



Weicon Plastic Metal UW

Weicon Plastic Metals are ideal for fast, cost effective and durable repairs and coatings on many types of surfaces. These easy to use compounds are two-part epoxy resin systems that harden at room temperature to form a firm, metal-like material. Plastic Metals cure with very little shrinkage and, once cured, can be drilled, milled, ground or filed while also exhibiting excellent resistance to a variety of chemicals.

All grades of Plastic Metal bond well to a wide range of materials including iron, steel, hard metals, bronze, aluminium, brass, copper, glass, ceramics, concrete, wood and many rigid plastics (with the exception of PTFE, polyethylene and polypropylene).

Weicon Plastic Metal UW is a pasty, mineral-filled grade of two-part epoxy compound that has been specially designed to harden underwater as well as on damp or wet surfaces. This grade is typically used for the repair and reconditioning of pipes, pumps, tanks and containers though it is also widely used as a versatile maintenance compound in the marine, water treatment and processing sectors.

Properties

Basis	Mineral Filled Epoxy Resin
Mix Ratio	1:1
Density of the Mixture	1.35 g/cm ³
Pot Life at 200g of Material At 20°C	20 Min.
Viscosity of the Mixture	670,000 MPa
Colour After Curing	White
Maximum Layer Thickness (per application)	12mm
Mechanical Strength (50%) When Curing at 20°C	4 Hours
Final Strength (100%) When Curing at 20°C	24 Hours
Mean Compressive Strength at 25°C (DIN 53281-83)	60 MPa
Mean Tensile Strength at 25°C (DIN 53281-83)	30 MPa
Mean Flexural Strength at 25°C (DIN 53281-83)	38 MPa
Mean E-Modul at 25°C (DIN 53281-83)	2,000 – 2,500 MPa
Shore Hardness at 25°C (DIN 53281-83)	70 Shore D
Shrinkage	0.02%
Thermoforming Resistance	+50°C
Temperature Resistance	-35°C to +120°C
Electrical Resistance (ASTM D 257)	6 x 10 ¹¹ Ω/cm
Dielectric Strength (ASTM D 149)	16 kV/mm
Thermal Conductivity (ASTM C 177)	0.57 W/m·K

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Important

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ADHESIVES & SEALANTS

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Plastic Metal UW 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 mechanical 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.

Processing

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 1:1 for Plastic Metal UW (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.

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Cure and Treatment

Weicon Plastic Metal UW can be machined or demoulded after about 4 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 UW has a minimum shelf-life of 24 months. Storage in direct sunlight should be avoided.

Opened containers must be used within 6 months.

Availability

Weicon Plastic Metal UW is available in the following standard size kits:

- 500gm
- 2kg

Each kit contains the correct proportions of resin and hardener, plastic gloves and a plastic mixing spatula. Extra space has been left in the resin container to allow you to add all of the hardener and mix. Assuming you're using the whole kit in one go, this makes achieving the correct mixing ratio simple.

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