPS 903 FB	
	UPS 904 GP	**3921 GSC Surface Conditioner/ 5921 EG - Conditioner**
	UPS 905 DS	

*Slight varations in kit listings

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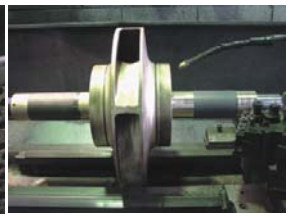
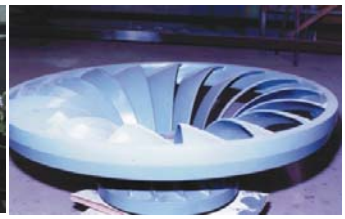
ADVANCED POLYMER SURFACE ENGINEERING TECHNOLOGY

Unique Polymer Systems – Super Metal Rebuilding System

UPS 'Super Metal Rebuilding System' is a high performance multi purpose synthetic metal repair compound specifically developed for metal repairs requiring good mechanical strength combined with easy machining properties.

UPS 'Super Metal Rebuilding System' is formulated on a complex range of epoxy resins combined with a polyamino curing system reinforced with a phosphor steel alloy to enhance the corrosion and chemical resistance of the whole system.

UPS 'Super Metal Rebuilding System' can be applied to any damaged component in one easy application and is ideal for repairing worn shafts, oversized bearing housings, cracked cases and blocks, damaged flanges, sloppy keyways and scored rams.

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

SURFACE PREPARATION

Heavy contamination due to oil or grease must first be removed using **UPS 'Cleaner'.**

All loose material, rust and surface contaminants, including existing coatings, must be removed and the surface roughened by using an angle grinder, needle gun 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.

Where possible, abrasive blasting is the preferred surface preparation, especially in fluid flow repairs.

Surfaces should finally be carefully degreased using **UPS 'Cleaner'.**

Cloths should be frequently changed to avoid spreading contamination. On deeply pitted surfaces or porous castings, **UPS 'Cleaner'** should be worked into the surface by brush and washed off using excess cleaner.

Parts (for example, threads or bearing surfaces) which must remain in position during application but must not adhere to **UPS 'Super Metal Rebuilding System'** must be coated with **UPS 'Release Agent'** prior to application of the **UPS 'Super Metal Rebuilding System'**

MIXING

UPS 'Super Metal Rebuilding System' is a two component solvent free material comprising resin and hardener components which must be mixed together prior to use.

Measure 3 volumes of resin component and 1 volume hardener component onto a clean mixing board or other suitable surface. The two components should then be thoroughly mixed until completely streak free.

The mixed material should be used within 25 minutes of mixing at 20°C (68°F). This time will be reduced at higher temperatures and extended at lower temperatures.

APPLICATION

The mixed material should be pressed firmly onto the prepared area, working the material into any cracks and surface defects.

When **UPS 'Super Metal Rebuilding System'** 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 until the product has set, any excess material squeezed out should be scraped away before the **UPS 'Super Metal Rebuilding System'** begins to cure.

When a reinforcing tape is being used to strengthen the repairs the tape should either be impregnated with **UPS 'Super Metal Rebuilding System',** or the tape should be layed over the **UPS 'Super Metal Rebuilding System'** surface and stippled into the material before it cures, then additional **UPS 'Super Metal Rebuilding System'** applied over the surface.

In areas where a second layer of **UPS 'Super Metal rebuilding System'** is required this application must be carried out within the initial set time for the first layer, if this is not possible surfaces will require thorough abrasion or abrasion blasting prior to any subsequent material being applied.

Once the **UPS 'Super Metal Rebuilding System'** has reached 'initial set' the material can be separated from the surfaces treated with **UPS 'Release Agent'.**

Once **UPS 'Super Metal Rebuilding System'** has cured for a minimum of 2 hours at 20°C (68°F), sanding, grinding and machining etc. can be carried out using standard engineering practice.

When machining **UPS 'Super Metal Rebuilding System'** a typical Lathe set up would be:

Surface Cutting Speed	200 ft/minute	
Feed Rate	(roughing)	50 thou/rev
	(finishing)	10 thou/rev

All equipment must be cleaned IMMEDIATELY after use, with **UPS 'Cleaner'.**

Volume Capacity
410cc (25cu ins) per kilo

PHYSICAL CONSTANTS

Mixing Ratio	Resin	Hardener
3	1 By Volume	
5	1 By Weight	

Appearance	Resin	Black Paste
	Hardener	Light Grey Paste

Drying & Cure Times at 20°C

Usable Life	25 minutes
Initial Set	60 minutes
Machining	2 hours
Full Mechanical	3 days

Volume Solids 100%

V.O.C. Nil

Shelf Life Use within 5 years of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F).

Food Contact Meets USDA requirements for incidental food contact.

Meets FDA requirements CFR 21.175.300 for food contact.

