

MCBOND COLD WELDING COMPOUND

PRODUCT TECHNICAL DATA SHEET ورقة البيانات الفنية للمنتج

GENERAL INFORMATION

Product Description:

McBond is a Two Component Metal filled epoxy compound, It is a surface tolerant High strength Epoxy, It reacts quickly to produce a tough & rigid Bond for lasting repair or Rebuild critical equipment and quickly return It to service, Minimizing expensive downtime & reducing costs. McBond is Ideal for use as a high strength structural bonding adhesive or for the creation of irregular load bearing shims.

APPLICATION INFORMATION

Application Areas:

When mixed and applied as detailed in the McBond Instructions for Use (IFU), the system is ideally suited where the surface is clean and free from Oil, Wax or Paint. In addition, the material cannot be applied underwater.

Application Methods

Plastic applicator and spatula

Application Temperature

Application should ideally occur in the following ambient temperature range: 41°F/5°C to 104°F/4 5°C

Cure Time

Cure times will vary depending on the ambient conditions. At 68°F/20°C, and a thickness of 0.25 in / 6 mm, mechanical loading is possible after 90 minutes. Consult the McBondIFU for specific details.

Working Life

The working life will vary according to the temperature. At 68°F/20°C, The above application information serves as introductory guide the McBond IFU for specific details. procedure/technique, refer to the Mc Bond

(Resin) Base Component

Colour: Grey

Form: Paste

(Hardener) Solidifier Component

Colour: Pale Yellow

Form: Liquid

Mixed Properties

Mixing Ratio by Weight : (Resin : Hardener) 80 : 20

Colour: Grey

Mixed Form: Paste

Mixed Density: 2.00 g/cm³

Slump Resistance: >0.5 in / >12.4 mm

For (ASTM D2369): details including the recommended application g/L IFU which is enclosed with each packaged product.

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ABRASION

Taber

When determined in accordance with ASTM D4060 the sliding Taber abrasion resistance will be:

Dry (CS17 Wheels)

54 mm³ loss per 1000 cycles (7 day cure at 68°F/20°C)

Wet (H10 Wheels)

1061 mm³ loss per 1000 cycles (7 day cure at 68°F/20°C)

ADHESION

Cleavage Adhesion

The Cleavage Adhesion on mild steel substrates, as determined in accordance with ASTM D1062, following a 7 day cure at 68°F/20°C, will typically be:

	Cleavage Adhesion	Failure Mode
Grit Blasted (SSPC-SP10) (ISO 8501-1 Sa2.5)	1680 pli / 295 N/mm	Cohesive
Ground (SSPC-SP11) (ISO 8501-1 St3)	1620 pli / 285 N/mm	Cohesive

Pull Off Adhesion

The PosiTest Dolly Pull Off Strength on 10mm thick mild steel, as determined in accordance with ASTM D4541 and ISO 4624, following a 7 day cure at 68°F/20°C, will typically be:

Grit Blasted (SSPC-SP10) (ISO 8501-1 Sa2.5)	Pull Off Adhesion
Clean & Dry	4220 psi / 29.1 MPa
Transformer Oil	4635 psi / 32.0 MPa
Wet	4665 psi / 32.2 MPa
Underwater	1925 psi / 13.3 MPa
Ground (SSPC-SP11) (ISO 8501-1 St3)	Pull Off Adhesion
Clean & Dry	4365 psi / 30.1 MPa
Transformer Oil	4105 psi / 28.3 MPa
Diesel	4430 psi / 30.6 MPa
Gearbox Oil	1880 psi / 13.0 MPa
Crude Oil	2670 psi / 18.4 MPa
Hydraulic Oil	3585 psi / 24.7 MPa
Fully Synthetic Motor Oil	3260 psi / 22.5 MPa
Wet	4100 psi / 28.3 MPa
Underwater	2500 psi / 17.2 MPa

ADHESION

Pull Off Adhesion

The PosiTest Dolly Pull Off Strength on Lead sheet, 6 mm glass and 10 mm thick glass reinforced epoxy (G.R.E), as determined in accordance with ASTM D4541 and ISO 4624, following a 7 day cure at 68°F/20°C, will typically be:

Substrate	Surface Preparation	Pull Off Adhesion
Lead	Roughing brush	1500 psi / 10.3 MPa
Glass	Solvent clean	1005 psi / 6.9 MPa *
Glass Reinforced Epoxy (G.R.E)	Frost blast	1580 psi / 10.9 MPa **
	Ground	1500 psi / 10.4 MPa **

