



TECHNICAL DATA SHEET

INDUSTRIAL METAL

Product Codes: 787, 727, 772C

Metal Repair & Rebuilding Composite - Paste Grade

PRODUCT DESCRIPTION

INDUSTRIAL METAL EPOXY has been the "original" workhorse for metal repairs since 1983. This two component composite is made with selected resins and hardeners combined with ferro-silicon 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. Exhibits tenacious bond to all metals and resistance to most MRO chemicals. Sectors in use: Industrial and marine applications.

INTENDED USES

- Repair scored shafts & scored hydraulic rams, worn keyways
• Excellent for bearing housing repair
• Sealing leaks on pipes & tanks
• Sealing transformer leaks, cracked engine blocks, sumps, etc.
• Repair of welds and joints / tank seam repair
• Substitute for welding or brazing
• Forming irregular load bearing shims
• Restoring stripped threads
• Repair cracked pump & valve casing
• All metal repairs patching, rebuilding, filling, sealing and bonding metal to metal

BENEFITS

- 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

PRODUCT SPECIFICATIONS

Table with 3 columns: Performance Data, #787, #727. Rows include Color, Adhesive Tensile Shear, Compressive Strength, Cured Hardness Rating, Coverage per kit, Dielectric Strength, Flexural Strength, Initial Cure, Full Cure, and Full Immersion.



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Machinable @ 75F Cure Time	16 hours	2 hours
Pot Life (Working Time)	30 min @ 75F	20 min @ 75C
Pull of adhesion (ASTM D4541)	2950 psi	3190 psi
Ratio Mix by Volume	2.5:1	3:1
Shrinkage	0%	0%
Temperature Resistance Dry	250F/121C	400F/204C
Temperature Resistance Wet (Immersion)	130F/54C	150F/66F

**\*Cure Time:** Industrial 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:*

Industrial Metal will fully cure at room temperature (75F/24F) within 24 hours and post heat curing is *not* required. For higher tolerances in specialized applications where stronger mechanical, thermal and chemical resistances are required, it may be post cured as follows: After 4 hours initial cure, raise temperature slow to 212F/100C for 4 hours. (This can highly enhance compressive, flexural, pull of adhesion and thermal properties can be enhanced. Consult with EMP Technical for specification # PC-ME-41970 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.

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.



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EMP Release Agent PN# 1126 can be used in areas where Industrial 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

\*This product is conveniently packaged in pre-measured kits ready to mix and apply. Each kit contains hardener and resin. Remove the appropriate amounts by volume of resin and hardener to be used on the non absorbing mixing board supplied in the kit. Lay both parts side by side to determine the measurement by volume. 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 however, small batches can be mixed with appropriate volume measurements. Be sure to always check the ratios on the product containers. Small mixing spoons and cups may be used for accurate volume mixes. (For eg: If volume measurement of a product is 3:1, then fill 3 filled cups of Resin to 1 cup of hardener, remove all the contents to a mixing board and mix to an even, smooth, streak free consistency.

### 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 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 on top less than 1/4" and allow to dry.

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

- 1) Apply a thin layer using a stiff bristle brush
- 2) Apply 1/16 layer of Industrial Metal
- 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 Industrial metal on both sides
- 5) Affix Fiberzite on the previously applied layer using a brush with a dabbing and brushing motion making



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sure there are no air pockets between the fabric and the Industrial Metal.

- 6) Apply final coat of Industrial Metal at 1/16" 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 INDUSTRIAL METAL OR ALLZITE

### *PATCHING:*

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

SHAFTS & BEARING HOUSING REPAIRS & OTHER SPECIALTY REPAIRS : Consult E.M.P Inc. guidelines & specifications or contact EMP Technical Department for assistance. Our field engineers will guide you through your specific repairs step by step for proper procedures and techniques in application.

### *COMPATIBILITY:*

Industrial Metal Epoxy can be used as a standalone system for metal refurbishment. It may also be used in conjunction with other E.M.P. systems as the final protection or main bonding layer. All E.M.P. Inc metal repair systems are designed to be compatible to one another to produce a homogeneous system.

### *Vertical & overhead surface applications:*

Industrial Metal may be applied at 3/8" thickness (per coat) on vertical/overhead applications and thus completely sag free. It may be built up to the thickness desired.

### *Horizontal surface applications:*

Industrial 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 INDUSTRIAL METAL specification # 1911LT

## **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**

### INDUSTRIAL METAL EPOXY , PN# 781

454 gram/Kit (Hardener & Epoxy)



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- 1 - Mixing Board
- 1 - Fiberzite Reinforcement Tape
- 1 - Spatula Set
- 1 - Paddle
- 1 - Applicator
- 1 - Stiff Bristle Brush

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INDUSTRIAL METAL EPOXY , PN# 781B

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

INDUSTRIAL METAL EPOXY, PN# 727

454 grams/Kit (Hardener & Epoxy)

- 1- Mixing Board
- 1 -Fiberzite Reinforcement Mesh
- 1 -Spatula Set
- 1- Paddle
- 1- Applicator
- 1 -Stiff Bristle Brush

INDUSTRIAL METAL EPOXY, PN# 727B

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

INDUSTRIAL METAL EPOXY, PN 772C - Customized Formulation, Specification 24182-7

***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 Industrial Metal and other epoxies shouldn't adhere to. (eg: forming casting metal components/molds etc)

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(Fig 1) Active Leak on a 54" saltwater Intake.  
Cracked pipe with a 1.5" hole. Extreme Corrosion.



(Fig 2) - Active Leak Stopped by LEAKLOX Epoxy #403  
Followed by Industrial Metal w/Fiberzite Reinforcement



(Fig 3) - Steel Plate bonded with Industrial Metal  
over the repair area.



(Fig 4) - A top coating of RUBBEREX Epoxy Liquid  
applied to steel plate for protection from corrosion.

Materials & Products Used: Industrial Metal Epoxy, Leaklox Epoxy #403, Fiberzite Reinforcement Tape, Rubberex Epoxy Liquid, EMP Metal Cleaner #701, Grinder & Orbital Sander, Rags, Mixing Board, Spatulas, Applicators, Stiff Bristle Brush, Paddles.

Data Sheet: Revision 1.

**Safety Information, Warranty & Limited Liability 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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