Operating Temperature

	Maximum	Continuous
Dry Heat	250°C (480°F)	120°C (248°F)
Wet Heat	120°C (248°F)	70°C (158°F)

PHYSICAL PROPERTIES

Compressive Strength 1090kg/cm (15500 psi)
ASTM D 695

Corrosion Resistance 5000 hours
ASTM B117

Flexural Strength 700kg/cm (10000 psi)
ASTM D 790

Hardness (Rockwell R) 100
ASTM D785

Heat Distortion 90°C (195°F)
ASTM D648 (Post Cured 24 hrs at 100°C/212°F)

Nuclear Decontamination Excellent
BS4247 Part 1

Tensile Shear Adhesion 175kg/cm (2500 psi)
ASTM D1002 (Grit Blasted Steel)

HEALTH AND SAFETY

As long as normal good practice is observed UPS 'Super Metal Rebuilding System' can be safely used. Protective gloves should be worn during use.

A fully detailed Material Safety Data Sheet is either included with the material or is available on request.

PACKAGING

Supplied in 1kg packs

FOR FURTHER INFORMATION PLEASE CONTACT

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Unique Polymer Systems

ADVANCED POLYMER SURFACE ENGINEERING TECHNOLOGY

Unique Polymer Systems - Abrasion Resistant Ceramic Carbide Fluid

UPS 'Abrasion Resistant Ceramic Carbide Fluid' is a high performance fluid grade engineering resurfacing compound designed for use in fluid flow environments.

UPS 'Abrasion Resistant Ceramic Carbide Fluid' uses a complex blend of epoxy resins and a polyamino-amide curing system reinforced with carbide and ceramic particles produce a coating with a high level of abrasion and erosion resistance combined with optimum physical and mechanical strength.

UPS 'Abrasion Resistant Ceramic Carbide Fluid' offers outstanding protection against impingement, entrainment and erosion / corrosion conditions.

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

SURFACE PREPARATION

All dust and loose material should be scraped away. Oil and grease should be removed with UPS 'Cleaner'. Surfaces should then be abrasive blast cleaned to a minimum Sa2½ BS7079 Part A1 : 1989 or equivalent with a blast profile of 75 microns (3 mil) corresponding to 'Medium' in BS7079 Part C3/ISO 8503/1. All loose abrasive dust and debris must be blown clear or vacuum-cleaned away.

Equipment that has been salt impregnated should, after blasting be left overnight to allow salts to sweat from the metal. Alternatively, surfaces should be warmed with a blowtorch or similar to bring salts up to the surface. The surface should once again be blast cleaned.

This procedure must be repeated until no further sweating of impregnated salt is evident.

On sections of repair which are not required to bond to the UPS 'Abrasion Resistant Ceramic Carbide Fluid' these surfaces should be treated with UPS 'Release Agent'.

MIXING

UPS 'Abrasion Resistant Ceramic Carbide Fluid' is a two component material comprising resin and hardener components which must be mixed together before use.

Mix the entire contents of the resin and hardener containers. Alternatively, measure three volumes of resin component and one volume of hardener into a clean container. The two components should be thoroughly mixed until completely streak free.

The mixed material should be used within 25 minutes of mixing at 20°C (68°F). This time will be reduced at higher temperatures and extended at lower temperatures.

APPLICATION

Application should not be carried out at temperatures below 5degC nor when relative humidity exceeds 85% or when the surface to be coated is less than 3°C above the dew point.

The mixed material should be applied to the prepared area using a clean brush or squeegee, application should be carried out as soon as possible after surface preparation is complete, and certainly on the same day, otherwise flash blasting will be necessary before application.

Where necessary a reinforcement tape should be stippled into the mixed product and further material applied over the tape.

For large areas the tape should be overlapped.

In areas where a second layer of UPS 'Abrasion Resistant Ceramic Carbide Fluid' is required, this application must be carried out within the initial set time for the first layer, otherwise the surface must be lightly abraded or flash blasted.

Machining of UPS 'Abrasion Resistant Ceramic Carbide Fluid' will cause excessive tool wear so care should be taken to finish the repair to the required size or dimensions. Formers treated with UPS 'Release Agent' can be used to minimise machining.

All equipment must be cleaned IMMEDIATELY after use with UPS 'Cleaner'.

Theoretical Coverage Rate
1.6 m² / kilo at 250 microns dft (17 ft² per kilo at 10 mils)

Volume Capacity
400 cc (24.4 cu ins) per kilo

Unique Polymer Systems - Abrasion Resistant Ceramic Carbide Fluid

Recommended Film Thickness
Wet 250 microns (10 mils)
Dry 250 microns (10 mils)

PHYSICAL CONSTANTS

Mixing Ratio

Resin	Hardener	
3	1	By volume
8	1	By weight

Appearance

Resin	Coloured Paste
Hardener	Amber Liquid

Drying & Cure times at 20°C/68°F

Usable Life	25 minutes
Initial Set	3 hours
Grinding Time	6 hours
Full Mechanical	5 days

Volume Solids 100%

V.O.C. Nil

Shelf Life
Use within 5 years of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F).

Operating Temperature

	Maximum	Continuous
Dry Heat	250°C (480°F)	120°C (248°F)
Wet Heat	120°C (248°F)	70°C (158°F)

PHYSICAL PROPERTIES

Compressive Strength D695	915 kg/per cm² ASTM (13000 psi)
Tensile Strength	195 kg/per cm² (2800 psi) ASTM D1002 (Grit blasted steel)
Flexural Strength D790	635 kg/per cm² ASTM (9000 psi)
Rockwell Hardness ASTM D785	100
Abrasion Resistance D4060	0.065 ml loss per ASTM 1000 cycles (CS17 wheel 1 kg load)
Heat Distortion Temperature ASTM D648	60°C (175°F)
Corrosion Resistance ASTM B117	5000 hours

HEALTH AND SAFETY

As long as normal good practice is observed 'Abrasion Resistant Ceramic Carbide Fluid' can be safely used.

