

MCOR™ 3115 (mClad™ mFill™) is a two-component, high strength, extremely forgiving/tolerant, vertical and overhead, non-sag, epoxy composite paste, packaged in a convenient 1:1 mix ratio to use a general industrial grade repair, reclaiming, resurfacing, patch filler for metal. The MCOR™ 3115 provides point-of-use application to save time and material. Highly tolerant for challenging areas, including wet. The material has a wide variety of applications, and is often sought for steel, and other metal repairs, filling, patching, and as a bonding adhesive. Epoxy-based, and highly modified with fibers and ceramics, the material is a durable, sealed protective solution to combat corrosion.

Applications Include

MCOR™ 3115 is versatile, often utilized as cladding epoxy, metal reclaimer, and/or mechanical filler.

- Oversized mating and gaps
- Metallic faces and filling
- Fractured pipes and components
- Pitted metal reclaiming
- Anchoring and adhesive
- Fractured, holed, leaking trays, tanks, hulls or vessels
- Other metal filling, repair, and reclamation needs

Features

- Ease-of-application
- 100% solid
- Ceramic filled, fiber reinforced
- For all metals
- Able to feather and taper
- Convenient 1:1 ratio by volume
- Surface tolerant
- High build, non-sag
- Sealed corrosion resistance

Volume Capacity / Theoretical Coverage

The volume capacity of 1 kg. of mixed MCOR™ 3115 is 1,000 cm³ (61 in³). Approximate coverage per 1 kilogram covers 1,000 cm² at 1 cm. thickness (1 kg covers 122 in² at 0.5 in. thickness).

Film Thickness

MCOR™ 3115 is a thixotropic material intended to be applied in various controlled applications for specific needs, and may be further controlled by sanding for uniformed dressing. Intended as a cladding epoxy or filler at various thicknesses, the MCOR™ 3115 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 (reinforcement 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 75 microns (3 mils); remove dust and debris by high compressive air or solvent cleaning (SSPC-SP1) may be require again. MCOR™ 9521 | Primecoat™ MTe is advised as a primer should the substrate be susceptible to flash-rusting, to stripe coat any edges or bends in the metal for enhancing peak retention, or should the metal not possess the characteristics to achieve optimal profiling capability.

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 (reinforcement mesh, weld rods, metal and fabric scrim) and apply MCOR™ 3115 over the patch and onto an adjacent solid area. Pipes can be repaired by coating a cloth "bandage" with MCOR™ 3115 or other 3000 (mClad™) series product and wrapping the bandage around the pipe. An additional layer of MCOR™ 3115 should be applied over the bandage.

Note: MCOR™ 3115 can be force cured with interval dry heat; do not exceed 90 °C (200 °F) and apply heat intermittently to avoid overheating.



mClad™ mFill™ Product Technical Data

MCOR™

3115

Packaging & Color

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

MCOR™ 3115 is available in:

- Dark Grey

Thinning

Thin with MCOR™ 9001 | #1 Reduction not to exceed 2% by volume.

Safety

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

Storage & Handling

Shelf life: 5 years, sealed.

Store in a dry area away from direct sunlight.

Clean tools with MCOR™ 9015 | #5 Cut & Clean.

Limitations

Apply in good weather when air and surface temperatures are above 16 °C (60°F). For optimum application properties, condition the material to 22 °C (72 °F) temperature range prior to mixing and application.

Technical Properties

General

Type:	Thixotropic Epoxy	Mixing ratio (by weight):	1:1
Base component (consistency):	Paste	Mixing ratio (by volume):	1:1
Base component (color):	Dark grey	Solids by volume:	ASTM D2697 100%
Solidified component (consistency):	Paste	Solvents (VOC) by volume:	ASTM D2697 0%
Solidified component (color):	Light grey	Pot life (200g mass @ 20 °C):	25 min.
Finish:	Matte	Curing schedule (200g mass @ 20 °C):	4.5 hours (dry to touch) 24 hours (return-to-service)
Water absorption:	0.02%		

