

Our Plastic Metal BR is a two-part epoxy resin filled with bronze. This specialised repair compound has a pasty viscosity when it's mixed and sets hard with physical properties. The cured putty has a bronze colour and it is widely used for repairs and resurfacing of bronze parts and surfaces.

This high-quality type of plastic steel is manufactured by Weicon in Germany and widely used in various industries around the world. It is especially popular in the marine sector and is registered with both the IMPA and ISSA.

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**Technical Details**

Basis	Bronze Filled Epoxy Resin	Mean Compressive Strength at 25°C (DIN 53281-83)	95 MPa
Mix Ratio (Resin / Hardener)	100 :1007	Mean Tensile Strength at 25°C (DIN 53281-83)	35 MPa
Density of the Mixture	1.8 g/cm <sup>3</sup>		
Pot Life at 200g of Material At 20°C	60 Min.	Mean E-Modul at 25°C (DIN 53281-83)	2,500 – 3,000 MPa
Viscosity of the Mixture	200,000 MPas	Shore Hardness at 25°C (DIN 53281-83)	75 Shore D
Colour After Curing	Bronze	Shrinkage	0.02%
Maximum Layer Thickness (per application)	12mm	Thermoforming Resistance	+50°C
Mechanical Strength (50%) When Curing at 20°C	16 Hours	Temperature Resistance	-35°C to +120°C
Final Strength (100%) When Curing at 20°C	24 Hours	Thermal Conductivity (ISO 8894-2)	0.3 W/m·K
		Dielectric Strength (ASTM D 149)	1.2 kV/mm
		IMPA References	81 29 10 & 81 29 11
		ISSA References	75.509.05 & 75.509.06

**Important**

The values listed here and the information presented should not be treated as a substitute for specific technical advice. We cannot warrant the products performance or suitability for particular applications.

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**Plastic Metal BR Chemical Resistance After Curing**

Acetic Acid Dilute (<5%)	+	Hydrocarbons (Aromatic)	-
Acetone	O	Hydrochloric Acid (<10%)	+
Alkalis (Basic Minerals)	+	Hydrochloric Acid (10-20%)	+
Amyl Acetate	+	Hydrofluoric Acid Dilute	O
Amyl Alcohols	+	Hydrogen Peroxide (<30%)	+
Anhydrous Ammonia (25%)	+	Impregnating Oils	+
Barium Hydroxide	+	Magnesium Hydroxide	+
Butyl Acetate	+	Maleic Acid	+
Butyl Alcohol	+	Methanol (Methyl Alcohol, <85%)	O
Calcium Hydroxide (slaked lime)	+	Milk of Lime	+
Carbolic Acid (Phenol)	-	Naphthalene	-
Carbon Disulphide	+	Naphthene	-
Carbon Tetrachloride	+	Nitric Acid (<5%)	O
Caustic Potash Solution	+	Oils, Vegetable and Animal	+
Chlorinated Water	+	Oxalic Acid (<25%)	+
Chloroacetic Acid	-	Paraffin	+
Chloroform	O	Perchloroethylene	O
Chlorosulphonic Acid	-	Petrol (92-100 Octane)	+
Chromic Acid	+	Phosphoric Acid (<5%)	+
Chroming Baths	+	Phthalic Acid	+
Creosote Oil	-	Phthalic Acid Anhydride	+
Cresylic Acid	-	Potassium Hydroxide (Caustic Potash, 0-20%)	+
Crude Oil	+	Soda Lye	+
Crude Oil Products	+	Sodium Bicarbonate (Sodium Hydrogen Carbonate)	+
Diesel Fuel Oil	+	Sodium Carbonate (Soda)	+
Ethanol < 85% (Ethyl Alcohol)	O	Sodium Chloride (Cooking Salt)	+
Ethyl Alcohol	O	Sodium Hydroxide (Caustic Soda, <20%)	O
Ethyl Benzole	-	Sulphur Dioxide	+
Ethyl Ether	+	Sulphuric Acid (<5%)	O
Exhaust Gases	+	Tannic Acid Dilute (<7%)	+
Formic Acid (>10%)	-	Tetralin	O
Glycerine	+	Toulene	-
Glycol	O	Trichloroethylene	O
Grease, Oils and Waxes	+	Turpenetine Substitute (White Spirit)	+
Heating Oil, Diesel	+	Xylene	-
Humic Acid	+		
Hydrobromic Acid (<10%)	+		
Hydrocarbons (Aliphatic)	+		

+ = Resistant

O = Resistant for a Limited Time

- = Not Resistant

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### **Preparation of the Surface**

To ensure a perfect bond, the surface to which the Plastic Metal will be applied must be clean, dry and degreased. Most surface contaminants (e.g. old paint residues, oil, grease, dirt, dust) can be removed with either Weicon Cleaner S or Weicon Sealant and Adhesive Remover.

If the surfaces are very smooth, the adhesion achieved by Plastic Metal can be enhanced by sand-blasting with a suitable grain size of sand or by roughening with a coarse abrasive material.

Cast parts, which have been exposed to sea water for a long time, should be treated with special care as they might contain inorganic salts. It is possible that these salts reach the surface and absorb moisture, thus starting the formation of rust (rust bubbles under the protective coating). It is therefore suggested that such parts are heated or exposed to flame after sand blasting.

If adhesion is not desired, a separating agent must be used. For smooth surfaces, Weicon Mould Release Agent (silicone free) or Weicon Silicone Spray may be suitable.

It is suggested that you begin the application of Weicon Plastic Metal immediately after surface pre-treatment to avoid oxidation and instantaneous rust formation.

### **Application**

#### *Mixing*

Before adding the hardeners to the larger resin container, it is very important that you stir up the fillers in the resin thoroughly while ensuring that they do not contain bubbles. After this has been done, mix the resin and the hardener for at least 4 minutes using the spatula supplied with every Plastic Metal kit or with a mechanical mixer (at low speed, max. 500 rpm) to get a uniform mass.

Do not mix more material that you intend to use within the pot life and be sure to strictly observe the specified mixing ratio of 100:100 for Plastic Metal BR (tolerance on this is a maximum of +/- 2%).

#### *Pot Life and Processing Time*

The indicated pot life refers to mixtures of 200gm prepared at 20°C. Larger quantities will cure faster due to the typical exothermic reaction associated with epoxy resins. Weicon Plastic Metals should be processed at room temperature (approximately 20°C).

Pot life and cure time will be reduced considerably at higher temperatures. The rule of thumb for this is every increase of 10°C above room temperature leads to a reduction in pot life and cure time of about 50%. At temperatures below 16°C the pot life will slow. Below about 5°C there is no reaction between the resin and the hardener.

#### *Cure and Treatment*

Weicon Plastic Metal A can be machined or demoulded after about 16 hours at room temperature. Final cure will be achieved after 24 hours.

In low temperature environments, the cure time can be accelerated via the application of heat up to a maximum of 40°C (via a heat lamp, electric blanket or hot air fan). To avoid thermal overheating and possible deformation the surface must not be warmed up with open flame.

### **Storage**

When stored unopened and in normal climatic conditions (20°C) Weicon Plastic Metal B has a minimum shelf-life of 24 months. Storage in direct sunlight should be avoided.

Opened containers must be used within 6 months.

### **Available Sizes**

Plastic Metal BR Bronze Filled Epoxy is available from Swift Supplies in 0.2kg, 0.5kg & 2kg Kits. Each kit contains the correct proportions of resin and hardener, plastic gloves and a plastic mixing spatula.

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