Protective gloves should be worn.

A fully detailed Material Safety Data with the material or is available on request.

PACKAGING

Supplied in 1kg packs.

FOR FURTHER INFORMATION PLEASE CONTACT

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... for Solutions

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Unique Polymer Systems

ADVANCED POLYMER SURFACE ENGINEERING TECHNOLOGY

Unique Polymer Systems – Super Low Friction Efficiency Coating




Unique Polymer Systems 'Super Low Friction Efficiency Coating' is a high performance solvent free coating designed for use as a resurfacing and lining system to improve the efficiency in fluid flow environments

Unique Polymer Systems 'Super Low Friction Efficiency Coating' is based on a specifically selected blend of epoxy resins and non toxic polyamino curing agents reinforced with carbide and inert flow enhancing pigments which produces a system with optimum physical and mechanical strengths and excellent resistance to erosion and corrosion.

Unique Polymer Systems 'Super Low Friction Efficiency Coating' is simple, sfe and easy to use and its excelent low friction surface improves flow rates in pumps and pipelines which makes it an ideal choice for the protection of waterboxes, tube sheets, pumps, impellers, valves and heat exchangers.

SURFACE PREPARATION

Heavy contamination due to oil or grease must be removed using with UPS 'Cleaner'. Surfaces to be coated should then be abrasive blast cleaned to a minimum Sa2½ BS7079 Part A1 : 1989/ISO 850-1: 1988 to give medium blast profile as defined by BS 7079: Part C3 1989/ISO 85031 1988.

Equipment which has become salt impregnated due to service conditions should, first be wet blasted then dry abrasive blasted and checked for presence of salts. This process should be repeated until the salts are removed.

Alternatively, surfaces should be warmed with a blow torch or heat gun to bring salts up to the surface. The surface should once again be blast cleaned. This process must be repeated until no further sweating of impregnated salts is evident.

Care should be taken on pitted surfaces to ensure that all contamination is removed from the bottom.

MIXING

Unique Polymer Systems 'Super Low Friction Efficiency Coating' is a two component product supplied as a resin component and an hardener component which must be mixed together immediately prior to use.

Stir the contents of the base component, continue stirring and gradually add the total contents of the activator container, stir the combined mix until completely homogeneoous.

The mixed material must be used within 45 minutes of mixing at 20°C (68°F). This time will be reduced at higher temperatures and extended at lower temperatures.

APPLICATION

Application should not be carried out when air and substrate temperatures are below 7°C nor when relative humidity exceeds 85% or when the surface to be coated is less than 3°C above the dew point.

Unique Polymer Systems 'Super Low Friction Efficiency Coating' can be applied by brush or roller, with brush application being preferred for the first coat of a two coat application. Good quality brushes or short to medium pile roller should be used.

Unique Polymer Systems 'Super Low Friction Efficiency Coating' should be worked into the surface to ensure complete wetting of the surface. On deeply pitted surfces, care should be taken to avoid air entrapment in the pitted areas.

Best application results are obtained with a minimum substrate temperature of 15°C with 20°C being the ideal temperature.

All equipment must be cleaned IMMEDIATELY after use with **Unique Polymer Systems 'Cleaner'**.

Theoretical Coverage Rate
2.7m^2/kilo at 250 microns dft (29 ft^2/kilo at 10 mils dft)

Recommended Film Thickness

Wet	250 microns (10 mils)
Dry	250 microns (10 mils)

Normally applied as a two coat system to achieve a nominal film thickness of 500 microns.

PHYSICAL CONSTANTS

Mixing Ratio	Resin	Hardener	
	2	1	By volume
	4	1	By weight
Appearance	Resin	Thixotropic Coloured Liquid	
	Hardener	Clear Liquid	

Drying & Cure times **at 20°C (68°F)**

Usable Life	45 minutes
Touch Dry	6 hours
Minimum Overcoating	6 hours
Maximum Overcoating	48 Hours
Full Cure	7 days

Volume Solids	**100%**
V.O.C.	Nil
Shelf Life	**Use within 5 years of purchase.**
temperatures	**Store in original sealed containers at between 5°C (40°F) and 30°C (86°F).**

Operating Temperature

	Maximum	**Continuous**
Dry Heat	150°C (300°F)	120°C (248°F)
Wet Heat	80°C (175°F)	60° (140°F)

Potable Water	**Water Regulations Advisory Scheme -Approved Product**

FOR FURTHER INFORMATION PLEASE CONTACT

Food Contact
Meets USDA requirements for incidental food contact.
Meets FDA requirements CFR 21.175.300 for food contact

PHYSICAL PROPERTIES

ASTM D4060	
Shore D Hardness	85
Tensile Shear Adhesion	175 kg per cm2 (2500 psi)
ASTM D1002	(Grit Blasted Steel)
Corrosion Resistance	Excellent, unaffected after
ASTM B117	10,000 hours exposure
Flexural Strength	570 kg/cm² (8100 psi)
ASTM D790	
Compressive Strength	700 kg/cm² (10000 psi)
ASTM D695	
Impact Resistance	40 Joules (355 in lbs)
ASTM D256	

HEALTH AND SAFETY

As long as normal good practice is observed **Unique Polymer Systems 'Super Low Friction Efficiency Coating'** can be safely used.

