ADHESIVES & SEALANTS

Weicon Easy-Mix Metal Epoxy Adhesive

Weicon Epoxy Adhesives are two-part, cold-curing, solvent free systems with extremely high bonding strength. These easy to use adhesive enable material bonds with high impact and tensile strength and are widely used for a range of assembly, production and repair applications.

Easy-Mix Metal is a high temperature resistant grade of adhesive made from steel filled epoxy resin. This high quality adhesive has a short pot life and a fast cure time. Once cured, Easy-Mix Metal can be machined.

Weicon Easy-Mix Metal is supplied in easy to use double syringe packs. Even though it is a two part product, there is no mixing involved as the two components are properly mixed as they travel through the Helix Mixing Nozzle to the bonding surface. This adhesive bonds well to a range of materials including metals, ceramics, fibre reinforced materials, glass, stone, wood and many plastics.

Properties

Basis	Steel Filled Epoxy Resin
Nature	Viscous
Pack size	50ml
Mixing ratio by volume	1:1
Pot life with 10ml of material @ 20ºC	4-5 minutes
Density of the mixture	1.8 g/cm³
Viscosity of the mixture @ 20ºC	120,000 MPa
Processing temperature	+10ºC to +30ºC
Curing temperature	+6ºC to +40ºC
Colour	Black
Maximum gap covering power	2mm
Handling strength (35% of final) @ 20ºC	40 minutes
Mechanical strength (50% of final) @ 20ºC	2 hours
Final strength (100%) @ 20ºC	24 hours
Average strength (+25ºC) DIN 53281-83	
Pressure	10 MPa
Tensile	24 MPa
Torsion	58 MPa
Shore Hardness D	70
Average tensile shear strength as per DIN 53281-83	
Steel, sand-blasted	20 N/mm²
Aluminium, sand-blasted	19 N/mm²
Rigid PVC, roughened	11 N/mm²
Temperature resistance	-50ºC to +145ºC
Linear shrinkage	3mm / metre (0.3% approx.)
Thermal conductivity (ASTM D 257)	1.11 W/m·K
Electrical resistance (ASTM D 257)	10^{11} Ω/cm
Dielectric strength (ASTM D 149)	1.2 kV/mm
Thermal expansion coefficient (ISO 11359)	30×10^{-6} k^{-1}

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Quality Endorsed Company

Easy-Mix Metal Bonding Surface Compatibility

Metals (e.g. aluminium, cast iron, brass, stainless steel)	++
Hard Plastics* (e.g. epoxy, resin, rigid PVC)	+
Fibre Reinforced Materials (e.g. GFRP, CFRP, Fibreglass)	++
Wood (e.g. oak, beech, spruce)	+
Balsa Wood	+
Derived Timber Products (e.g. plywood, MDF)	+
Glass, Ceramics	+
Stone (e.g. marble, granite, brick, concrete)	++
Rubber / Elastomers	-

++ = Highly Compatible
+ = Compatible
- = Not Compatible

*Except for plastics such as polyethylene, polypropylene, polyacetal and other fluorinated hydrocarbons with naturally adhesive rejecting surfaces.

Easy-Mix Metal Chemical Resistance After Curing

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

+ = Resistant O = Resistant for a Limited Time - = Not Resistant

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Processing

The prerequisite for good adhesion is a clean and dry bonding surface (cleaning and degreasing may be done with Weicon Cleaner S, Surface Cleaner or Plastic Cleaner). Smooth surfaces should also be roughed.

Weicon Easy-Mix Metal can be applied using the Weicon Easy-Mix Hand Dispenser D 50 and the specialised Helix Mixing Nozzles (used just for this grade).

This adhesive should only be applied to one of the surfaces being bonded. Easy-Mix Metal will bridge a gap between 0.2mm and 2mm. The pot life given (4-5 minutes) is for a material quantity of 10ml at room temperature. If larger quantities are used curing will be faster due to the exothermic reaction typical of epoxy resins. Similarly, higher ambient temperatures will shorten the cure time (as a rule of thumb, every +10ºC increase above room temperature will halve working time). Temperatures below +16ºC will extend working and curing times. Below +5ºC no reaction will take place at all.

Physiological properties / health and safety at work

Weicon Easy-Mix Metal, when properly handled and completely cured, is toxicologically harmless. When using this product, the physical, safety, technical, toxicological and ecological data and regulations in the SDS must be observed.

Storage

When kept at a constant room temperature of about +20ºC and unopened, Weicon Epoxy Adhesives have a minimum shelf-life of 18 months. Avoid direct sunlight. If these storage instructions are disregarded shelf-life will be reduced to about 6 months.

Epoxy resins are fundamentally liable to crystallise at temperatures of less than +5ºC. This effect is accentuated by wide variations in temperature. This has a negative effect on working qualities, curing and technical details although these effects can be reversed by warming the adhesive to a maximum of 50ºC (do not use naked flame). The base resins (bisphenol A and F) used in Weicon Epoxy Adhesives ensures a reduction in the potential for crystallisation.

Availability

Easy-Mix Metal is available in 50ml double syringe packs.

Extra Helix Mixing Nozzles and the Weicon Easy-Mix Hand Dispenser D 50 are also available separately.

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