

WEICON WR



0,2 kg



0,5 kg



2,0 kg

liquid
steel-filled
wear-resistant

ISSA-Code 75.509.15/16
IMPA-Code 812947/48

WEICON WR is suitable for areas where metal parts are subject to heavy wear due to friction. For example, the epoxy resin system can be used for repairs and for casting around shafts, for casting bearings, cutting and punching tools, for the production of castings, copy milling models and moulds, for underpouring machines and foundations, and as a wear-resistant base layer before the final coating with WEICON Ceramic BL.

It can be used in mechanical engineering, toolmaking, model and mould making, and in many other industrial sectors.

Characteristics

| | |
|---------------------|--------|
| Base | epoxy |
| Filler | steel |
| Texture | liquid |
| Colour after curing | black |

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 | 100:15 |
| Mixing ratio by volume | 100:43 |
| Viscosity of the mixture at 25 °C and 20 1/s | 4000-5000 mPa·s |
| Density of the mixture | 2,4 g/cm ³ |
| Consumption at layer thickness of 1.0mm | 2,4 g/cm ³ |
| Max. layer thickness per work step | 10 mm |

Curing

| | |
|--|---------|
| Pot life at 20°C, 500g batch | 40 min. |
| Repeated application possible after (35% strength) | 5 h |
| Capable of bearing mechanical loads (80% strength) | 7 h |
| Final strength after (100% strength) | 16 h |
| Shrinkage | 0.06 % |

Mechanical properties after curing

| | | |
|--|------------------|---------------|
| Tensile strength | DIN EN ISO 527-2 | 46 MPa |
| Elongation at break (tensile) | DIN EN ISO 527-2 | 1,0 % |
| E-modulus (tensile) | DIN EN ISO 527-2 | 4900-5300 MPa |
| Compressive strength | DIN EN ISO 604 | 100 MPa |
| E-modulus (pressure) | DIN EN ISO 604 | 5800-6300 MPa |
| Bending strength | DIN EN ISO 178 | 85 MPa |
| Hardness (Shore D) | DIN ISO 7619 | 83±3 |
| Adhesive strength | DIN EN ISO 4624 | 12 MPa |
| Lap shear strength material thicken. 1.5mm | DIN EN 1465 | |
| Steel 1.0338 sandblasted | | 12 MPa |
| Stainless steel V2A sandblasted | | 11 MPa |
| Aluminium sandblasted | | 7 MPa |
| Galvanized steel | | 2 MPa |

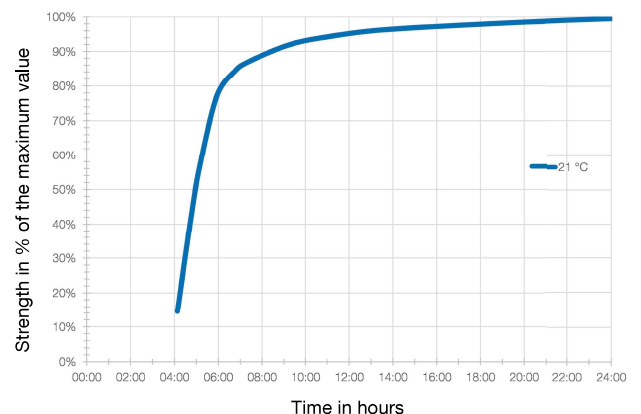
Thermal parameters

| | | |
|---|---------------------|---------------------------|
| Temperature resistance | | -35 °C to +120 °C |
| T _g after curing at room temperature | (DSC) | approx. +54°C |
| T _g after tempering (at 120 °C) | (DSC) | +70°C |
| Heat deflection temperature | DIN EN ISO 75-2 (B) | +55°C |
| Thermal expansion coefficient | | 45·10 ⁻⁶ 1/m·K |
| Thermal conductivity | DIN EN ISO 22007-4 | 1.1 W/m·K |
| Heat capacity | DIN EN ISO 22007-4 | 0.61 J/(g·K) |

Electrical parameters

| | | |
|-------------|-----------|-------------------------|
| Resistivity | DIN IEC93 | 1.9·10 ¹² Ωm |
| Magnetic | | yes |

Increase in strength



Note

The specifications and recommendations given in this technical data sheet must not be seen as guaranteed product characteristics. They are based on our laboratory tests and on practical experience. Since individual application conditions are beyond our knowledge, control and responsibility, this information is provided without any obligation. We do guarantee the continuously high quality of our products. However, own adequate laboratory and practical tests to find out if the product in question meets the requested properties are recommended. A claim cannot be derived from them. The user bears the only responsibility for non-appropriate or other than specified applications.

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 WR 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 WR, 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 ½ - "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 WR, 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.

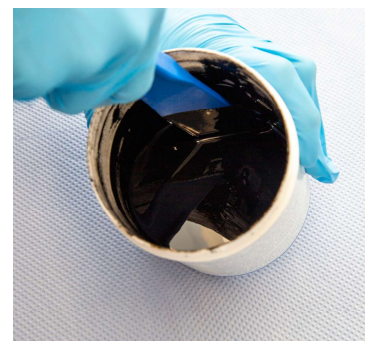
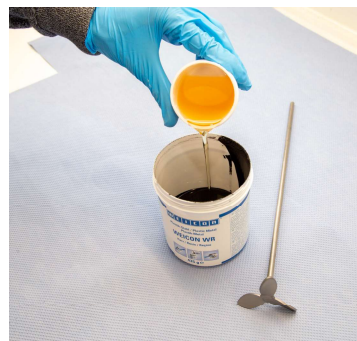
After each mechanical pre-treatment, the surface should be cleaned again with WEICON Cleaner Spray S and protected from further contamination until the coating is applied.