Protective gloves should be worn during use.

A fully detailed **Material Safety Data Sheet** is either included with the material or is available on request.

PACKAGING

Supplied in 1kg packs.

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Unique Polymer Systems

ADVANCED POLYMER SURFACE ENGINEERING TECHNOLOGY

Unique Polymer Systems - 'High Temperature Ceramic Carbide Compound'

UPS 'High Temperature Ceramic Carbide Compound' is a high performance fluid grade engineering resurfacing compound specifically developed for high temperature immersion conditions and is ideal for resurfacing pumps, impellers, valves, tube sheets, water boxes, heat exchangers.

UPS 'High Temperature Ceramic Carbide Compound' is based on a complex blend of phenolic epoxy resins and a special polyamino-amide curing system reinforced with carbide and ceramic particles to produce a coating with a high level of temperature, abrasion and adhesion properties combined with optimum physical and mechanical strength.

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

SURFACE PREPARATION

All dirt and loose material should be scraped away. Oil and grease should be removed with UPS 'Cleaner'. Surfaces should then be abrasive blast cleaned to a minimum Sa2½ BS7079 Part A1 1989 or equivalent with a minimum blast profile of 75 microns (3 mil) corresponding to 'Medium' in BS7079 Part C3/ ISO8503/1. All loose abrasive dust and debris must be blown clear or vacuum cleaned away.

Existing steel surfaces which have corroded in a chemical environment may be contaminated by soluble iron salts within corrosion pits. To prepare these surfaces it is recommended that one of the following treatments be carried out prior to final dry abrasive blasting to the specified standard.

a) Blasting with a mixture of clean water and abrasive.

b) Initial dry blast cleaning to remove corrosion and surface coatings followed by high pressure clean water jetting (minimum 1000 psi/66 bar).

On sections of repairs which are not required to bond to the UPS 'High Temperature Ceramic Carbide Compound' these surfaces should be treated with UPS Release 'Agent'.

MIXING

UPS 'High Temperature Ceramic Carbide Compound' is a two component solvent free product supplied as a resin component and an hardener component which must be mixed together prior to use.

Mix the entire contents of the resin and hardener containers.

Alternatively measure four volumes of resin component and one volume of hardener into a clean container. The two components should be thoroughly mixed until completely streak free.

The mixed material should be used within 60 minutes of mixing at 68°F. This time will be reduced at higher temperatures and extended at lower temperatures.

APPLICATION

The mixed material should be applied to the prepared area using a clean brush or squeegee. Application should be carried out as soon as possible after surface preparation is complete, and certainly the same day, otherwise flash blasting will be necessary before application.

Where necessary a reinforcing tape should be stippled in to the mixed product and further material applied over the tape, ensuring the edges of the tape are overlapped.

Machining of UPS 'High Temperature Ceramic Carbide Compound' will cause excessive tool wear so care should be taken to finish the repair to the required size or

dimensions. Formers treated with UPS 'Release Agent' can be used to minimise machining.

All equipment must be cleaned IMMEDIATELY after use with UPS 'Cleaner'.

Theoretical Coverage Rate
0.80 m² / kilo at 750 microns dft (8.50 ft² per kilo at 30 mils)

Volume Capacity 555cc (38.1 cu ins) per kilo

Recommended Film Thickness
Wet 750 microns (30 mils)
Dry 750 microns (30 mils)

PHYSICAL CONSTANTS

Mixing Ratio	**Resin**	**Hardener**	
	100	12	By volume
	4	1	By Weight

Appearance	Resin	Dark Grey/Black Paste
	Hardener	Amber Liquid

Drying & Cure times at 20°C (68°F)

Usable Life	60 minutes
Initial Set	6 hours
Minimum Overcoating	6 hours
Maximum Overcoating	24 hours

Volume Solids 100%

V.O.C Nil

Shelf Life Use within 5 years of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F)

Operating Temperature

	Maximum	**Continuous**
Dry Heat	250°C (482°F)	170°C (338°F)
Wet Heat	180°C 356°F)	150°C (302°F)

PHYSICAL PROPERTIES

Abrasion Resistance ASTM D4060	0.065 ml loss per 1000 cycles 1 kg load/CS17 wheel
Compressive Strength ASTMD695	915 kg/cm² (13000 psi)
Corrosion Resistance ASTM B117	5,000 hours
Flexural Strength **ASTM 790**	**635kg/cm2 (9000 psi)**
Heat Distortion Temp. ASTM D648	146°C (295°F) (Post Cured at 120°C for 6 hours
Tensile Shear Adhesion ASTM D1002	195 kg/cm² (2800 psi) (Grit Blasted Steel)

HEALTH AND SAFETY

As long as normal good practice is observed 'High Temperature Ceramic Carbide Compound can be safely used.

Protective gloves should be worn.

