



TECHNICAL DATA SHEET

HELLZITE METAL

Product Codes: 925

High Temperature Metal Repair & Rebuilding Composite - Paste Grade

PRODUCT DESCRIPTION

HELLZITE METAL EPOXY is a high temperature epoxy polymer with a specialty matrix and immense cross linking formulation based on EMP Hells Putty 500. Originally named in the lab for its high heat resistance to 310F(165C) under immersion and 400F(204C) dry heat. Excellent for metal rebuilding for corrosion, cavitation and erosion. This two component composite is made with heat resistant base & activator combined with specialty metal filled alloys. This strong, solvent free, non-rusting, non shrink, fully machinable formulation is a no-sag formula and can be applied vertically and overhead to 1/2" inch thicknesses. HELLZITE may be coated over with a variety of high temp & corrosion resistant protective coatings from E.M.P Inc. Exhibits tenacious bond to all metals and resistance to most MRO chemicals. Sectors in use: Industrial and marine applications.

INTENDED USES

- Repair of high temperature fluid flow equipment.
- Sealing cracks, pits, wear, holes, leaks on high temp pipes & tanks.
- Repair heat exchangers, condensers, scrubbers, blowers, steam turbine equipment, clarifiers, etc.
- Forming irregular load bearing shims where high temperatures may be encountered.
- Repair cracked pump & casings.
- Rebuild eroded and corroded metal surfaces.
- High temperature patching, rebuilding, filling, sealing and bonding metal to metal.

BENEFITS

- High temperature resistance to 320F/160C (full immersion) & 400F/204C (dry heat)
- Long pot life or working time
- Can be fully machined, drilled, tapped, sanded and coated over
- Easy mix ratio, no special tools required
- No hot work involved
- Sold as kit containing mixing board, applicators, spatula set & Fiberzite Reinforcement Fabric.
- Highly chemical resistant to most chemicals
- Excellent bonding to steel, aluminum, copper, brass, stainless steel and some plastics
- Can be coated over various EMP high temperature, chemical, corrosion, erosion & cavitation coatings

PRODUCT SPECIFICATIONS

Performance Data ▪	#925
Color	Gray
Adhesive Tensile Shear(ASTM D1002)	2800psi
Compressive Strength (ASTM D685)	14550 psi
Cured Hardness Rating (Shore D)	85

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Coverage per kit @ 1/4" Note: account for waste & surface roughness	47 sq inch @ 1/4"
Dielectric Strength	30 volts/mil
Flexural Strength (ASTM D790)	8250 psi
Initial Cure	16 Hours @ 75F/24C
Full Cure	24 Hours @ 75F/25C
Full Immersion	60 Hours @ 75F/25C
Machinable @ 75F Cure Time	16 hours
Pot Life (Working Time)	45 min @ 75F
Pull of adhesion (ASTM D4541)	4900 psi
Ratio Mix by Volume	Full kits only
Shrinkage	0%
Temperature Resistance Dry	400F/121C
Temperature Resistance Wet (Immersion)	300F/54C

***Cure Time:** HELLZITE Metal cures faster with warmer temperatures and slower with colder temperatures. Temperatures will affect the pot life, initial cure, full and immersion cure rates of the product as well. However product performance after cure is un-affected. Please consult with EMP Inc.

Optimum Performance Requirement:

HELLZITE Metal will fully cure at room temperature (75F/24F) within 24 hours and post heat curing is *not* required for dry heat exposure. For full immersion, Hellzite must cure for 60 hours @ 75F (ambient) before subjecting to immersion. If working in low temperatures, use heat to cure the product. Portable heating equipment (fan heaters) may be used by building a small plastic enclosure may be used and raise heat to 100F for 12 hours for proper cure before subjecting to full immersion. Please contact EMP Inc. for tech spec # PC-ME-925.

Top coating: To produce a monolithic application, HELLZITE may be top coated when hard to touch with various E.M.P. Inc high temperature and chemical resistant coatings (brush, roller or spray) based on your application and fluid generation.

