

WEICON WP



IMPA-Code 812957/58

**pasty, high-strength
ceramic-filled, extreme protection against wear
viscoplastic and impact-resistant**

WEICON WP serves as protection for surfaces subject to heavy wear. A coating with the epoxy resin system offers high resistance to wear and abrasion and is extremely resistant to chemicals.

WEICON WP prevents metal loss and, depending on the application, replaces previously used wear-resistant alloys, ceramic tiles or rubber lining as well as welded metal coatings. It can be used both for the reconditioning of worn metal surfaces and as a wear-resistant coating. A particularly high level of protection is achieved when wear is caused by laterally impacting particles.

Characteristics

| | |
|---------------------|----------------|
| Base | epoxy |
| Filler | ceramic-filled |
| Texture | pasty |
| Colour after curing | grey |

Processing

| | |
|--|-----------------------|
| Processing temperature | +15 °C up to +40 °C |
| Component temperature | >3 °C over dew point |
| Relative air humidity | max. 85 % |
| Mixing ratio by weight | 100:100 |
| Mixing ratio by volume | 100:100 |
| Viscosity of the mixture at 25 °C and 20 1/s | 900,000 mPa·s |
| Density of the mixture | 2.2 g/cm ³ |
| Consumption at layer thickness of 1,0mm | 2.2 g/cm ³ |
| Max. layer thickness per work step | 20 mm |

Curing

| | |
|---|---------|
| Pot life at 20 °C, 2 kg batch | 30 min. |
| Repeated application possible after (35 % strength) | 7 Std. |
| Capable of bearing mechanical loads (80 % strength) | 12 Std. |
| Final strength after (100 % strength) | 36 Std. |
| Shrinkage | 0,11 % |

Mechanical properties after curing

| | | |
|-------------------------------|----------------------|----------------------|
| Tensile strength | DIN EN ISO 527-2 | 22 MPa |
| Elongation at break (tensile) | DIN EN ISO 527-2 | 2 % |
| E-modulus (tensile) | DIN EN ISO 527-2 | 2500-3000 MPa |
| Compressive strength | DIN EN ISO 604 | 51 MPa |
| Bending strength | DIN EN ISO 178 | 35 MPa |
| Impact strength | DIN EN ISO 179-1/1eU | 12 kJ/m ² |
| Hardness (Shore D) | DIN ISO 7619 | 75±3 |
| Adhesive strength | DIN EN ISO 4624 | 24 MPa |

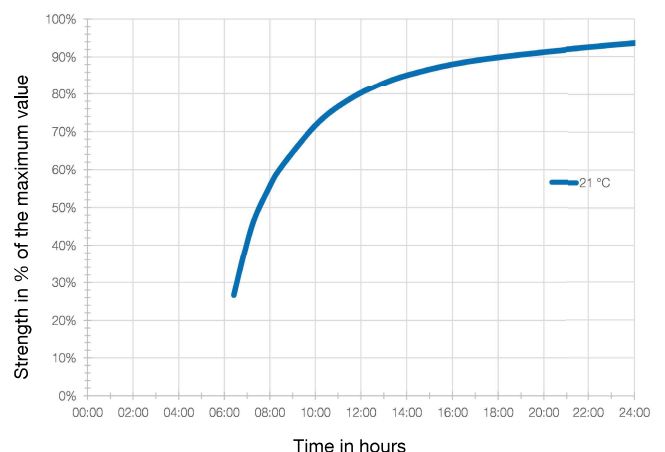
Thermal parameters

| | | |
|-------------------------------------|---------------------|--------------------|
| Temperature resistance | | -35 °C bis +120 °C |
| Tg after curing at room temperature | (DSC) | approx. +64 °C |
| Tg after tempering (at 120 °C) | (DSC) | +87 °C |
| Heat deflection temperature | DIN EN ISO 75-2 (B) | +65 °C |
| Thermal conductivity | DIN EN ISO 22007-4 | 0,8 W/m·K |
| Heat capacity | DIN EN ISO 22007-4 | 0,78 J/(g·K) |

Electrical parameters

| | | |
|-------------|-----------|-------------------------|
| Resistivity | DIN IEC93 | 2,2·10 ¹¹ Ωm |
| Magnetic | | no |

Increase in strength



Note

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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 WP 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 WP, the following points must be observed:

The surfaces 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 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 WP, 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 WP should be applied as soon as possible (within one hour) to avoid oxidation, flash rust or new contamination.

Mixing

First, stir the resin. 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 a mortar stirrer, 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 30 minutes. The specified pot life refers to a material batch of 2 kg 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.



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Application

For processing, we recommend an ambient temperature of 20°C (68°F) 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 WP intensively into the surface in crosswise layers using the Contour Spatula Flexy 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. To fill large gaps or holes, fibreglass, expanded metal or other mechanical fixation materials should be used. Finally, the surface can be smoothed easily with the help of a PE film and a rubber roller.

Curing

Final hardness is reached after 24 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 WP at room temperature in a dry place. Unopened containers can be stored at temperatures of +18°C to +28°C for at least 36 months after delivery date. Unopened containers must be used up within 6 months.

