Epoxy Resin Systems

Plastic Metal

WEICON SF

0,2 kg

0,5 kg

2,0 kg

pasty
steel-filled
certified by DNV GL

ISSA-Code	75.509.13/14
IMPA-Code	812931/32

WEICON SF has a DNV GL certificate and is particularly suitable for quick repairs and repair work on leaking pipes, housings and gears, for anchoring and for the production of clamping devices.

The epoxy resin system can be used in mechanical engineering, tool production, model and mould making, the maritime industry and many other areas.

Curing

Pot life at 20 °C, 500g batch	5 min.
Repeated application possible after (35 % strength)	2 h
Capable of bearing mechanical loads (80 % strength)	1 h
Final strength after (100 % strength)	6 h
Shrinkage	0.82 %

Mechanical properties after curing

Tensile strength	DIN EN ISO 527-2	15 MPa
Elongation at break (tensile)	DIN EN ISO 527-2	<1 %
E-modulus (tensil)	DIN EN ISO 527-2	3000-3500 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 MPa
Galvanized steel		5 MPa

Thermal parameters

Temperature resistance		-35 °C to +90 °C
Tg after curing at room temperature	(DSC)	approx. +41 °C
Heat deflection temperature Thermal	DIN EN ISO 75-2 (B)	+40 °C
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

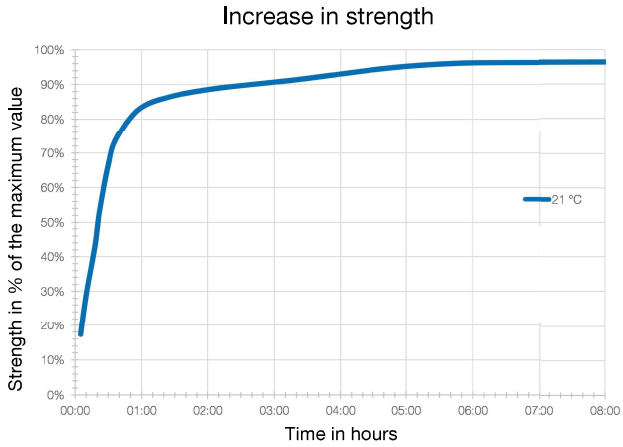
Resistivity	DIN IEC93	$1.3 \cdot 10^{12}$ Ωm
Magnetic		yes

Characteristics

Base	epoxy
Filler	steel
Texture	pasty
Colour after curing	dark grey

Processing

Processing temperature	+15 °C to +40 °C
Component temperature	>3°C over dew point
Relative air humidity	max. 85 %
Mixing ratio by weight	100:33
Mixing ratio by volume	100:54
Viscosity of the mixture at 25 °C and 20 $^1/_s$	800,000 mPa·s
Density of the mixture	1.8 g/cm³
Consumption at layer thickness of 1.0mm	1.8 g/cm³
Max. layer thickness per work step	10 mm



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.

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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 SF 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 SF, 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 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/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 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 maximum of two minutes at 20°C (68°F). Use the included processing spatula for this purpose. 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 prepare batches larger than 500 g, as the typical reaction heat of epoxy resins results in faster curing.

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Application

For processing, we recommend an ambient temperature of 20°C (68°C) at less than 85% relative humidity for processing. Apply WEICON SF as quickly as possible to the desired layer thickness using the processing spatula. Make sure that the application is even and without air bubbles. In order to fill large gaps or holes, fibreglass, expanded metal or other mechanical fixation 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 14°C (57°F) increase the curing time, until at approx. 4°C (39°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. Unopened containers must be used up within 6 months.

Scope of delivery

10953001 Processing Spatula, short (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
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
Lint-free cloths

Available sizes

10250002	WEICON SF 0.2 kg
10250005	WEICON SF 0.5 kg
10250020	WEICON SF 2.0 kg

	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	
Adhesive				x									x		x				
Wear protection								x	x							x			
Potting and gap filling	x					x											x	x	

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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

Conversion table

(°C x 1.8) + 32 = °F	N x 0,225 = lb	Nm x 8.851 = lb·in	mPa·s = cP
mm/25.4 = inch	N/mm² x 145 = psi	Nm x 0.738 = lb·ft	N/cm x 0,.71 = lb/in
µm/25.4 = mil	MPa x 145 = psi	Nm x 141.62 = oz·in	kV/mm x 254 = V/mil

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