Epoxy Resin Systems
Plastic Metal

WEICON SF

pasty | steel-filled | certified by DNV

WEICON SF has a DNV certificate and is particularly suitable for quick repairs and repair works on leaky pipelines, housings and gears, for anchorages, and for the production of fixing devices. The epoxy resin can be used in machine construction, tool construction, model and mould making, the maritime industry and in many other applications.

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		100:33
Mixing ratio by volume		100:54
Viscosity of the mixture	at +25 °C	800.000 mPa·s
Density of the mixture		1,8 g/cm³
Consumption	Layer thickness 1.0 mm	1.8 kg/m²
max. layer thickness	per step	10 mm
Curing		
Pot life	at 20 °C, 500 g batch	5 min.
Additional layer after	(35 % strength)	20 min.
Working strength after	(80 % strength)	1 h
Final strength	(100 % strength)	6 h
Shrinkage		0,82 %

Mechanical properties after curing		
- measured after curing at		24 h RT + 4 h 60 °C
Tensile strength	DIN EN ISO 527-2	37 MPa
Elongation at break (tensile)	DIN EN ISO 527-2	1,0 %
E-modulus (tensile)	DIN EN ISO 527-2	3500-4500 MPa
Compressive strength	DIN EN ISO 604	52 MPa
Bending strength	DIN EN ISO 178	41 MPa
Impact strength	DIN EN ISO 179-1/1eU	4,5 kJ/m²
Hardness (Shore D)	DIN ISO 7619	82±3
Adhesive strength	DIN EN ISO 4624	21 MPa
Lap shear strength material thickn. 1,5mm DIN EN 1465		
Steel 1.0338 sandblasted		13 MPa
Stainless steel V2A sandblasted		16 MPa
Aluminium sandblasted		8 N/mm²
Galvanized steel		5 MPa
Thermal parameters		
Temperature resistance		-35°C to +90°C
Tg after curing at room temperature	(DSC)	+41 °C
Heat deflection resistance	DIN EN ISO 75-2	+40 °C
Thermal conductivity	DIN EN ISO 22007-4	0,6 W/m·K
Heat capacity	DIN EN ISO 22007-4	0,86 J/(g·K)
Electrical parameters		
Resistance	DIN EN 62631-3-1	1,3·10¹² Ω·m
magnetic		yes
Specific properties		
MIL-Spec	entspricht	MIL-A-52194
Zulassungen / Richtlinien		
DNV		DNV GL rules for classification
IMPA Code		812931/32
ISSA Code		75.509.13/14

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 SF depends on the thorough preparation of the surfaces. This is the most

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WEICON SF

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 SF, 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 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 SF, 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/m^2. Heating and repeated blasting of the surface may be necessary to remove all soluble salts and moisture.

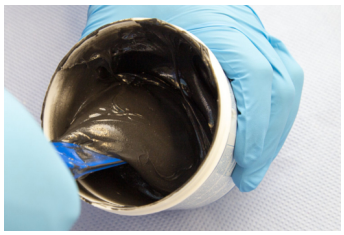
After each mechanical pre-treatment, the surface should be cleaned again with WEICON Cleaner Spray S and protected from further contamination until the coating is applied.

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 SF 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 two minutes at 20°C (68°F). Use the included processing spatula to do so. 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 5 minutes. The specified pot life refers to a material batch of 500 g and 20°C (68°F) material temperature. Do not mix more than 500 g per batch, as the typical reaction heat of epoxy resins causes faster curing.



Application

For processing, we recommend an ambient temperature of 20°C (68°C) at less than 85% relative humidity. Apply WEICON SF with the processing spatula as quickly as possible to the desired layer thickness. 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.

Curing

Final hardness is reached after 6 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 SF 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 | Contour Spatula Flexy | Instructions for Use | Gloves

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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, 115 g, vintage white
10850005	Glass Fibre Cloth Tape, 1 PCE, dark grey
10953001	Processing spatula, 1 PCE
10953003	Processing spatula, 1 PCE
15841500	Pump Dispenser WPS 1500, 1 L
52000035	Cable Scissors No. 35, 1 PCE
10851010	Processing Kit, 1 PCE

Recommended equipment

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

Conversion table

(°C x 1,8) + 32 = °F	Nm x 8,851 = lb·in
mm/25,4 = inch	Nm x 0,738 = lb·ft Nm
µm/25,4 = mil	x 141,62 = oz·in
N x 0,225 = lb	mPa·s = cP
N/mm^2 x 145 = psi	N/cm x 0,571 = lb/in
MPa x 145 = psi	kV/mm x 25,4 = V/mil

Available sizes:

10250002	WEICON SF, 200 g, dark grey
10250005	WEICON SF, 0,5 kg, dark grey
10250020	WEICON SF, 2 kg, dark grey

	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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