Scope of delivery

10953001 Processing Spatula, short (0.2 kg package)
10953003 Processing Spatula, long (2.0 kg, 10.0 kg package)
10953020 Contour Spatula Flexy
10953015 Protective Gloves
Instructions for use

Accessories

11202500 Cleaner Spray S, spray can 500 ml
15200005 Cleaner S, canister 5 l
11207400 Surface Cleaner, spray can 400 ml
15207005 Surface Cleaner, canister 5 l
10604025 Mould Release Agent Liquid F 1000, 250 ml
10604515 Mould Release Agent Wax P 500, 150 g
10539115 Repair Stick Multi-Purpose 115 g
10850005 Glass Fibre Cloth Tape, 50 mm x 1 m
10953001 Processing Spatula, short
10953003 Processing Spatula, long
15841500 Pump-Dispenser WPS 1500
52000035 Cable Scissors No. 35
10851010 Processing Kit

Recommended tools

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
Rubber roller
Lint-free cloths

Available sizes

10490002 WEICON WP 0.2 kg
10490020 WEICON WP 2.0 kg
10490100 WEICON WP 10.0 kg

Conversion table

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{mm}/25.4 = \text{inch}$
 $\mu\text{m}/25.4 = \text{mil}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N}/\text{mm}^2 \times 145 = \text{psi}$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{Nm} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{Nm} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{Nm} \times 141.62 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$
 $\text{N}/\text{cm} \times 0.571 = \text{lb}/\text{in}$
 $\text{kV}/\text{mm} \times 25.4 = \text{V}/\text{mil}$

| | WEICON A | WEICON B | WEICON BR | WEICON C | WEICON F | WEICON FZ | WEICON HB 300 | WEICON Ceramic BL | WEICON GL | WEICON Ceramic W | WEICON SF | WEICON ST | WEICON HP | WEICON TI | WEICON UW | WEICON WP | WEICON WR | WEICON WRZ | WEICON CBC |
|-------------------------|----------|----------|-----------|----------|----------|-----------|---------------|-------------------|-----------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|
| Repair and moulding | X | X | X | X | X | X | X | | | | X | X | | X | X | | | X | |
| Adhesive | | | | X | | | | | | | | | X | | X | | | | |
| Wear protection | | | | | | | | X | X | X | | | | | | X | | | |
| Potting and gap filling | X | | | | | X | | | | | | | | | | | X | X | X |

www.weicon.de/products



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Chemical resistance of WEICON Plastic Metals after curing*

| | | | |
|---|---|---|---|
| Acetic acid dilute < 5% | + | Hydrocarbons, aliphatic (crude oil derivatives) | + |
| Acetone | 0 | Hydrocarbons, aromatic (benzene, toluene, xylene) | - |
| Alkalis (basic materials) | + | Hydrochloric acid < 10% | + |
| Amyl acetate | + | Hydrochloric acid 10 - 20% | + |
| Amyl alcohols | + | Hydrofluoric acid dilute | 0 |
| Anhydrous ammonia 25% | + | Hydrogen peroxide < 30% (hydrogen superoxide) | + |
| Barium hydroxide | + | Impregnating oils | + |
| Butyl acetate | + | Magnesium hydroxide | + |
| Butyl alcohol | + | Maleic acid (cis-butenedioic acid) | + |
| Calcium hydroxide (slaked lime) | + | Methanol (methyl alcohol) < 85% | 0 |
| Carbolic acid (phenol) | - | Milk of lime | + |
| Carbon disulphide | + | Naphthalene | - |
| Carbon tetrachloride (tetrachloromethane) | + | Naphthene | - |
| Caustic potash solution | + | Nitric acid < 5% | 0 |
| Chlorinated water | + | Oils, minerals | + |
| Chloroacetic acid | - | Oils, vegetable and animal | + |
| Chloroform (trichloromethane) | 0 | Oxalic acid < 25% (ethanedioic acid) | + |
| Chlorosulphonic acid | - | Paraffin | + |
| Chromic acid | + | Perchloroethylene | 0 |
| Chroming baths | + | Petrol (92 - 100 octane) | + |
| Creosote oil | - | Phosphoric acid < 5% | + |
| Cresylic acid | - | Phthalic acid, phthalic acid anhydride | + |
| Crude oil | + | Potassium carbonate (potash solution) | + |
| Crude oil and crude oil products | + | Potassium hydroxide (caustic potash) 0-20% | + |
| Diesel fuel oil | + | Soda lye | + |
| Ethanol < 85% (ethyl alcohol) | 0 | Sodium bicarbonate (sodium hydrogen carbonate) | + |
| Ethyl alcohol | 0 | Sodium carbonate (soda) | + |
| Ethyl benzole | - | Sodium chloride (cooking salt) | + |
| Ethyl ether | + | Sodium hydroxide < 20% (caustic soda) | 0 |
| Exhaust gases | + | Sulphur dioxide | + |
| Formic acid >10% | - | Sulphuric acid < 5% | 0 |
| Glycerine (trihydroxypropane) | + | Tannic acid dilute < 7% | + |
| Glycol | 0 | Tetralin (tetrahydronaphthalene) | 0 |
| Grease, oils and waxes | + | Toluene | - |
| Heating oil, diesel | + | Trichloroethylene | 0 |
| Humic acid | + | Turpentine substitute (white spirit) | + |
| Hydrobromic acid < 10% | + | Xylene | - |

+ = resistant 0 = resistant for a limited time - = not resistant

* Storage of all WEICON Plastic Metals was at +20°C chemical temperature

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