A fully detailed Material Safety Data Sheet is either included with the material or is available on request.

PACKAGING

Supplied in 3kg packs.

FOR FURTHER INFORMATION PLEASE CONTACT

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Technical Data Sheet

UniquePolymerSystems.com
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ThistleBond

UPS 226 HTA Fluid Ceramic

UPS 226 HTA Fluid Ceramic is designed to upgrade the performance of conventional materials of construction and in particular to protect equipment operating in contact with acids and highly aggressive chemicals at elevated temperatures. The coating once fully cured is capable of withstanding temperatures up to 90°C in continuous immersion in sulphuric acid, hydrochloric acid and phosphoric acid. The material can be applied directly to abrasive blasted steel or to surfaces previously rebuilt with UPS 105 EG Metal Repair Paste or UPS 200 EG Ceramic Repair Paste.

Typical applications

Suitable for the coating of processing equipment, pumps, pipework, distillation units, stripper units, exhaust stacks and internal tank surfaces.

Surface Preparation

All oil and grease must be removed from the surface of the repair using an appropriate cleaner such as MEK. The surface should be abrasive blasted to Swedish Standard SA2.5 and a minimum blast profile of 75 microns using an angular abrasive. Once blast cleaned, the surface must be degreased and cleaned using MEK and all prepared surfaces must be repaired before rusting or oxidation occur.

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

Where the product should not adhere, a thin layer of a suitable release agent should be applied taking care not to contaminate other areas.

On surfaces already rebuilt with UPS 105 EG Metal Repair Paste or UPS 200 EG Ceramic Repair Paste no further surface preparation is required where over-coating takes place within 3 hours. After this maximum over-coating time has elapsed roughen the surface by flash blasting or other means of abrasion.

Mixing and Application

Warm the Base to 20-25°C before mixing and do not apply when the ambient or substrate temperature is less than 10°C or when the relative humidity is greater than 90%.

Only full units of material should be mixed and to aid mixing add only part of the Activator initially. Pour approximately one third of the contents of the Activator unit into the Base container and mix carefully using a spatula. Once the two materials have been blended, add the remainder of the Activator ensuring that as much material is drained from the Activator container as possible. Mix the two components together until they are streak-free and apply using a short bristled brush or applicator tool. The material once fully mixed has an application of time of 30-40mins at 20°C.

Two Coat Application

Where possible, the application should be carried out in two coats.

a) The first coat of material should be applied at a target thickness of 600 microns using a practical coverage rate of 0.6 sq metres/kg. Use a plastic applicator as a squeegee to apply a **very** thin layer of product, forcing it into the blast profile. Special attention should be paid to detailed areas such as edges, corners and welds where brush application by stippling may be required. Immediately after the initial application apply further material by brush or applicator to give the required film build, checking film thickness with a wet film thickness gauge. Lay off the coating by brush to give a smooth finish.

Technical Data Sheet

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ThistleBond

Two Coat Application (continued)
b) Allow to harden for a minimum of 16 hours before removing any surface bloom by washing first with a detergent and water mixture and then clean water. This should be followed by sweep blasting at reduced pressure using fine grit, and removal of any debris before washing with MEK.
c) The second coat of material should be applied at a target thickness of 300 microns using a practical coverage rate of 1.2 sq metre/kg using a brush or applicator and once again checking film thickness with a wet film gauge before finally laying off the coating with a brush to give a smooth finish.

Single Coat Application
If a two coat application is not practical, the product can be applied as in (a) above in a single coat at 650-850 microns using a practical coverage rate of 0.45 sq metres /Kg. Using this method extreme care is required when carrying out visual inspection of the coating whilst still wet to identify any defects which should be corrected.

Once cured any surface bloom should be removed by detergent wash and the coating then wet sponge tested to identify any pin holes. These should be repaired by manually abrading the surface, cleaning down and applying freshly mixed UPS 226 HTA Fluid Ceramic at approximately 250 microns thickness to the prepared area.

Cure Times
At 20°C, the applied materials should be allowed to harden for at least 6 hours before movement. UPS 226 HTA is designed for elevated temperature service and **in all situations** requires post cure. After an initial cure period of at least 24 hours at 20°C it should be post cured at between 60 and 100°C for between 2 and 24 hours. As an alternative, and where the service temperature will rise gradually, the material can be post cured in service after an initial cure period of at least 24 hours at 20°C

Technical Data and Performance

Volume Capacity	**425cc/Kg**
Compressive Strength ASTM D695	**983kg/ cm² (13,960psi)**
Tensile Shear Adhesion ASTM D1002	**220kg/cm² (3125psi)**
Flexural Strength ASTM D790	**614kg/cm² 8710psi**
Shore D Hardness ASTM D2240	**89 at 20°C 78 at 240°C**
Corrosion Resistance (ASTM B117)	**5000 hours**

Storage Life
5 years if unopened and stored in normal dry conditions (15-30°C)

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

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Unique Polymer Systems

ADVANCED POLYMER SURFACE ENGINEERING TECHNOLOGY

Unique Polymer Systems – Flexibilised Fluid Ceramic Carbide Compound




Unique Polymer Systems 'Flexibilised Fluid Ceramic Carbide Compound' offers a resilient high performance system with outstanding protection against impingement, entrainment, cavitation and erosion corrosion and is ideal for resurfacing, propellers, kort nozzles, guide vanes and tube sheets etc.