Adhesion

Tensile adhesion (pull-off bond strength)

In accordance with ASTM D4541/ISO 4624, the pull off strength from abrasive blasted steel yields on average:

18.25 MPa (2,647 psi)

Elongation & Tensile Properties

In accordance with ASTM D638, typical values will yield:

Tensile strength: 18.2 MPa (2,638 psi)

Tensile elongation: 2.69 %

Young's Modulus: 669 MPa (0.97 x 10⁵ psi)

Hardness

Shore D

In accordance with ASTM D2240, typical values will yield:
82

Barcol

In accordance with ASTM D2583, typical values will yield:
74

Flexural Properties

In accordance with ASTM D790, typical values will yield:

Flexural strength: 30.8 MPa (4,470 psi)

Flexural modulus: 1,710 MPa (2.48 x 10⁵ psi)



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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.

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Compressive Properties

In accordance with ASTM D695, test pieces on various sizes, with no backing and with steel backing, at both ambient cure and at heated cure yield:

Compressive strength (average)

121.5 MPa (17,613 psi)	3mm @ ambient cure / no backing
154.9 MPa (22,454 psi)	3mm @ 100 °C cure / no backing
74.5 MPa (10,800 psi)	3mm @ ambient cure / steel backing
74.5 MPa (10,800 psi)	3mm @ 100 °C cure / steel backing
80.0 MPa (11,594 psi)	6mm @ ambient cure / no backing
135.7 MPa (19,663 psi)	6mm @ 100 °C cure / no backing
74.5 MPa (10,800 psi)	6mm @ ambient cure / steel backing
74.5 MPa (10,800 psi)	6mm @ 100 °C cure / steel backing

Average: 98.8 MPa (14,300 psi)

Compressive yield (average)

64.6 MPa (9,364 psi)	3mm @ ambient cure / no backing
33.7 MPa (4,885 psi)	3mm @ 100 °C cure / no backing
74.5 MPa (10,800 psi)	3mm @ ambient cure / steel backing
74.5 MPa (10,800 psi)	3mm @ 100 °C cure / steel backing
37.3 MPa (5,408 psi)	6mm @ ambient cure / no backing
18.7 MPa (2,714 psi)	6mm @ 100 °C cure / no backing
74.5 MPa (10,800 psi)	6mm @ ambient cure / steel backing
74.5 MPa (10,800 psi)	6mm @ 100 °C cure / steel backing

Average: 56.5 MPa (8,200 psi)

Compressive modulus (average)

20,086 MPa (29x10 ⁵ psi)	3mm @ ambient cure / no backing
7,487 MPa (10.8x10 ⁵ psi)	3mm @ 100 °C cure / no backing
4,078 MPa (5.91x10 ⁵ psi)	3mm @ ambient cure / steel backing
3,250 MPa (4.71x10 ⁵ psi)	3mm @ 100 °C cure / steel backing
5,361 MPa (7.77x10 ⁵ psi)	6mm @ ambient cure / no backing
2,636 MPa (3.82x10 ⁵ psi)	6mm @ 100 °C cure / no backing
1,980 MPa (2.87x10 ⁵ psi)	6mm @ ambient cure / steel backing
1,953 MPa (2.83x10 ⁵ psi)	6mm @ 100 °C cure / steel backing

Average: 5,853.8 MPa (8.49x10⁵ psi)

Temperature Resistance

Wet heat resistance

Wet heat resistance, performed by immersion of free film coupon to water and refined mineral oil (water soluble motor/cutting oil) for 24 hours @ 120 °C (248 °F) yielded:

Water - No Blistering, softening, loss of adhesion, or any deleterious effects. Slight change in color.

Oil - No Blistering, softening, loss of adhesion, or any deleterious effects. Slight change in color.

Dry heat resistance

The dry heat resistance (initial degradation temperature in air) accordance with ISO 11357, with dynamic heat from 25 – 350 °C, using differential scanning calorimetry (DSC), average heat resistance yielded an average heat resistance of:

208 °C (406 °F)