For higher tolerances in specialized applications where stronger mechanical, thermal and chemical resistances are required, it may be post cured as follows: After 16 hours initial cure, raise temperature slowly every hour to 130F/54C for 2 hours. Consult with EMP Technical for specification # PC-ME-925 if post curing is desired.

SURFACE PREPARATION

1) Surfaces must be clean, dry and free from foreign matter. Remove any rust or oxidation. Metals must be prepared properly using a grinding wheel with a metal disc or grit blasting if available to a white metal finish. For best results, a surface profile of 5 mil is ideal. Proper profiling creates a tenacious mechanical bond and durability.



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Certain conditions and fluids may call for manual surface preparation to the existing metal or substrate and thus wire brushes, metal files, hack saws will be the tools of choice to manually prepare the surface. Such tools may be used for surface preparation, cleaning and profiling to create a "tooth" or cross hatch pattern so that epoxy can anchor onto the substrate mechanically and chemically for a powerful bond.

If crack repair is being conducted, make sure to "V" out the crack. Drill and tap crack at the ends to stop crack propagation. For longer cracks, it may be necessary to drill and tap at every 2-4" for strength and stability of the repair.

2) Blow off, vacuum or wipe off any dust from surface preparation.

3) Using a stiff bristle brush (paint brush), clean and wash area vigorously with the quick evaporating, non-residue forming E.M.P. Metal Cleaner #701. Repeat twice and allow to dry properly. Begin application of epoxy immediately on the newly prepared surface.

EMP Release Agent PN# 1126 can be used in areas where HELLZITE Metal shouldn't adhere to. (eg: forming mold, etc.)

Additional information: Please consult with our technical department for proper guidelines for surface preparation. Training and consultation are available on all E.M.P. Inc. products.

Mixing

NOTE: Read product label completely before use.

This product is conveniently packaged in small pre-measured kits ready to mix and apply. Each kit contains hardener and resin. Remove all contents by of resin and hardener on the non absorbing mixing board supplied in the kit. Mix both parts using the large spatula supplied in the kit. Lift all the material to be mixed and spackle down on the mixing board. Continue this process until a streak free, even and smooth consistency is reached.

Note: Mixing full kits is always recommended for proper cure for this product.

Application Method

Application Instructions:

Temperature Considerations

If product is being stored in cold conditions, please move tubs to warm area to soften epoxy before use. Store product at 75F/23C before for use. For best results always apply at 40F or above. Heaters may be used by enclosing area with plastic to elevate the temperature for proper application.

It is recommended to apply a thin layer first using a short bristle brush supplied in the kit. Brush material



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with firm pressure by rubbing it into the metal. Be careful not to have any air pockets under the product. Once this process is complete, immediately apply a thicker layer using applicator in the kit on top less to desired thickness. (Normally 1-8" - 1/4")

For cracks, holes and, gouge repairs, use Fiberzite reinforcement tape as follows:

- 1) Brush coat a thin layer using a stiff bristle brush in the kit provided.
- 2) Apply layer of HELLZITE Metal at 1/8" using the applicator or spatula provided in the kit.
- 3) Cut Fiberzite reinforcement tape to size of area to be built or sealed (approx 3" away and around the damage)
- 4) Saturate the fabric tape by using the applicator or spatula and firmly press a thin layer of HELLZITE metal on both sides of reinforcement tape.
- 5) Affix Fiberzite on the previously applied layer using a brush with a dabbing and brushing motion making sure there are no air pockets between the fabric and the HELLZITE Metal.
- 6) Apply final coat of HELLZITE Metal at 1/8" over the Fiberzite fabric.
- 7) Allow to dry as per instructions

ACTIVE LEAK REPAIRS:

Active Leaks with low pressure can be plugged with LEAKLOX EPOXY first and then abrade the area and apply HELLZITE. Please consult with EMP Technical department for leak repairs.

