

WEICON F2



flowable | aluminium-filled | non-corrosive

The epoxy resin system WEICON F2 is suitable for the casting of models, moulds and templates, for the repair of porous and damaged castings, for the production of prototypes and holding devices, and for pouring out swages to test precision. It can be used in tool construction, model and mould making, and in many other industrial applications.

Characteristics

| | |
|---------|--------------------|
| Base | epoxy |
| Filler | Aluminium |
| Texture | flowable |
| Colour | aluminium metallic |

Processing

| | | |
|--------------------------|------------------------|-----------------------|
| Processing temperature | +15°C to +40°C | |
| Component temperature | >3 °C above dew point | |
| relative air humidity | < 85 % | |
| Mixing ratio by weight | 100:14 | |
| Mixing ratio by volume | 100:30 | |
| Viscosity of the mixture | at +25 °C | 200.000 mPa·s |
| Density of the mixture | 1,6 g/cm ³ | |
| Consumption | Layer thickness 1.0 mm | 1.6 kg/m ² |
| max. layer thickness | per step | 10 mm |

Curing

| | | |
|------------------------|-----------------------|---------|
| Pot life | at 20 °C, 500 g batch | 60 min. |
| Additional layer after | (35 % strength) | 12 h |
| Working strength after | (80 % strength) | 26 h |
| Final strength | (100 % strength) | 72 h |
| Shrinkage | | 0,16 % |

Mechanical properties after curing

| | | |
|--|---------------------------------|-----------------------|
| - measured after curing at | | 24 h RT + 4 h 60 °C |
| Tensile strength | DIN EN ISO 527-2 | 31 MPa |
| Elongation at break (tensile) | DIN EN ISO 527-2 | 1,3 % |
| E-modulus (tensile) | DIN EN ISO 527-2 | 3200-3400 MPa |
| Compressive strength | DIN EN ISO 604 | 39 MPa |
| Bending strength | DIN EN ISO 178 | 26 MPa |
| Impact strength | DIN EN ISO 179-1/1eU | 3,1 kJ/m ² |
| Hardness (Shore D) | DIN ISO 7619 | 77±3 |
| Adhesive strength | DIN EN ISO 4624 | 14 MPa |
| Lap shear strength material thckn. 1,5mm DIN EN 1465 | | |
| | Steel 1.0338 sandblasted | 13 MPa |
| | Stainless steel V2A sandblasted | 13 MPa |
| | Aluminium sandblasted | 9 N/mm ² |
| | Galvanized steel | 5 MPa |

Thermal parameters

| | | |
|---|--------------------|---------------------------------|
| Temperature resistance | | -35°C (-4°F) to +120°C (+248°F) |
| Tg after curing at room temperature (DSC) | | ~ +52 °C |
| Tg after tempering (at 120°C) (DSC) | | +53 °C |
| Heat deflection resistance | DIN EN ISO 75-2 | +55 °C |
| Thermal conductivity | DIN EN ISO 22007-4 | 1 W/m·K |
| Heat capacity | DIN EN ISO 22007-4 | 0,82 J/(g·K) |

Electrical parameters

| | | |
|------------|------------------|--------------------------|
| Resistance | DIN EN 62631-3-1 | 7,4·10 ¹² Ω·m |
| magnetic | | no |

Specific properties

| | |
|-----------|--------------|
| IMPA Code | 812933/34 |
| ISSA Code | 75.509.11/12 |

Instructions for use

When using WEICON products, the physical, safety-related, toxicological and ecological data and regulations in our EC safety data sheets (www.weicon.com) must be observed.

Surface pre-treatment

The successful application of WEICON F2 depends on the thorough preparation of the surfaces. This is the most important factor for overall success. Dust, dirt, oil, grease, rust and moisture or wetness have a negative impact on the adhesion. Therefore, before processing WEICON F2, the following points must be observed: The areas to be bonded or repaired must be free of any oil, grease, dirt, rust, oxides, paint and other impurities or residues. For cleaning and degreasing, we recommend WEICON Cleaner Spray S.

Smooth and particularly heavily soiled surfaces should additionally be treated by mechanical surface pre-treatment, e.g. by grinding or preferably by blasting. In case of blasting, the surface should be brought to a degree of purity of SA 2 1/2 - "Near White Blast Cleaning" (according to ISO 8501/1-2, NACE, SSPC, SIS). In order to achieve an optimum surface roughness of 75 - 100 µm, angular, disposable blasting media (aluminum oxide, corundum) should be used. The surface quality is negatively influenced by the use of reusable blasting media (slag, glass, quartz), but also by ice blasting. The air for blasting must be dry and oil-free. Metal parts that have

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come into contact with sea water or other salt solutions should first be rinsed thoroughly with demineralised water and, if possible, left to rest overnight so that all salts can be dissolved from the metal. Before each application of WEICON F2, a test for soluble salts should be carried out according to the Bresle method (DIN EN ISO 8502-6).

