ENGINE BLOCK REPAIR EPOXY

TECHNICAL DATA SHEET

Product Codes: 574, 583

Engine Block Repair & Rebuilding Composite - Paste Grade

PRODUCT DESCRIPTION

ENGINE BLOCK REPAIR EPOXY is a two component epoxy composite made with specialty resins, hardeners, adhesion promoters combined with ferro-silicon alloys. Due to its unique composition, it is predominantly used to seal cracked & damaged engine blocks in the automotive industry. 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 metal as well as high temperature resistance . Sectors in use: Industrial, automotive and marine applications.

INTENDED USES

- Repair of cracked engine blocks, water jackets, cylinder heads, etc.
- Cracked oil pans, etc.

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

Performance Data ▪▫	**#574**	**#583**
Color	Dark Grey	Dark Grey
Adhesive Tensile Shear(ASTM D1002)	2850	2500
Compressive Strength (ASTM D685)	13200 psi	15500 psi
Cured Hardness Rating (Shore D)	85	87
Coverage per kit @ 1/4" Note: account for waste & surface roughness	47.5 sq in/kit (6"x8"x1/4")	47.5 sq in/kit (6"x8"x1/4")
Dielectric Strength	35 volts/mil	55 volts/mil
Flexural Strength (ASTM D790)	9500 psi	8300 psi
Initial Cure	2 hours @ 75C/24C	4 hours @ 75C/24C
Full Cure	24 hours @ 75C/24C	24 hours @ 75C/24C
Full Immersion	36 hours @ 75C/24C	48 hours @ 75C/24C
Machinable @ 75F Cure Time	2 hours	5 hours and < 22 hours
Pot Life (Working Time)	20 min @ 75C	20 min @ 75C
Pull of adhesion (ASTM D4541)	3190 psi	3100 psi
Ratio Mix by Volume	3:1	3:1
Shrinkage	0%	0%
Temperature Resistance Dry Temperature Resistance Wet (Immersion)	400F/204C 150F/66F	350F/1764C 150F/66F

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***Cure Time:** Engine Block Repair Epoxy 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.

Optional Optimum Performance Requirement:
For general repairs, Engine Block Repair Epoxy 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-574 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, bevel or open the crack further using a Dremel tool or grinder. 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 Engine Block Repair Epoxy shouldn't adhere to. (e.g.: 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.

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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 e.g.: 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. Eye balling volume measurements is acceptable.

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.

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

1) Apply a thin layer using a stiff bristle brush
2) Then apply 1/16"-1/8" layer of Engine Block Repair Epoxy
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 by firmly pressing a thin layer of Engine Block Repair Epoxy on both sides on the mixing board.
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 Engine Block Repair Epoxy.
6) Apply final coat of Engine Block Repair Epoxy 1/16"-1/8" over the Fiberzite fabric.
7) Allow to dry as per product spec.

Vertical & overhead surface applications:

Engine Block Repair Epoxy may be applied at 3/8” thickness (per coat) on vertical/overhead applications

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and thus completely sag free. It may be built up to the thickness desired.

Horizontal surface applications:

Engine Block Repair 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 ENGINE BLOCK REPAIR EPOXY specification # 574-585LT

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

ENGINE BLOCK REPAIR EPOXY, PN# 574
454 gram/Kit (Hardener & Epoxy)
1 - Mixing Board
1 - Fiberzite Reinforcement Tape
1 - Spatula Set
1 - Paddle
1 - Applicator
1 - Stiff Bristle Brush

ENGINE BLOCK REPAIR EPOXY, PN# 574B
(same as above without Mixing board, Fiberzite, spatula, paddle, applicator & stiff bristle brush)

ENGINE BLOCK REPAIR EPOXY, PN# 585
454 grams/Kit (Hardener & Epoxy)
1- Mixing Board
1 -Fiberzite Reinforcement Mesh
1 -Spatula Set
1- Paddle
1- Applicator
1 -Stiff Bristle Brush

ENGINE BLOCK REPAIR EPOXY , PN# 585B
(same as above without Mixing board, spatula, paddle, applicator & stiff bristle brush)

ENGINE BLOCK REPAIR EPOXY , PN 587 - Customized Formulation

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 Engine Block Repair Epoxy and other epoxies shouldn't adhere to. (e.g.: forming, casting metal components/molds, etc.)

Fig 1. Crack in water jacket about 4"-5".

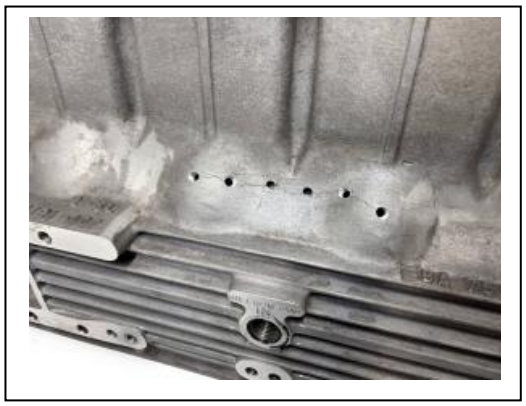

Fig 2. Drill & Tap procedure conducted to stop crack mitigation.

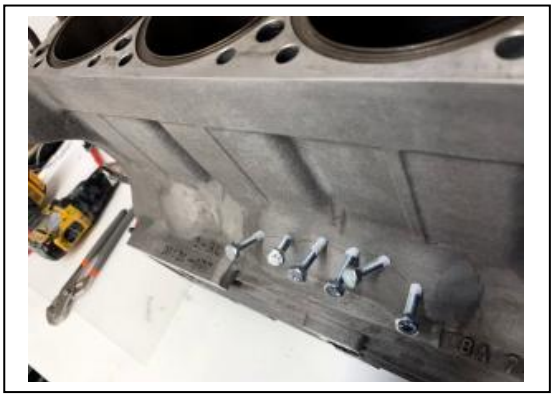

Fig 3. Bolts inserted through the crack.

Fig 4. Bolts cut/grinded flush. Area mechanically prepared and cleaned.

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Fig 5. a)Brush thin coat b) apply epoxy c)install Fiberzite fabric
d) apply Engine Block Repair Epoxy again as per product spec.

Data Sheet: Revision 1.

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Warranty Information

EMPCORR
HIGH PERFORMANCE POLYMERS

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 warranties 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.

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