Unique Polymer Systems 'Flexibilised Fluid Ceramic Carbide Compound' is a high performance solvent free flexible polyceramic repair coating designed for the resurfacing of equipment operating in fluid flow environments.

Unique Polymer Systems 'Flexibilised Fluid Ceramic Carbide Compound' is based on a complex blend of high molecular weight and urethane polymers blended with inert pigments and silicas reacted with an amine accelerated isocyanate resin which produces a system with the optimum physical and mechanical strength.

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

SURFACE PREPARATION

All dirt, and contamination should be removed, then surfaces should be degreased using **Unique Polymer Systems 'Cleaner'.** Surfaces should now be abrasive blasted to Sa21/2 BS7079: PART A1 1989, or equivalent with a medium to coarse profile.

Equipment that has been salt impregnated should be heated to sweat out salt contamination then the surface reblasted. This process should be repeated until all salt contamination is eliminated.

All residual abrasive dust should be blown clear of the prepared surface. Surfaces which are not required to bond to the **Unique Polymer Systems 'Flexibilised Ceramic Carbide Compound'** should be treated with **Unique Polymer Systems 'Release Agent'.**

MIXING

Unique Polymer Systems 'Flexibilised Fluid Ceramic Carbide Compound' is a two component solvent-free material comprising resin and hardener components which must be mixed together prior to use.

Add all the contents of the hardener container into the resin container and mix thoroughly, alternatively measure three volumes of resin and one volume of hardener into a clean container and mix thoroughly. The two components initially are fluid, but on mixing form a paste material. To ensure thorough mixing, the paste should be transferred to a mixing board and further mixing carried out to produce a streak free material.

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

APPLICATION

Application should be carried out as soon as possible after the surface preparation is complete, and certainly within 4 hours otherwise flash blasting will be necessary before application.

The mixed material should be applied by brush to provide an even smooth coating to the prepared / filled surface.

Where **Unique Polymer Systems 'Flexibilised Fluid Ceramic Carbide Compound'** is being applied over **Unique Polymer Systems 'Flexibilised Ceramic Carbide Compound'** a maximum of 4 hours should be allowed between applications, however, when two coats of **Unique Polymer Systems 'Flexibilised Fluid Ceramic Carbide Com-pound'** are being applied the maximum overcoating time is 24 hours.

All equipment must be cleaned IMMEDIATELY after use with **Unique Polymer Systems 'Cleaner'.**

Theoretical Coverage Rate
0.8 m² / kilo at 1 mm (18ft² / kilo at 20 mil)

Unique Polymer Systems – Flexibilised Fluid Ceramic Carbide Compound

PHYSICAL CONSTANTS

Mixing Ratio	Resin	Hardener	
	3	1	By volume
	3	1	By weight
Appearance	Resin	**Light Grey Thixotropic Liquid**	
	Hardener	**Brown Liquid**	

Drying & Cure times **at 20°C (68°F)**

Usable Life	**20 minutes**
Touch Dry	**2 hours**
Hard Dry	**4 hours**
Full Cure	**7 days**

Volume Solids **100%**
V.O.C. Nil

Shelf Life **Use within 5 years of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F).**

Operating Temperature

	Maximum	**Continuous**
Dry Heat	150°C (300°F)	80°C (175°F)
Wet Heat	80°C (175°F)	50° (122°F)

PHYSICAL PROPERTIES

Tensile Strength ASTM D412	200 kg/cm² (2825 psi)
Abrasion Resistance ASTM D4060	0.08 ml loss per 1000 cycles 1 kg load CS 17 Wheel
Corrosion Resistance ASTM B117	Unaffected after 5000 hours exposure
Impact Resistance ASTM D256	20 Joules (175 ins lbs)
Flexibility	30% ASTM D522-4

HEALTH AND SAFETY

As long as normal good practice is observed **Unique Polymer Systems 'Super Low Friction Efficiency Coating'** can be safely used.

Protective gloves should be worn during use.

A fully detailed **Material Safety Data Sheet** is either included with the material or is available on request.

PACKAGING

Supplied in 1kg packs.

FOR FURTHER INFORMATION PLEASE CONTACT

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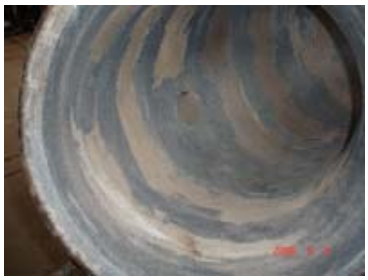
Unique Polymer Systems

ADVANCED POLYMER SURFACE ENGINEERING TECHNOLOGY

Unique Polymer Systems - Heavy Duty Ceramic Carbide Compound



Unique Polymer Systems 'Heavy Duty Ceramic Carbide Compound' is a high performance abrasion resistant metal repair compound specifically developed for use where resistance to sliding abrasion is required. It is based on a complex of epoxy resins and polyamino-amide curing system reinforced with carbide and ceramic particles to produce a coating with a high level of adhesion, abrasion and erosion resistance combined with optimum physical and mechanical strength.