The maximum amount of soluble salts remaining on the substrate should not exceed 40 mg/m². Heating and repeated blasting of the surface may be necessary to remove all soluble salts and moisture.

After each mechanical pre-treatment, the surface should be cleaned again with WEICON Cleaner Spray S and protected from further contamination until the coating is applied.

Areas where no adhesion to the substrate is desired must be treated with silicone-free mould release agents. For smooth surfaces, we recommend WEICON Mould Release Agent Liquid F 1000 or, for porous surfaces, WEICON Mould Release Agent Wax P 500.

After the surface pre-treatment, WEICON F2 should be applied as soon as possible (within one hour) to avoid oxidation, flash rust or new contamination.

Mixing

Before adding the hardener, the resin needs to be mixed with the fillers thoroughly and without creating bubbles. Then mix the resin and hardener together thoroughly and bubble-free for at least four minutes at 20°C (68°F). The included processing spatula or a mechanical mixer, such as the Stirrer Stainless Steel, can be used for this purpose. With mechanical mixers, a low speed of max. 500 rpm should be used. The components should be stirred until a homogeneous mixture is achieved. The mixing ratio of the two components must be strictly observed, as otherwise, strongly deviating physical values will result (max. deviation +/- 2 %). Only prepare a batch as large as can be processed within the pot life of 60 minutes. The specified pot life refers to a material batch of 500 g and 20°C (68°F) material temperature. Mixing larger quantities or higher processing temperatures will result in faster curing due to the typical reaction heat of epoxy resins.



Application

For processing, we recommend an ambient temperature of 20°C (68°C) at less than 85% relative humidity. The highest

adhesive strength is achieved when the parts to be processed are heated to >35°C (>95°F) before application. For a thin pre-coat, work WEICON F2 intensively into the surface in crosswise layers using the Contour Spatula Flexy or a paint brush to achieve maximum adhesion. By means of this technique, the epoxy resin penetrates well into all cracks and roughness depths. Afterwards, further applications can be carried out straight away, until the desired layer thickness is reached. Make sure that the epoxy resin is applied evenly and without air bubbles.

Curing

Final hardness is reached after 72 hours at 20°C (68°F) at the latest. At lower temperatures, the curing can be accelerated by evenly applying heat up to max. 40°C (104°F), e.g. with a heating pack, hot air blower or fan heater. Higher temperatures shorten the curing time. The following rule of thumb applies: Each increase by +10°C (50°F) above room temperature (20°C/68°F) will decrease the curing time by half. Temperatures below 16°C (61°F) increase the curing time, until at approx. 5°C (41°F) and below, almost no reaction will take place at all.

Storage

Store WEICON F2 at room temperature in a dry place. Unopened containers can be stored at temperatures of +18°C to +28°C for at least 24 months after delivery date. Opened containers must be used up within 6 months.

Scope of delivery

Processing Spatula | Instructions for Use | Gloves

Accessories

| | |
|----------|--|
| 11202500 | Cleaner Spray S, 500 ml, transparent |
| 15200005 | Cleaner S, 5 L, colourless, transparent |
| 11207400 | Surface Cleaner, 400 ml, transparent |
| 15207005 | Surface Cleaner, 5 L, transparent |
| 10604025 | Mould Release Agent Liquid F 1000, 250 ml, white, milky |
| 10539115 | Repair Stick Multi-Purpose Repair Stick Multi-Purpose, 115 g, vintage white 115 g, vintage white |
| 10850005 | Glass Fibre Cloth Tape, 1 PCE, dark grey |
| 10953001 | Processing spatula, 1 PCE |
| 10953003 | Processing spatula, 1 PCE |
| 10953021 | , 0 " |
| 10953010 | Stirrer Stainless Steel, 1 PCE |
| 15841500 | Pump Dispenser WPS 1500, 1,5 L |
| 10851020 | Injection Packer Set, 1 PCE |
| 10851021 | Injection Packer/ rectangular, 1 PCE |
| 10851022 | Injection Packer/ flat, 1 PCE |
| 13250001 | Cartridge Gun, 1 PCE |
| 52000035 | Cable Scissors No. 35, 1 PCE |
| 10851010 | Processing Kit, 1 PCE |

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Recommended equipment

Angle grinder Blast machine Heating pack, Hot air blower or fan heater Smoothing trowel, spatula PE foil 0.2 mm Fabric tape Paint brush, foam roller Lint-free cloths

Available sizes:

10200005 WEICON F2, 0,5 kg, aluminium metallic
10200020 WEICON F2, 2 kg, aluminium metallic
10200002 WEICON F2, 200 g, aluminium metallic