*Cohesive failure of glass substrate

**Cohesive failure of G.R.E substrate

Tensile Shear Adhesion

The Tensile Shear Adhesion on mild steel substrates, as determined in accordance with ASTM D1002, following a 7 day cure at 68°F/20°C, will typically be:

Substrate	Grit Blasted (SSPC-SP10) (ISO 8501-1 Sa2.5)	Ground (SSPC-SP11) (ISO 8501-1 St3)
Clean & Dry	2615 psi / 18.0 MPa	2575 psi / 17.8 MPa
Transformer Oil	2920 psi / 20.1 MPa	2615 psi / 18.0 MPa
Wet	2170 psi / 15.0 MPa	1970 psi / 13.6 MPa
Underwater	2000 psi / 13.8 MPa	1915 psi / 13.2 MPa

The Tensile Shear Adhesion on various metal substrates, as determined in accordance with ASTM D1002, following a 7 day cure at 68°F/20°C, will typically be:

Substrate	Grit Blasted (SSPC-SP10) (ISO 8501-1 Sa2.5)	Ground (SSPC-SP11) (ISO 8501-1 St3)
Aluminum	1400 psi / 9.7 MPa	1440 psi / 9.9 MPa
Brass	2235 psi / 14.8 MPa	1450 psi / 9.4 MPa
Copper	1855 psi / 12.8 MPa	1825 psi / 12.6 MPa
Stainless Steel	2540 psi / 16.5 MPa	1665 psi / 10.5 MPa
Lead	-	270 psi / 1.9 MPa **

**Preparation with a roughing brush and Tensile failure of Lead

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CHEMICAL ANALYSIS

The mixed **McBond** has been independently analyzed for halogens, heavy metals, and other corrosion-causing impurities, with the following typical results:

Analyte	Total Concentration (ppm)
Fluoride	110
Chloride	552
Bromide	ND (<10)
Sulfur	157
Nitrite	ND (<7)
Nitrate	5
Zinc	11.5
Antimony	19.1
Tin	5.7
Arsenic, Bismuth, Cadmium, Lead, Silver, Mercury, Gallium and Indium	ND (<5.0)

ND : Not Detected

COMPRESSIVE PROPERTIES

When determined in accordance with ASTM D695, typical values will be:

Compressive Strength (Maximum)	
10935 psi / 75.4 MPa	(24 hour cure at 68°F/20°C)
12375 psi / 85.4 MPa	(7 day cure at 68°F/20°C)
14070 psi / 97.0 MPa	(24 hour post cure at 194°F/90°C)
15230 psi / 105.0 MPa	(7 day post cure at 194°F/90°C)
Compressive Strength (Yield)	
8590 psi / 59.2 MPa	(24 hour cure at 68°F/20°C)
10010 psi / 69.0 MPa	(7 day cure at 68°F/20°C)
10405 psi / 71.8 MPa	(24 hour post cure at 194°F/90°C)
10955 psi / 75.5 MPa	(7 day post cure at 194°F/90°C)
Compressive Modulus	
1.61 x 10 ⁵ psi / 1113 MPa	(24 hour cure at 68°F/20°C)
1.73 x 10 ⁵ psi / 1192 MPa	(7 day cure at 68°F/20°C)
1.78 x 10 ⁵ psi / 1229 MPa	(24 hour post cure at 194°F/90°C)
1.69 x 10 ⁵ psi / 1165 MPa	(7 day post cure at 194°F/90°C)

CORROSION RESISTANCE

Salt Spray

When tested in accordance with ASTM B117, the material shows no visible signs of corrosion after 12 months continuous exposure.

ELONGATION & TENSILE PROPERTIES

When determined in accordance with ASTM D638, typical values will be:

Tensile Strength (Maximum)	
3625 psi / 25.0 MPa	(24 hour cure at 68°F/20°C)
3905 psi / 26.9 MPa	(7 day cure at 68°F/20°C)
5085 psi / 35.1 MPa	(7 day post cure at 194°F/90°C)
Tensile Strength (Yield)	
1825 psi / 12.6 MPa	(24 hour cure at 68°F/20°C)
2495 psi / 17.2 MPa	(7 day cure at 68°F/20°C)
3175 psi / 21.9 MPa	(7 day post cure at 194°F/90°C)
Elongation	
0.67 %	(24 hour cure at 68°F/20°C)
0.60 %	(7 day cure at 68°F/20°C)
0.76 %	(7 day post cure at 194°F/90°C)
Young's Modulus	
7.48 x 10 ⁵ psi / 5156 MPa	(24 hour cure at 68°F/20°C)
7.25 x 10 ⁵ psi / 5003 MPa	(7 day cure at 68°F/20°C)
7.45 x 10 ⁵ psi / 5135 MPa	(7 day post cure at 194°F/90°C)

