

mClad™ Metal

Product Technical Data

MCOR™ 3310

MCOR™ 3310 (mClad™ Metal) is an engineering grade, steel alloy reinforced epoxy. Thixotropic with high molecular weighing reactive polymers and oligomers; the molecular metal is utilized as a trowel grade paste-like polymer to restore, repair and reclaim metal components of engineering grade machinery, equipment, and other mechanical components. The mClad™ Metal is often utilized as a high strength structural epoxy filler for load bearing correction, tooling and machining. It may be drilled, tapped, filed or machined for repair of equipment and parts that may require precision finishing. Once cured, the material replaces worn or lost metal and restores metallic profile with polymechanical bonding and reinforcing as a cold-weld alternative. Exhibits good heat tolerance and advanced wear resistance cladding as a solution for a wide range of industrial applied solutions.

Applications Include

- Oversized bearing / bush housings
- Cavitated impellers / propellers
- Fractured and holed casings / blocks
- Corrosion cells and tank leaks
- Sloppy keyways
- Scored machine beds
- Flange faces
- Fractured pipes
- Pitted and warped valves
- Other metal filling, repair, and reclamation needs

Features

- Machinable
- Abrasion, heat, and chemical resistance
- 100% solid
- Convenient 1:1 ratio by volume
- Cold-weld alternative

Film Thickness & Theoretical Coverage

Approximate coverage per 1 kilogram covers .26 m² at 1 cm. thickness (1 pound covers 21 in² at 0.5 in. thickness).

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MCOR™ 3310 (mClad™ Metal) is a thixotropic material intended to be applied in various controlled applications for specific needs, and can be further controlled by sanding/machining for precision dressing. Intended as a cladding epoxy or filler at various thicknesses, the mClad™ Metal can be applied at any thickness up to 1.25 cm (1/2 inch) per pass without sagging, without mechanical support; and thicker if applied in multiple passes or with mechanical support (ie- MCOR™ FG and/or MT Mesh, weld rods, metal and fabric scrim)

Surface Preparation

The success of any coating application is directly proportional to the completeness of the substrate preparation and the care the application crew puts into the application. Surface must be clean and sound. Verify that the temperature of the surface is at least 3 degrees C (5 degrees F) higher than the dew point temperature to preclude condensation.

Metal: Before preparing steel, please inspect and remove oil, grease, or other contaminants - "Solvent Cleaning" (SSPC-SP1) may be required. Grind any weld spatter or steel weld inconsistencies. Abrasive blasting (or other approved mechanical methods) to SSPC SP-6/NACE No. 3 "Commercial Blast Cleaning" must be used in order to achieve a clean surface with a minimum profile of 25 microns (1 mil); remove dust and debris by high compressive air or solvent cleaning (SSPC-SP1) may be required again. MCOR™ MTe (or MTw) Primecoat™ is advised as a primer should the substrate be susceptible to flash-rusting.

Application Method

Material is supplied in two (2) containers (base+cure) as a unit. If possible, always mix a complete unit in the proportions supplied. Use a calibrated scale to weigh out each component or use measuring cups to measure by volume. Adding more or less hardener will adversely affect the cured physical properties.

Measure the material temperature prior to mixing. If the material is cooler than 16 °C (60 °F), raise its temperature slowly to above 22 °C (72 °F). For published working time to remain manageable, do not exceed 32 °C (90 °F).

After the components have been measured on a clean, flat mixing board, mix thoroughly with a trowel/spatula/putty-knife until the mixture becomes a uniform in color and viscosity with no visible streaks or lumps (2 - 3 minutes). Incomplete mixing will result in loss of physical properties and unmixed/mal cured patches.

Apply the mixture immediately with a trowel/spatula/putty-knife. Cover large holes or cracks with mechanical support (ie- MCOR™ FG and/or MT Mesh, weld rods, metal and fabric scrim) and apply mClad™ mFill™ over the patch and onto an adjacent solid area. Pipes can be repaired by coating a cloth "bandage" with mClad™ mFill™ and wrapping the bandage around the pipe. An additional layer of mClad™ Metal should be applied over the bandage.



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Important! Although the technical details and recommendations contained in this data sheet correspond to the best of our knowledge and experience, all the above information must, in every case be taken as merely indicative and subject to confirmation after long-term practical applications; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product. The sole liability of MCOR and Epoxytec International, Inc. for any claims out of the manufacturer's use of sale of its products shall be for the buyer's purchase price.

Revised: 2013-10-16



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Packaging & Color

A unit is a two-component (base+cure)

The volume capacity of 1 kg. of mixed MCOR™ 3310 is 379 cm³ (23.1 in³).

mClad™ Metal is available in:

- Dark Grey (DGY)

Storage & Handling

Shelf life: 36 months, sealed.

Store in a dry area away from direct sunlight.

The material should be conditioned to between 24 °C (75 °F) and 35 °C (95 °F) before use.

Clean tools with MCOR™ #5 Cut & Clean.

Thinning

Thinning is not advised.

Safety

Consult Material Safety Data Sheet (MSDS) for all material safety information.

Technical Properties

Type:		Thixotropic Metal Epoxy
Base component (consistency):		Paste
Base component (color):		Dark grey
Solidified component (consistency):		Paste
Solidified component (color):		Grey
Finish:		Matte
Mixing ratio		1 : 1 (by volume) 0.8 : 1 (by weight)
Solids by volume:	ASTM D2697	100%
Solvents (VOC) by volume:		0%
Bond strength (steel):	ASTM D4541	82 Bar (1200 psi)
Durometer		88 Shore D
Impact Strength:		2.4 m- 0.45 kilo (7.9 ft-lb)
Tensile strength:	ASTM D 638	28.9 MPa (4,200 psi)
Flexural strength:	ASTM D 790	51 MPa (7,400 psi)
Compressive strength:		96.5 MPa (14,000 psi)
Temperature exposure (dry):		-26 °C – 150 °C (-15 °F – 302 °F)
Temperature exposure (wet-max):		120 °C (248 °F)
Wear resistance (% weight loss):		0.3% (high velocity media)
Pot life:		20 min. @ 20 °C @ 200g mass

Cure Table

TEMPERATURE	41 °F (5 °C)	50 °F (10 °C)	59°F (15°C)	68 °F (20 °C)	77°F (25°C)	86 °F (30 °C)
Movement or use involving no loading or immersion (min.)	<u>4</u> hrs	<u>3.5</u> hrs	<u>3</u> hrs	<u>2</u> hrs	<u>2</u> hrs	<u>1.5</u> hrs
Machining and/or light loading (min.)	<u>6</u> hrs	<u>5</u> hrs	<u>5</u> hrs	<u>3</u> hrs	<u>2.5</u> hrs	<u>2</u> hrs
Full electrical, mechanical or thermal loading (min.)	<u>18</u> hrs	<u>14</u> hrs	<u>12</u> hrs	<u>7</u> hrs	<u>6</u> hrs	<u>5</u> hrs
Immersion in chemicals (min.)	<u>36</u> hrs	<u>24</u> hrs	<u>24</u> hrs	<u>18</u> hrs	<u>16</u> hrs	<u>14</u> hrs



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