Conversion table

$(^{\circ}\text{C} \times 1,8) + 32 = ^{\circ}\text{F}$
mm/25,4 = inch
 $\mu\text{m}/25,4 = \text{mil}$
N x 0,225 = lb
 $\text{N}/\text{mm}^2 \times 145 = \text{psi}$
MPa x 145 = psi

Nm x 8,851 = lb·in
Nm x 0,738 = lb·ft
Nm x 141,62 = oz·in
mPa·s = cP
 $\text{N}/\text{cm} \times 0,571 = \text{lb}/\text{in}$
 $\text{kV}/\text{mm} \times 25,4 = \text{V}/\text{mil}$

| | WEICON A | WEICON B | WEICON BR | WEICON C | WEICON F | WEICON F2 | WEICON HB 300 | WEICON SF | WEICON ST | WEICON TI | WEICON UW | WEICON WR2 | WEICON HP | WEICON Ceramic BL | WEICON GL | WEICON GL-S | WEICON Ceramic W | WEICON Ceramic HC 220 | WEICON WP | WEICON WR | WEICON CBC | |
|-------------------------|----------|----------|-----------|----------|----------|-----------|---------------|-----------|-----------|-----------|-----------|------------|-----------|-------------------|-----------|-------------|------------------|-----------------------|-----------|-----------|------------|---|
| Repair and moulding | x | x | x | x | x | x | x | x | x | x | x | x | | | | | | | | | | |
| Adhesive | | | | x | x | | x | | x | | | | x | | | | | | | | | |
| Wear protection | | | | | | | | | | | | | | x | x | x | x | x | x | | | |
| Potting and gap filling | x | | | | | x | | | | | | x | | | | | | | | | x | x |

To the product detail page:



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Chemical resistance of WEICON Plastic Metals after curing* (Excerpt)

| | | | |
|---|---|--|---|
| Exhaust fumes | + | Potassium carbonate | + |
| Acetone | o | Potassium hydroxide 0-20 % (caustic potash) | + |
| Ethyl ether | + | Milk of lime | + |
| Ethyl alcohol | o | Carbolic acid | - |
| Ethylbenzene | - | Creosote oil | - |
| Alkalis (alkaline substances) | + | Cresylic acid | - |
| Hydrocarbons, aliphatic (petroleum derivatives) | + | Magnesium hydroxide | + |
| Formic acid >10 % (methanoic acid) | - | Maleic acid (cis-ethylenedicarboxylic acid) | + |
| Ammonia anhydrous 25% | + | Methanol (methyl alcohol) <85 % | - |
| Amyl acetate | + | Mineral oil | + |
| Amyl alcohol | + | Naphthalene | - |
| Hydrocarbons, aromatic (benzene, toluene, xylene) | + | Naphthene | - |
| Barium hydroxide | + | Sodium carbonate (soda) | + |
| Petrol (92-100 octane) | + | Sodium bicarbonate (sodium hydrogen carbonate) | + |
| Hydrobromic acid <10 % | + | Sodium chloride (table salt) | + |
| Butyl acetate | + | Sodium hydroxide >20 % (caustic soda) | o |
| Butyl alcohol | + | Caustic soda | + |
| Calcium hydroxide (slaked lime) | + | Heating oil, diesel | + |
| Chloroacetic acid | - | Oxalic acid <25 % (ethanedioic acid) | + |
| Chloroform (trichlormethane) | o | Perchloraethylene | o |
| Chlorosulphuric acid (wet and dry) | - | Kerosene | + |
| Chlorinated water (swimming pool concentration) | + | Oils, vegetable and animal | + |
| Hydrochloric acid | + | Phosphoric acid <5% | + |
| Chromium bath | + | Phthalic acid, phthalic anhydride | + |
| Chromic acid | + | Crude oil | + |
| Diesel fuels | + | Nitric acid <5% | o |
| Mineral oil and mineral oil products | + | Hydrochloric acid <10 % | + |
| Acetic acid diluted <5% | + | Sulphur dioxide (wet and dry) | + |
| Ethanol <85 % (ethyl alcohol) | + | Carbon disulphide | + |
| Greases, oils and waxes | + | Sulphuric acid <5% | o |
| Hydrofluoric acid diluted | o | White spirit | + |
| Tannic acid diluted <7% | + | Carbon tetrachloride (tetrachloromethane) | + |
| Glycerin (trihydroxipropane) | + | Tetralin (tetrahydronaphthalene) | o |
| Glycol | o | Toluene | - |
| Humic acid | + | Hydrogen peroxide <30 % (hydrogen superoxide) | + |
| Impregnating oils | + | Trichloraethylene | o |
| Potash | + | Xylene | - |

+ = resistant 0 = for a limited time - = not resistant *The storage of all WEICON Plastic Metal types was carried out at +20°C chemical temperature.

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