CERALOY 439 is a hybrid two component, specialty blend of micro-ceramic alloy filled polymer epoxy paste grade used to repair/rebuilding metal substrates affected by corrosion, erosion & cavitation on various fluid flow equipment. Excellent as non-sag compound for vertical applications up to 1/2”.

**INTENDED USES**

- Rebuild worn, pitted and gouged pump internals, pump casings, impellers, heat exchangers, tube sheets, kurt nozzles, butterfly gate valves
- Forming irregular load bearing shims due to its high compressive strength
- Repair and protection of old and new equipment

**BENEFITS**

- Solvent Free & Non-Shrink
- Chemical, Corrosion, Abrasion, Erosion Resistant
- Immersion grade
- Easy mix ratio, no special tools required
- No hot work involved
- Sold as kit containing applicators, spatula and mix boards
- Highly chemical resistant to most chemicals
- Excellent bonding to steel, aluminum, copper, brass, stainless steel
- Maybe coated with Ceraloy 403 for a high wear, chemical resistance and turbulence reducing properties.

**PRODUCT SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Performance Data</th>
<th>#439</th>
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</thead>
<tbody>
<tr>
<td>Color</td>
<td>Blue, Green, Gray</td>
</tr>
<tr>
<td>Adhesive Tensile Shear (ASTM D1002)</td>
<td>2250psi</td>
</tr>
<tr>
<td>Compressive Strength (ASTM D695)</td>
<td>13000 psi</td>
</tr>
<tr>
<td>Cured Hardness Rating (Shore D)</td>
<td>85</td>
</tr>
<tr>
<td>Coverage per kit @ 1/4” Note: account for waste &amp; surface roughness</td>
<td>1.25 sq ft</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>365 volts/mil</td>
</tr>
<tr>
<td>Flexural Strength (ASTM D790)</td>
<td>6500 psi</td>
</tr>
<tr>
<td>Initial Cure</td>
<td>5 Hours @ 75F/24C</td>
</tr>
<tr>
<td>Full Cure</td>
<td>24 Hours @ 75F/25C</td>
</tr>
<tr>
<td>Full Immersion (Water) @ 75F/25C</td>
<td>24 Hours</td>
</tr>
<tr>
<td>Full Immersion (Chemicals) @ 75F/25C</td>
<td>36 Hours</td>
</tr>
<tr>
<td>Machinable @ 75F Cure Time</td>
<td>&lt;15 hours</td>
</tr>
<tr>
<td>Pot Life (Working Time)</td>
<td>20 min @ 75F</td>
</tr>
<tr>
<td>Pull of adhesion (ASTM D4541)</td>
<td>2890 psi</td>
</tr>
<tr>
<td>Ratio Mix by Volume</td>
<td>Pre-Measured</td>
</tr>
<tr>
<td>Recoat Window Max @ 75F/24C</td>
<td>2 hour</td>
</tr>
<tr>
<td>Shrinkage</td>
<td>0%</td>
</tr>
</tbody>
</table>
**TECHNICAL DATA SHEET**

**Temperature Resistance Dry**
375°F/190°C

**Temperature Resistance Wet (Immersion/Water)**
160°F/71°C

*Cure Time:* Ceraloy Series 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. Pot Life can be extended if mixed material is further divided into smaller containers or poured on a flat paint pan. Please consult with EMP Inc.

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**SURFACE PREPARATION**

1) Surfaces must be clean, dry, free of oils and foreign matter. Remove any rust or oxidation. For optimum results (highly recommended) metals must be properly prepared with grit blasting and achieve a surface profile of 3-5 mil. Grit media must produce an angular surface profile. If grit blasting is not available, use a grinding wheel (or contact EMP for Bristle Blaster) with a metal disc to achieve white metal finish. Proper profiling creates a tenacious mechanical bond and durability.

2) If substrate to be coated was exposed to salt water (eg: sea water), prepare as follows:
   a) Grit Blast Surface as per specifications above
   b) Wait 24 hours for salts to leech out of the metal substrate
   c) Thoroughly wash the surface
   d) Brush blast the surface
   e) Blow off or vacuum surface to remove dust and residue
   f) Chloride contamination test should read < 40 mgs

OR

a) Grit Blast Surface as per specifications above
b) Spray or brush on EMP Inc, SALZITE #45 (Salt Neutralizing Compound) and wet out substrate
c) Wash down the area using a pressure washer or water hose using clean water, vaccum and allow to dry.
   Please contact EMP Inc for further technical advice on SALZITE #45, application and procedures.

Note: Flash rust may occur after grit blasting. If doing a large area and CERALOY 439 cannot be applied within an hour, please spray FLASHLOX #48 to prevent flash rust. FLASHLOX will hold a grit blasted profile for 24 hours and will give you ample time to return and coat.

3) Blow off, vaccum or wipe off any dust from surface preparation.

4) 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 if necessary and allow to dry properly. Begin application of CERALOY 439 immediately on the newly prepared surface before substrate starts to oxidize or produce flash rust.
EMP Release Agent PN# 1126 can be used in areas where CERALOY 403 shouldn't adhere to.

Mixing

*This product is conveniently packaged in pre-measured kits ready to mix and apply. Each kit contains hardener and resin. Remove resin and hardener on the mixing board supplied. Using a large spatula, mix both components by lifting and "spackling down" motion until an even smooth streak free consistency is achieved.

Note: Mixing full kits is always highly recommended for mix and cure consistency. In certain cases, small batches can be mixed with appropriate weight measurements only (not volume measurements). Use this method sparingly or unless absolutely necessary. Obtain an accurate and calibrated digital weight scale. The kit may be divided into halves by weight. Divide Resin container into 2 parts using two small cups and weigh both parts until they are of equal weight. Do the same for the hardener container. The end result is 2 half kits. Mix as above. Read product label for further instructions of volume measurements.

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 product at 40F/4.5C or above. Heaters may be used by enclosing area with plastic to elevate the temperature for proper application.

Humidity Considerations:
In general, it is best to avoid applying coating materials to a surface whose temperature is within 5°F of the dew point temperature. Or when humidity exceeds 90%.

Check Pot Life (working time) in above specifications and apply within this specified time.

Coverage Recommendations:
Note: Account for rough surfaces and waste.

Apply the mixed CERALOY 439 with the spatulas supplied. Apply material with firm pressure into the damaged metal by pushing material in making sure there are no voids in product. Overfill the material and then bring back to level of substrate using the spatulas. Alternatively, after cure (<15 hours), Ceraloy 439 can be machined down to bring back to level using a grinder. CERALOY 439 is extremely hard to machine after full cure hence mechanical leveling must be done in the appropriate times.
COMPATIBILITY:

Ceraloy 439 can be used as a standalone system for metal. It may also be used in conjunction with CERALOY 403. All E.M.P. Inc metal repair systems are designed to be compatible to one another to produce a monolithic system.

Lathing & Machining

Machining Ceraloy 439 and Ceraloy Series of products are extremely hard using conventional techniques. These products may be machined using diamond bits or proper grinding equipment.

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

CERALOY 439
3 lb/Kit (Hardener & Epoxy)
1 - Paddle
Spatulas
Mixing Board (Non-Absorbing)
Gloves

CERALOY 404 , PN# 404 (Available in Gray, Green & Gray)/ Custom Formulation
CERALOY 405 , PN# 405 (Available in Gray, Green & Gray)/Custom Formulation

Optional, Additional Products:

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

EMP Release Agent PN# 1126 - can be used in areas where Ceraloy 439 and other epoxies shouldn't adhere to. (eg: forming casting metal components/molds etc)
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.

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