

**PRODUCT DESCRIPTION**

LIQUID METAL EPOXY was originally formulated for specialty applications and has been in use since 1983. With a long track record, this two component composite is made with super crosslink technology and yet maintains its flowable, self leveling properties. This pourable metal is reinforced with ferro-silicon/metal alloys producing a strong, solvent free, non-rusting, non shrink, fully machinable formulation. Designed to flow into voids and crevices creating an impact resistant steel layer where paste grade epoxies will not work. Can be used for leveling, anchoring, etc. Excellent as a anti-skid coating on metal surfaces, diamond plates, concrete ramps, steps with the addition of E.M.P Grip Quartz #5,#6 & #7 Series based on the amount of slip resistance required. Exhibits tenacious bond to all metals & concrete and resistance to most MRO chemicals. Sectors in use: Industrial and marine applications.

**INTENDED USES**

- Creating strips or bands of anti-slip areas to increase friction to metal & concrete ramps, diamond plates, concrete & metal steps, fire escapes, ladders, worn stair tread plates, vehicle step ups etc.
- Provides anti-slip or increase friction to rollers, conveyor drive drums, etc with broadcasting E.M.P. Inc Grip Quarts 5,6,7 Series depending on level of friction desired.
- Leveling machinery plates
- Mold making
- Filling voids & crevices where paste grade epoxies won't reach
- Plate bonding
- Excellent anti-slip band creation where rain and wet plant floors could create a risk of fall and injuries

**BENEFITS**

- Super adhesion, chemical, impact, friction resistant epoxy system.
- Can be poured up to 3/4 inches per layer.
- High build self leveling liquid that flows into hard to reach areas.
- 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 cup, stiff bristle brush, mix paddle.
- Highly chemical resistant to most chemicals.
- Excellent bonding to steel, aluminum, copper, brass, stainless steel and concrete.

**PRODUCT SPECIFICATIONS**

<b>Performance Data</b> □	<b>#919</b>
Color	Grey
Adhesive Tensile Shear(ASTM D1002)	2950psi
Compressive Strength (ASTM D685)	11500 psi
Cured Hardness Rating (Shore D)	85

**TECHNICAL DATA SHEET**

**Liquid Metal Repair, Rebuilding & Friction Composite - Liquid Grade**

Coverage per kit @ 1/32" or 31.25 mils (WFT) Note: account for waste, surface roughness, thickness.	~200 sq in/kit
Dielectric Strength	30 volts/mil
Flexural Strength (ASTM D790)	7250 psi
Initial Cure @ 75F/24C	4 Hours
Full Cure @ 75F/24C	24 Hours
Full Immersion @ 75F/24C	2 days
Machinable @ 75F Cure Time	12 hours
Pot Life (Working Time)	30 min @ 75F
Pull of adhesion (ASTM D4541)	2950 psi
Ratio Mix by Volume	3:1
Recoat Window @ 75F/24C	3 hours
Shrinkage	0%
Temperature Resistance Dry	275F/121C
Temperature Resistance Wet (Immersion)	145F/54C

**\*Cure Time:** Liquid Metal cures faster with warmer temperatures and slower with colder temperatures. Temperatures will affect the pot life, recoat window, 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:*

Liquid 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 2 hours initial cure, raise temperature slow to 200F/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-919 if post curing is desired.

**SURFACE PREPARATION**

*Metals:*

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.

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-

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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 Liquid 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.

*Concrete:*

Concrete should be sound, free from cracks, spalls and damage. Areas must be leveled using E.M.P. Inc concrete polymer repair products if there is damage. Newly poured concrete must be allowed to dry for a minimum of 30 days. Manually grind, scarify or shot blast areas. Vacuum and remove all dust. Surfaces should be completely dry, oil and residue free. Optional: For best results, Conclox Primer TH can be used to seal concrete porosity and provide a proper sealed surface.

**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.

***Anti-Skid, Anti-Slip & Machinery Friction Based Applications:***



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Tape all areas to be coated especially anti-slip stripes or bands installed. Based on the slope & level of the area, coating thickness can be adjusted. Apply using a stiff bristle brush supplied in the kit at approximately 15-20 mils wet film thickness. Immediately broadcast and flood the area Grip Quartz #5(light grip) , #6 (Medium Grip) or #7 Heavy Grip. Allow to dry for 24 hours and vacuum any loose quartz from applied sections.

*Pouring, Rebuilding & Leveling Applications:*

Pour mixed Liquid Metal in the area up to 3/4" per layer. Liquid Metal will heat up as it starts to cure. To build up successive layers, allow first layer to cool and apply within the recoat window. In certain situations, wood or plastic forms may be employed to contain the material and cure in place especially when in-situ applications are being conducted. Please consult with E.M.P. Inc technical department for your specific application needs.

*COMPATIBILITY:*

Liquid Metal can be used as a standalone system. It may also be used in conjunction with other E.M.P. systems as the final protection top coat, main bonding layer or a base layer to other specialized coatings for corrosion, erosion, chemical resistant and high temperature coatings. All E.M.P. Inc metal repair systems are designed to be compatible to one another to produce a monolithic system.

**Lathing & Machining**

Please consult with E.M.P. Inc technical department for lathe specifications for LIQUID 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**

LIQUID METAL, PN# 919

454 grams/Kit (Hardener & Epoxy)

- 1- Mixing container
- 1 -Stiff Bristle Brush
- 1- Paddle

LIQUID METAL, PN# 919B

(same as above without spatula, mixing container, paddle & stiff bristle brush)

LIQUID METAL, PN 921 - Customized Formulation, Specification 921



TECHNICAL DATA SHEET

**LIQUID METAL**

Product Codes: 919

**Liquid Metal Repair, Rebuilding & Friction Composite - Liquid Grade**

***Optional, Additional Products:***

E.M.P Grip Quartz #5 (Light traction), #6 (Medium traction)& #7 (Heavy Traction) - Sold Separately

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

**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

Liability, if any, is limited to replacement of products or net selling price of the product; EMPCORR shall not be liable for incidental or consequential damages, direct or indirect including but not limited to lost profits, down time, damages to property of the purchaser or other persons, bodily harm or injuries to purchaser or other persons, or damages for which the purchaser may be liable to other persons, whether or not occasioned by EMPCORR's negligence. Acceptance of delivery of our product means that you have accepted the terms of this notice, warranty and liability whether or not orders or other documents state terms that vary from this warranty. Our products contain chemicals that may cause serious physical injury. Before using, read the safety data sheet and follow all safety precautions, and use proper protective equipment (PPE) to prevent bodily harm before using the product.