FLEXURAL PROPERTIES

When determined in accordance with ASTM D790, typical values will be:

Flexural Strength (Maximum)	
8905 psi / 61.4 MPa	(24 hour cure at 68°F/20°C)
9790 psi / 67.5 MPa	(7 day cure at 68°F/20°C)
11215 psi / 83.0 MPa	(7 day post cure at 194°F/90°C)
Flexural Strength (Yield)	
5160 psi / 35.6 MPa	(24 hour cure at 68°F/20°C)
6285 psi / 43.4 MPa	(7 day cure at 68°F/20°C)
7375 psi / 50.9 MPa	(7 day post cure at 194°F/90°C)
Flexural Modulus	
6.69 x 10 ⁵ psi / 4612 MPa	(24 hour cure at 68°F/20°C)
7.41 x 10 ⁵ psi / 5109 MPa	(7 day cure at 68°F/20°C)
7.97 x 10 ⁵ psi / 5469 MPa	(7 day post cure at 194°F/90°C)

HARDNESS

The Shore D and Barcol hardness, when determined in accordance with ASTM D2240 and ASTM D2583 (Model No.935) respectively, will typically be:

	Shore D	Barcol
24 hour cure at 68°F/20°C	82	81
7 day cure at 68°F/20°C	84	82
7 day post cure at 194°F/90°C	86	83

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HEAT RESISTANCE

Heat Distortion (HDT)

The HDT when determined in accordance with ASTM D648, will typically be:

Cure	HDT
24hrs at 68°F/20°C	111°F/44°C
7 days at 68°F/20°C	120°F/49°C
24 hour post cure at 194°F/90°C	147°F/64°C
7 day post cure at 194°F/90°C	153°F/67°C

Dry Heat Resistance

The indicated degradation temperature in air based on Differential Scanning Calorimetry (DSC) operated in accordance with ISO11357 is typically 392°F (200°C).

For many applications the product is suitable down to -40°F (-40°C).

IMPACT RESISTANCE

Izod Pendulum

Izod impact strength, when determined in accordance with ASTM D256, will typically be:

Notched:	4.17 KJ/m ²	(7 day cure at 68°F/20°C)
	4.76 KJ/m ²	(7 day post cure at 194°F/90°C)
Un-notched:	5.07 KJ/m ²	(7 day cure at 68°F/20°C)
	5.07 KJ/m ²	(7 day post cure at 194°F/90°C)

SHELF LIFE

Separate base and solidifier components shall have a shelf life of 5 years from date of manufacture when stored in their original unopened containers between 32°F (0°C) and 86°F (30°C).

WARRANTY

Mc Bond guarantees this product will meet the performance claims stated herein when material is stored and used as instructed in the Mc Bond Information For Use leaflet. Mc Bond further guarantees that all its products are carefully manufactured to ensure the highest quality possible and tested strictly in accordance with universally recognized standards (ASTM, ANSI, BS, DIN, ISO etc.). Since Mc Bond has no control over the use of the product described herein, no warranty for any application can be given.

AVAILABILITY AND COST

Mc Bond will be available from a network of Mc-Rix Industries Distributors throughout the world for prompt delivery to the application site. For information, consult the McRix Distributor in your area.

HEALTH AND SAFETY

Prior to using this material, please consult the relevant Material Safety Data Sheets.

TECHNICAL SERVICE

Complete technical assistance is available and includes fully trained Technical Consultants, technical service personnel and fully staffed research, development and quality control laboratories.

The technical data contained herein is based on the results of long term tests carried out in our laboratories and to the best of our knowledge is true and accurate on the date of publication. It is however subject to change without prior notice and the user should contact Mc Bond to verify the technical data is correct before specifying or ordering. No guarantee of accuracy is given or implied. We assume no responsibility for rates of coverage, performance or injury resulting from use. Liability, if any, is limited to the replacement of products. No other warranty or guarantee of any kind is made by Mc Bond, express or implied, whether statutory, by operation of law or otherwise, including merchantability or fitness for a particular purpose.

Nothing in the foregoing statement shall exclude or limit any liability of Mc Bond to the extent such liability cannot by law be excluded or limited.

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manufactured under an
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Quality Management System*