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 WR 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 and its fillers must be stirred thoroughly and free of bubbles. Then mix the resin and the hardener thoroughly for at least four minutes at 20°C (68°F). To do so, use the included processing spatula or a mechanical mixer, such the Stirrer Stainless Steel. 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 mix a batch as large as can be processed within the pot life of 40 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.



Note

The specifications and recommendations given in this technical data sheet must not be seen as guaranteed product characteristics. They are based on our laboratory tests and on practical experience. Since individual application conditions are beyond our knowledge, control and responsibility, this information is provided without any obligation. We do guarantee the continuously high quality of our products. However, own adequate laboratory and practical tests to find out if the product in question meets the requested properties are recommended. A claim cannot be derived from them. The user bears the only responsibility for non-appropriate or other than specified applications.

WEICON GmbH & Co. KG
(Headquarters) Germany
phone +49 (0) 251 9322 0
info@weicon.de

WEICON Inc.
Canada
phone +1 877 620 8889
info@weicon.ca

WEICON Romania SRL
Romania
phone +40 (0) 3 65 730 763
office@weicon.com

WEICON South East Asia Pte Ltd
Singapore
Phone (+65) 6710 7671
info@weicon.com.sg

WEICON Ibérica S.L.
Spain
phone +34 (0) 914 7997 34
info@weicon.es

WEICON Middle East L.L.C.
United Arab Emirates
phone +971 4 880 25 05
info@weicon.ae

WEICON Kimya Sanayi Tic. Ltd. Şti.
Turkey
phone +90 (0) 212 465 33 65
info@weicon.com.tr

WEICON SA (Pty) Ltd
South Africa
phone +27 (0) 21 709 0088
info@weicon.co.za

WEICON Czech Republic s.r.o.
Czech Republic
phone +42 (0) 417 533 013
info@weicon.cz

WEICON Italia S.r.L.
Italy
phone +39 (0) 010 2924 871
info@weicon.it

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 WR 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 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 WR 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, 0.5 kg package)
- 10953003 Processing Spatula, long (2.0 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
- 10953010 Stirrer Stainless Steel
- 15841500 Pump-Dispenser WPS 1500
- 13955001 Cartridge 310 ml empty
- 13250001 Cartridge Gun
- 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
- Lint-free cloths

Available sizes

- 10300002 WEICON WR 0.2 kg
- 10300005 WEICON WR 0.5 kg
- 10300020 WEICON WR 2.0 kg

Conversion table

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

| | WEICON A | WEICON B | WEICON BR | WEICON C | WEICON F | WEICON F2 | WEICON HB 300 | WEICON Ceramic BL | WEICON GL | WEICON Ceramic W | WEICON SF | WEICON ST | WEICON HP | WEICON TI | WEICON UW | WEICON WP | WEICON WR | WEICON WR2 | 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


Note
The specifications and recommendations given in this technical data sheet must not be seen as guaranteed product characteristics. They are based on our laboratory tests and on practical experience. Since individual application conditions are beyond our knowledge, control and responsibility, this information is provided without any obligation. We do guarantee the continuously high quality of our products. However, own adequate laboratory and practical tests to find out if the product in question meets the requested properties are recommended. A claim cannot be derived from them. The user bears the only responsibility for non-appropriate or other than specified applications.

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

Note

The specifications and recommendations given in this technical data sheet must not be seen as guaranteed product characteristics. They are based on our laboratory tests and on practical experience. Since individual application conditions are beyond our knowledge, control and responsibility, this information is provided without any obligation. We do guarantee the continuously high quality of our products. However, own adequate laboratory and practical tests to find out if the product in question meets the requested properties are recommended. A claim cannot be derived from them. The user bears the only responsibility for non-appropriate or other than specified applications.

WEICON GmbH & Co. KG
 (Headquarters) Germany
 phone +49 (0) 251 9322 0
 info@weicon.de

WEICON Inc.
 Canada
 phone +1 877 620 8889
 info@weicon.ca

WEICON Romania SRL
 Romania
 phone +40 (0) 3 65 730 763
 office@weicon.com

WEICON South East Asia Pte Ltd
 Singapore
 Phone (+65) 6710 7671
 info@weicon.com.sg

WEICON Ibérica S.L.
 Spain
 phone +34 (0) 914 7997 34
 info@weicon.es

WEICON Middle East L.L.C.
 United Arab Emirates
 phone +971 4 880 25 05
 info@weicon.ae

WEICON Kimya Sanayi Tic. Ltd. Şti.
 Turkey
 phone +90 (0) 212 465 33 65
 info@weicon.com.tr

WEICON SA (Pty) Ltd
 South Africa
 phone +27 (0) 21 709 0088
 info@weicon.co.za

WEICON Czech Republic s.r.o.
 Czech Republic
 phone +42 (0) 417 533 013
 info@weicon.cz

WEICON Italia S.r.L.
 Italy
 phone +39 (0) 010 2924 871
 info@weicon.it