

WEICON GC-WE



pasty | steel-filled

WEICON GC-WE is suitable for the under- and backfilling of systems to be aligned, e.g. in the wind energy sector, and is suitable for the Uptower Repair Method. The epoxy resin system is highly filled with steel pigments and serves as a replacement for shims made of steel or similar materials. The WEICON GC-WE restores a force-fit connection between the worn components.

The 2-component system can be used to fill and seal gaps and cracks, e.g. in the nacelle and tower of wind turbines. WEICON GC-WE can also be used in power plants as well as in numerous other areas of the power and energy industry.

To ensure the safety of the entire process, WEICON GC-WE may only be used by certified companies.

Characteristics

Base	Epoxy
Filler	steel
Texture	pasty
Colour	dark grey

Processing

Processing temperature	+15°C to +40°C
Component temperature	>3 °C above dew point
Relative air humidity	< 85 %
Mixing ratio by weight	100:10
Mixing ratio by volume	100:21
Viscosity of the mixture	at +25 °C 95.000 mPa·s
Density of the mixture	2,6 g/cm ³
Consumption	Layer thickness 1.0 mm 2,6 kg/m ²
Max. layer thickness	per step 25 mm

Curing

Pot life	at 20 °C, 500 g batch	60 min.
Additional layer after	(35 % strength)	3 h
Working strength after	(80 % strength)	8 h
Final strength	(100 % strength)	24 h
Shrinkage		0,18 %

Mechanical properties after curing

- Measured after curing at		24 h RT + 4 h +60 °C
Tensile strength	DIN EN ISO 527-2	39 MPa
Elongation at break (tensile)	DIN EN ISO 527-2	0,4 %
E-modulus (tensile)	DIN EN ISO 527-2	9.000-10.100 MPa
Compressive strength	DIN EN ISO 604	113 MPa
E-modulus (pressure)	DIN EN ISO 604	10.200 MPa
Bending strength	DIN EN ISO 178	63 MPa
Hardness (Shore D)	DIN ISO 7619	82 ± 3
Adhesive strength	DIN EN ISO 4624	13 MPa
Taber Test	DIN ISO 9352 (H18, 2 x 1 kg, 1000 rotations)	1,1 g / 0,3 cm ³
Lap shear strength material thickn. 1,5mm DIN EN 1465		
	Steel 1.0338 sandblasted	15 MPa
	Stainless steel V2A sandblasted	16 MPa
	Aluminium sandblasted	8 MPa
	Galvanized steel	9 MPa

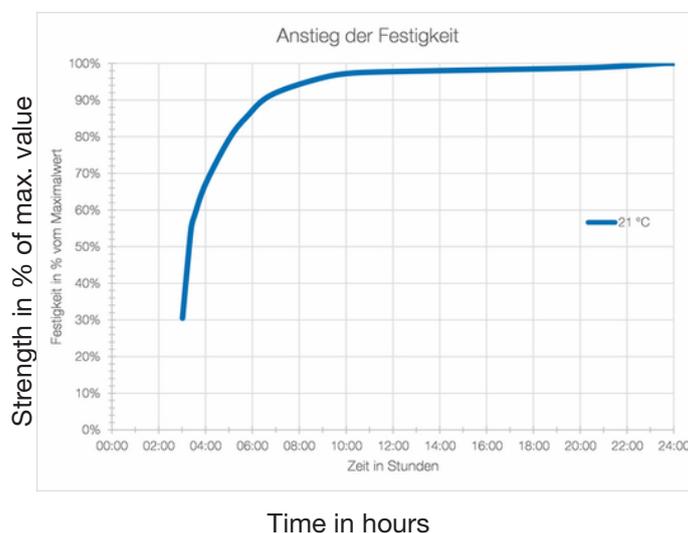
Thermal parameters

Temperature resistance		-35°C (-4°F) to +120°C (+248°F)
Tg after curing at room temperature	(DSC)	~ +61 °C
Tg after tempering (at 80°C)	(DSC)	80 °C
Heat deflection resistance	DIN EN ISO 75-2	+79 °C
Thermal conductivity	DIN EN ISO 22007-4	0,59 W/m·K
Heat capacity	DIN EN ISO 22007-4	0,61 J/(g·K)

Electrical parameters

Resistance	DIN EN 62631-3-1	1,79·10 ¹⁴ Ω·m
Magnetic		yes

Increase in strength



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WEICON GC-WE

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 GC-WE depends on the meticulous preparation of the surfaces as this is the most important factor for ensuring the overall success. Dust, dirt, oil, grease, rust and moisture or wetness have a negative impact on adhesive strength.

Therefore, the following points must be observed before applying WEICON GC-WE:

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 exceptionally soiled surfaces should additionally be treated by mechanical surface pre-treatment, e.g. by grinding or preferably by abrasive blasting. In case of blasting, the surface should be brought to a degree of purity of SA 2.5 – “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, single-pass abrasive media (aluminium oxide, corundum) should be used. Multi-use abrasive media (slag, glass, quartz) but also ice blasting will have a negative effect on the surface quality. The air for blasting must be dry and oil-free. Metal parts that have come into contact with sea water or other saline 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 GC-WE, 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 GC-WE 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 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 the application, 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 GC-WE 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 fixing 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.

Scope of delivery

Processing Spatula | Contour Spatula Flexy | Instructions for use | Gloves | Resin & Hardener

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Accessories

- 10000147 Cleaner Spray S, 500 ml, transparent
- 10000347 Cleaner S, 5 L, colourless, transparent
- 10024313 Surface Cleaner, 400 ml, transparent
- 10025288 Surface Cleaner, 5 L, transparent
- 10026647 Mould Release Agent Liquid F 1000, 250 ml, white, milky
- 10026712 Mould Release Agent Wax P 500, 150 g
- 10053995 Repair Stick Multi-Purpose, 115 g, vintage white
- 10000913 Glass Fibre Cloth Tape, 1 PCE, white
- 10010887 Processing Spatula short, 1 PCE
- 10022562 Processing Spatula long, 1 PCE
- 10010066 Contour Spatula Flexy, 1 PCE
- 10016002 Pump Dispenser WPS 1500, 1 PCE
- 10039667 Cable Scissors No. 35, 1 PCE
- 10045523 Processing Kit, 1 PCE

Conversion table

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

Available sizes

	WEICON A	WEICON B	WEICON BR	WEICON C	WEICON F	WEICON F2	WEICON HB 300	WEICON HT 111	WEICON SF	WEICON ST	WEICON Fire Safe	WEICON TI	WEICON UW	WEICON WR2	WEICON HP	WEICON Anti-Static	WEICON Food Grade	WEICON Anti-Stick	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	x	x												
Adhesive				x	x		x	x		x	x				x											
Wear, erosion and corrosion protection – abrasion-resistant coating																x	x	x	x	x	x	x	x	x		
Casting, relining and gap compensation – casting and injecting potting compound	x					x								x											x	x

To the product detail page:



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Chemical resistance 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	+	Trichloroethylene	o
Impregnating oils	+	Hydrogen peroxide <30 % (hydrogen superoxide)	+
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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