In addition, it has excellent adhesion to most metallic surfaces in one easy application and offers outstanding protection to chutes, hoppers, pipe elbows, chippers, valves, pumps and equipment subject to aggressive attack from dry solids and slurries.

Please read the following information carefully to ensure that the correct application procedure is fully understood.

SURFACE PREPARATION & APPLICATION PROCEDURE

All dust and loose material should be scraped away. Oil and grease should be removed with **Unique Polymer Systems Cleaner**. Surfaces should then be abrasive blast cleaned to a minimum Sa2½ BS7079 Part A1 : 1989 or equivalent with a blast profile of 75 microns (3 mil) corresponding to 'Medium' in BS7079 Part C3/ISO 8503/1. All loose abrasive dust and debris must be blown clear or vacuum cleaned away.

Equipment that has been salt-impregnated due to service conditions should be first wet-blasted then dry-abrasive blasted and checked for presence of salts, this process should be repeated until salts are removed. Alternatively, surfaces should be warmed with a blowtorch or similar to bring salts up to the surface. The surface should once again be blast cleaned. This procedure must be repeated until no further sweating of impregnated salt is evident.

On sections of repair that are not required to bond to the **Unique Polymer Systems 'Heavy Duty Ceramic Carbide Compound'** these surfaces should be treated with **Unique Polymer Systems 'Release Agent'**.

MIXING

Transfer the entire contents of the resin and hardener containers onto a clean mixing board or other suitable surface. Alternatively measure three volumes of resin component and one volume of hardener onto a clean mixing surface. The two components should be thoroughly mixed until completely streak free.

The mixed material should be used within 25 minutes of mixing at 20°C (68°F). This time will be reduced at higher temperatures and extended at lower temperatures.

APPLICATION

Application should not be carried out at temperatures below 5°C nor when relative humidity exceeds 85% or when the surface to be repaired is less than 3°C above the dew point. The mixed material should be pressed firmly onto the prepared area, care should be taken to avoid air entrapment on deeply pitted surfaces.

Application should be carried out as soon as possible after surface preparation is complete, and certainly the same day, otherwise flash blasting will be necessary before application. Where necessary, a reinforcement tape should be stippled into the mixed product and further material applied over the tape. For large areas the tape should be overlapped.

In areas where a second layer of **Unique Polymer Systems 'Heavy Duty Ceramic Carbide Compound'** is required, this application must be carried out within the initial set time for the first layer, if this is not possible surfaces will require thorough abrasion or abrasive blasting prior to any subsequent material being applied.

TECHNICAL DATASHEET UPS240

Unique Polymer Systems - Heavy Duty Ceramic Carbide Compound

Machining of **Unique Polymer Systems 'Heavy Duty Ceramic Carbide Compound'** will cause excessive tool wear so care should be taken to finish the repair to the required size or dimensions.

Formers treated with **Unique Polymer Systems 'Release Agent'** can be used to minimise machining.

Once the **Unique Polymer Systems 'Heavy Duty Ceramic Carbide Compound'** has reached initial set the material can be separated from surfaces treated with **Unique Polymer Systems 'Release Agent'.**

All equipment must be cleaned IMMEDIATELY after use with **Unique Polymer Systems 'Cleaner'** or equivalent.

Volume Capacity
542cc (33 cu ins) per kilo
Coverage rate
0.09sqm (1ft2) per kilo

PHYSICAL CONSTANTS

Mixing Ratio	By volume	By Weight
Resin	3	4
Hardener	1	1

Appearance
Resin - Grey Paste
Hardener - Off-white Paste

Drying & Cure times at 20°C (68°F)

Usable Life	60 minutes
Initial Set	3 hours
Grinding Time	8 hours
Full Mechanical	5 days

Volume Solids
100%

V.O.C
Nil

Shelf Life
Use within 5 years of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F).

Operating Temperature

	Maximum	**Continuous**
Dry Heat	200°C (392°F)	120°C (248°F)
Wet Heat	120°C (248°F)	70°C (158°F)

Food Contact Meets USDA requirements for incidental food contact.
Meets FDA requirements CFR 21.175.300 for food contact.

PHYSICAL PROPERTIES

Compressive Strength ADTM D695	1055 kg per cm² (15000psi)
Tensile Shear Adhesion ASTM D1002	140 kg per cm² (2000psi) (Abrasive Blasted Mild-Steel)
Flexural Strength ASTM D790	420 kg per cm² (6000psi)
Heat Distortion Temperature ASTM D648	60°C (140°F)
Hardness (Rockwell R) ASTM D785	100
Abrasion Resistance ASTM D4060	20 mg lossl per 1000 cycles (1 kg load/CS17 Wheel)
Corrosion Resistance ASTMB117	5000 hours

HEALTH AND SAFETY

As long as normal good practice is observed **Unique Polymer Systems 'Heavy Duty Ceramic Carbide Compound'** can be safely used.
Protective gloves should be worn during use.
A fully detailed **Material Safety Data Sheet** is either included with the material or is available on request.

PACKAGING

Supplied in 5kg packs.

