Epoxy Resin Systems
Plastic Metal

WEICON GL-S

flowable | mineral-filled | wear protection | control layer | temperature-resistant up to +180 °C

The epoxy resin system WEICON GL-S provides high abrasion resistance and serves as wear protection for heavily used surfaces. It is flowable, spreadable (can be applied with a paint brush), has a high initial strength, is mineral-filled, and resistant to chemicals. WEICON GL-S is also well-suited for creating a system structure in combination with WEICON Ceramic BL. Due to its long recoat time of five hours, GL-S is especially suitable for applications at higher ambient temperatures or for larger surfaces. The different colours of Ceramic BL (blue) and GL-S (dark green) make it easy to determine the degree of wear during visual inspections. It is particularly suitable for lining heavily stressed pump casings, as wear protection for slide bearings, chutes, funnels and pipes, and for the repair of castings, valves and fan blades. The product can be used in mechanical and plant engineering, in equipment engineering, and in many other areas of industry.

Characteristics		
Base		epoxy
Filler		silicon carbide, zirconium silicate
Texture		flowable
Colour		green
Processing		
Processing temperature		+15°C to +40°C
relative air humidity		< 85 %
Mixing ratio by weight		100:8
Mixing ratio by volume		100:15
Viscosity of the mixture	at +25 °C	23.000 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	55 min.
Additional layer after	(35 % strength)	5 h
Working strength after	(80 % strength)	8 h
Final strength	(100 % strength)	12 h
Shrinkage		0,13 %
Mechanical properties after curing		
Tensile strength	DIN EN ISO 527-2	59 MPa
Elongation at break (tensile)	DIN EN ISO 527-2	0,9 %
E-modulus (tensile)	DIN EN ISO 527-2	7100-7300 MPa
Compressive strength	DIN EN ISO 604	116 MPa
Bending strength	DIN EN ISO 178	80 MPa
Hardness (Shore D)	DIN ISO 7619	90±3
Adhesive strength	DIN EN ISO 4624	17 MPa
Lap shear strength material thickn. 1,5mm DIN EN 1465		
Steel 1.0338 sandblasted		12 MPa
Stainless steel V2A sandblasted		11 MPa
Aluminium sandblasted		7 MPa
Galvanized steel		4 MPa
Thermal parameters		
Temperature resistance		-35°C to +180°C
Tg after curing at room temperature	(DSC)	~ +52 °C
Tg after tempering (at 120°C)	(DSC)	+69 °C
Heat deflection resistance	DIN EN ISO 75-2 (B)	+55
Thermal conductivity	DIN EN ISO 22007-4	0,6 W/m·K
Heat capacity	DIN EN ISO 22007-4	0,91 J/(g·K)
Electrical parameters		
Resistance	DIN EN 62631-3-1	$5{,}8 \cdot 10^{11}$ Ω·m

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 GL-S 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 GL-S, the

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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 GL-S, 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 GL-S 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 the Stirrer Stainless Steel, 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 55 minutes. The indicated pot life time refers to a material batch of 500g 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 processing, we recommend an ambient temperature of 20°C (68°C) 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 GL-S intensively into the surface in crosswise layers using a paint brush to achieve maximum adhesion. By means of this technique, the epoxy resin penetrates well into all cracks and roughness depths. Afterwards, a second application with a paint brush or foam roller can be carried out straight away, until the desired layer thickness is reached. A layer of approx. 0,25 to 0,50 mm can be achieved per work step. Make sure that the epoxy resin is applied evenly and without air bubbles. Further coats can be applied in each case after approx. 5 hours (layer sequence time).

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 GL-S 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. Opened containers must be used up within 6 months.

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Scope of delivery

Processing Spatula | Instructions for use | Gloves

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
10604515	Mould Release Agent Wax P 500, 150 g
10539115	Repair Stick Multi-Purpose, 115 g, vintage white
10700005	WEICON GL, 0,5 kg, green
10700010	WEICON GL, 1 kg, green
10850005	Glass Fibre Cloth Tape, 1 PCE, dark grey
10953001	Processing spatula, 1 PCE
10953003	Processing spatula, 1 PCE
10953021	, 0 ’’
10953010	Stirrer Stainless Steel, 1 PCE
15841500	Pump Dispenser WPS 1500, 1,5 L
13955001	Empty cartridge, 1 PCE
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 mm
Fabric 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:

10705002	WEICON GL-S, 200 g, green
10705005	WEICON GL-S, 0,5 kg, green
10705020	WEICON GL-S, 2 kg, green

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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