PIPE WRAPPING :

Hellzite can be used to wrap entire pipes by using Fiberzite Reinforcement Fabric. Brush coat a thin layer of Hellzite onto entire surface of pipe. Patch all damage and apply about 1/8" of Hellzite Metal around the pipe. Impregnate Hellzite into the Fiberzite Fabric by using a spatula on both sides. Wrap the pipe making sure there are no voids behind the fabric. Install another layer of Hellzite Metal at 1/8". Allow to dry.

PATCHING :

For all other repairs, standard procedures of surface prep, mixing and application remain the same.

PIT FILLING CORROSION REPAIRS:

Standard procedures on surface prep and application apply.

PLATE BONDING / METAL REBUILDING:

Standard procedures on surface prep and application apply.

TOP COATING & COMPATIBILITY:

HELLZITE Metal Epoxy can be used as a standalone system for metal refurbishment. It may also be used in conjunction with other E.M.P. polymer systems (chemical, erosion, corrosion, cavitation or high temp resistant coatings) as the final protective layer. All E.M.P. Inc metal repair systems are designed to be



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compatible to one another to produce a monolithic system.

Vertical & overhead surface applications:

HELLZITE Metal may be applied at 1/2" thickness (per coat) on vertical/overhead applications and thus completely sag free. It may be built up to the thickness desired.

Horizontal surface applications:

HELLZITE Metal Epoxy may be applied as thick as required by building up layers. Please contact EMP Inc technical department for specific application requirements and questions.

Lathing & Machining

Please consult with E.M.P. Inc technical department for lathe specifications for HELLZITE METAL specification # 925LT

Storage & Handling

Store at room temperature in a cool, dry place. Keep containers tightly closed after use. If long term storage is required after use, encase the resin and hardener in a plastic bag, remove all air and store. Vacuum packaging via plastic bags increases the shelf life.

Packaging

HELLZITE METAL EPOXY , PN# 925

- 454 gram/Kit (Hardener & Epoxy)
- 1 - Mixing Board
- 1 - Fiberzite Reinforcement Tape
- 1 - Spatula Set
- 1 - Paddle
- 1 - Applicator
- 1 - Stiff Bristle Brush

HELLZITE METAL EPOXY , PN# 925B

(same as above without Mixing board, Fiberzite, spatula, paddle, applicator & stiff bristle brush)

HELLZITE METAL EPOXY, PN 929C - Customized Formulation, Specification 3883-7

Optional, Additional Products:

E.M.P. Metal Repair System Applicator Tool Kit, Part # TK220 (Also sold separately))

E.M.P. Metal Cleaner #701 - Non-Residue forming, metal surface prep cleaner. Fast evaporation.

EMP Release Agent PN# 1126 - can be used in areas where HELLZITE Metal and other epoxies shouldn't

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adhere to. (eg: forming casting metal components/molds etc)



High Temperature roller with Hellzite Metal/Repairs

Data Sheet: Revision 1.

Warranty Information



SAFETY PRECAUTION: READ MATERIAL PRODUCT SAFETY DATA SHEETS BEFORE USING PRODUCT. Our products are intended for use by experienced professional only. Suitable chemical resistant gloves, safety glasses or full face shields, protective clothing and respirators must be worn as per product safety data sheet while conducting surface preparation and applying product. Do not smoke or drink while using product. Keep away from open flames and sparks.

EMPCORR warrants their product from defects. Because the application, handling or storing of our products is beyond our control, EMPCORR will not be held liable and in any form whatsoever for the results obtained after usage. To the best of our knowledge, the technical data contained herein is accurate on the date of publication and is subject to change without prior notice. Purchasers shall conduct their own tests to determine the suitability of our products for their particular purpose. Product properties, performance data and contents of this technical data sheets should not be constructed as specifications. User must contact EMPCORR to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. EMPCORR assumes no responsibility for coverage, performance or injuries resulting from use. No other warranty or guarantee of any kind is made by EMPCORR, express or implied, statutory, by operation of law, or otherwise, including merchantability and fit for a particular purpose

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