FOR FURTHER INFORMATION PLEASE CONTACT

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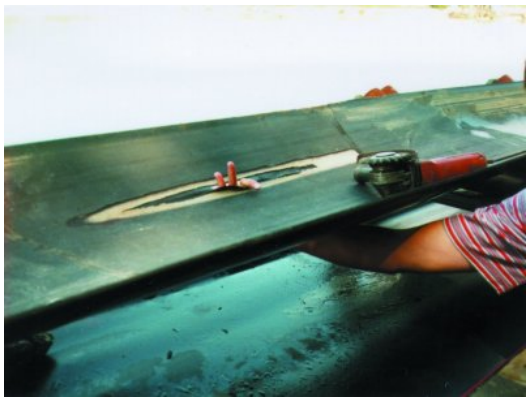
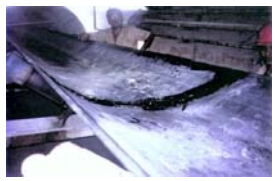
Unique Polymer Systems

ADVANCED POLYMER SURFACE ENGINEERING TECHNOLOGY

Unique Polymer Systems - '60' DUROMETER Paste Elastomer





UPS '60 DUROMETER Paste Elastomer' is a 60 Durometer high performance paste grade elastomer which has been specifically developed for the repair of rubber components by trowel or putty knife and is suitable for use on impellers, chutes, hoppers, valves, rollers, gaskets, hoses, conveyor belts, off road tyres etc.

UPS '60 DUROMETER Paste Elastomer' is based on a complex blend of polyols and polyesters in combination with amine catalysts and activators to produce a cold vulcanising product with outstanding mechanical strength.

The properties of **UPS '60 DUROMETER** Paste Elastomer' have been designed to match factory produced rubbers.

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

SURFACE PREPARATION

All existing dirt, oil and grease should be removed and the surface wiped with UPS 'Cleaner'.

Any areas of frayed or fragmented rubber should be cut away to provide a sound repair area.

Smooth surfaces, including metals, should be mechanically etched to produce a good profile, with abrasive blasting being preferred for metal substrates. Rubber surfaces are best roughened using a stiff wire brush / comb.

Edges of repair areas of belts, hoses, tyres etc. should be undercut.

All loose dust and particles should be blown clear of the prepared surface.

On certain repairs such as gaskets and castings where one surface is not required to bond to the UPS '60 DUROMETER Paste Elastomer', these surfaces should be treated with UPS 'Release Agent'.

PRIMING

All areas to be repaired or resurfaced should be first primed with UPS 'Elastomer Primer'.

The primer should be applied with a soft bristled brush to give an even, but low coating thickness, taking care to avoid ponding of the primer.

The primer should be allowed a minimum of 60 minutes and a maximum of 8 hours at 20°C before applying the UPS '60 DUROMETER Paste Elastomer'

Where a faster drying primer is required UPS '60 DUROMETER Rapid Paste Elastomer' Primer can be used. Please refer to UPS '60 DUROMETER Rapid Paste Elastomer' Tech Sheet.

MIXING

UPS '60 DUROMETER Paste Elastomer' is a two component material which must be mixed together prior to use.

Two volumes of resin and one volume of hardener should be measured onto a clean surface and the two components mixed thoroughly to produce a smooth streak free material.

Thorough mixing is extremely important, and once the material appears mixed, a further period of mixing should be carried out to ensure there is no unmixed material.

The mixed material should be used within 30 minutes of mixing at 20°C (68°F).

APPLICATION

The mixed material should be pressed firmly onto the prepared area working the product into cracks or defects on the surface. Where necessary, reinforcement tape should be bedded into the material and overlapped to provide multi-layer reinforcement.

All equipment must be cleaned IMMEDIATELY after use with UPS 'Cleaner'.

Volume Capacity: 900cc (54.8 cu ins) per kilo

PHYSICAL CONSTANTS

Mixing Ratio	Resin	Hardener	
	2	1	By volume
	2	1	By Weight

Appearance		
	Resin	Opaque Paste
	Hardener	Coloured Paste

Drying & Cure times at 20°C (68°F)

Usable Life	25 minutes
Initial Set	3 hours
Machining	16 hours
Full Mechanical	3 days

Volume Solids
100%

V.O.C
Nil

Shelf Life
Use within 12 months of purchase. Store in original sealed containers at temperatures between 5°C (40°F) and 30°C (86°F)

Operating Temperature

	Maximum	Continuous
Dry Heat	120°C (250°F)	80°C (176°F)
Wet Heat	80°C (175°F)	50°C (122°F)

PHYSICAL PROPERTIES

Compressive Strength ASTM D412	70 kg/cm² (1000 psi)
Tear Strength ASTM D624	36 kg/cm (200 pli)
Elongation ASTM D412	800%
Shore A Hardness ASTM D2240	60
Peel Adhesion (Concrete & Steel) ASTM D903	9 kg/cm (50 pli) – cohesive failure in ’60 Durometer
Dielectric Strength ASTM D149	16 volts/micron (400 volts/mil)

HEALTH AND SAFETY

As long as normal good practice is observed ThistleBond '60 DUROMETER Paste Elastomer' can be safely used.

Protective gloves should be worn.

A fully detailed Material Safety Data Sheet is either included with the material or is available on request.

PACKAGING

Supplied in 0.600kg packs.

FOR FURTHER INFORMATION PLEASE CONTACT

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