Epoxy Resin Systems
Plastic Metal

WEICON Ceramic HC 220

wear protection | surface coating | high temperature resistance | drinking water approval according to BS 6920

The epoxy resin system WEICON Ceramic HC 220 provides high abrasion resistance and serves as wear protection for heavily used surfaces.

It is temperature-resistant up to +220 °C, flowable, ceramic-filled, resistant to chemicals and has a high adhesive strength. Ceramic HC 220 can be easily processed with a paint brush and applied to large surfaces. The epoxy resin systems is non-corrosive, anti-magnetic and cures practically without shrinkage.

It adheres excellently to various surfaces such as metal, concrete, stone or asphalt. When combined with coarse materials such as silicon carbide in grain sizes of F14-F24, WEICON Ceramic HC 220 serves as an anti-slip coating, enhancing slip resistance in industrial facilities. This combination is perfectly suited for chemical plants and workshops where stairs or floors are contaminated with aqueous solutions.

The product can be used in mechanical and plant engineering, in equipment engineering, and in many other areas of industry where high temperature loads are part of daily work.

Characteristics

Base		Epoxy
Filler		silicon carbide, zirconium silicate
Texture		flowable
Colour		dark grey
Minimum shelf life	at room temperature	36 mon.

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		100:18
Viscosity of the mixture	at +25 °C	~30.000 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	~45 min.
Additional layer after	(35 % strength)	~4 h
Working strength after	(80 % strength)	~6 h
Final strength	(100 % strength)	~10 h
Shrinkage		0,14 %

Mechanical properties after curing

- Measured after curing at		24 h RT + 14 h +120 °C
Tensile strength	DIN EN ISO 527-2	51 MPa
Elongation at break (tensile)	DIN EN ISO 527-2	0,8 %
E-modulus (tensile)	DIN EN ISO 527-2	5300-7000 MPa
Compressive strength	DIN EN ISO 604	160 MPa
Bending strength	DIN EN ISO 178	83 MPa
Hardness (Shore D)	DIN ISO 7619	85±3
Adhesive strength	DIN EN ISO 4624	11,6 MPa
Taber Test	DIN ISO 9352 (H18, 1 kg, 1000 rotations)	0,2 g / 0,1 cm³
Lap shear strength material thickn. 1,5mm DIN EN 1465		
Steel 1.0338 sandblasted		15 MPa
Stainless steel V2A sandblasted		12 MPa
Aluminium sandblasted		8 MPa
Galvanized steel		5 MPa

Thermal parameters

Temperature resistance		-35 °C to +220 °C
Tg after curing at room temperature	(DSC)	~50 °C
Tg after tempering (at 130°C)		+130
Heat deflection resistance	DIN EN ISO 75-2 (*after tempering)	+130* °C
Thermal expansion coefficient	ISO 11359	$70 \cdot 10^{-6} 6K^{-1}$ 1/m·K

Electrical parameters

Magnetic		no

Approvals / Guidelines

Food safety certification		BS 6920

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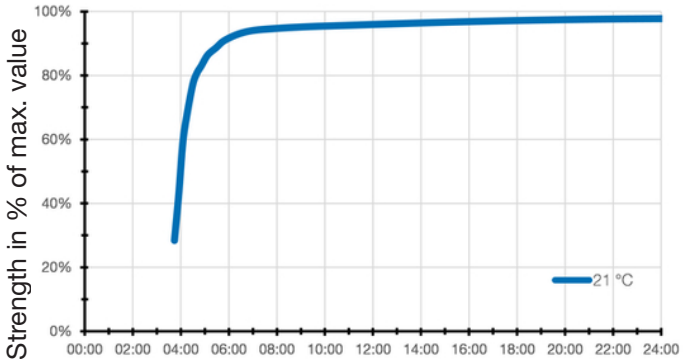
Increase in strength



Time in hours

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 Ceramic HC 220 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 Ceramic HC 220, 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 Ceramic HC 220, 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 Ceramic HC 220 should be applied as soon as possible (within one hour) to avoid oxidation, flash rust or new contamination.

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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 45 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 °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 Ceramic HC 220 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. 4 hours (layer sequence time).

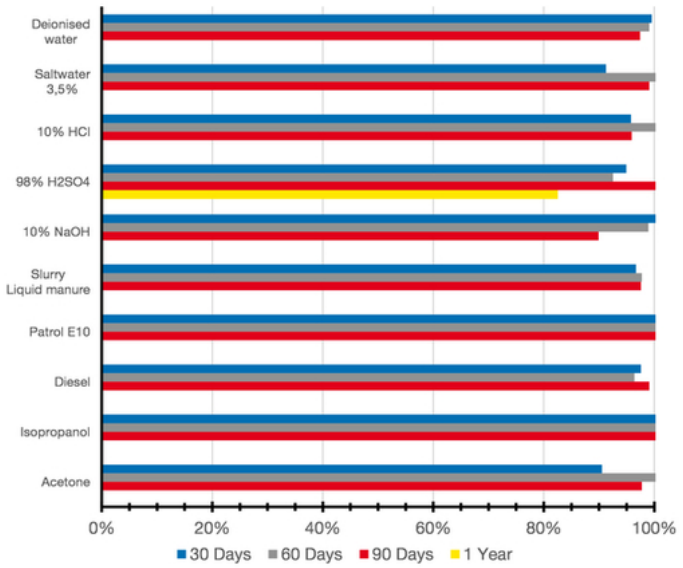
Curing

Final hardness is reached after 10 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

WEICON Epoxy Resin Systems should be stored in a dry place at room temperature. Unopened containers can be stored at temperatures from +18 °C to +28 °C. Opened containers must be used up within 6 months.

Tensile strength after storage



Scope of delivery

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

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
10059417	Brush 35 short, flat, Plastic Metal, 1 PCE
10001978	Stirrer Stainless Steel, 1 PCE
10016002	Pump Dispenser WPS 1500, 1 PCE
10002034	Empty cartridge, 1 PCE
10039667	Cable Scissors No. 35, 1 PCE
10045523	Processing Kit, 1 PCE

Recommended equipment

Angle grinder	PE film 0.2 mm
Blast machine	Fabric tape
Heat pocket	Brush
Hot or fan heater	Foam roller
Smoothing trowel, spatula	Lint-free cloth

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Conversion table

(°C x 1.8) + 32 = °F
mm/25.4 = inch
µm/25.4 = mil
N x 0.225 = lb
N/mm^2 x 145 = psi
MPa x 145 = psi

Nm x 8.851 = lb·in
Nm x 0.738 = lb·ft
Nm x 141.62 = oz·in
mPa·s = cP
N/cm x 0.571 = lb/in
kV/mm x 25.4 = V/mil

Available sizes

10060702	WEICON Ceramic HC 220, 200 g, dark grey
10060705	WEICON Ceramic HC 220, 0,5 kg, dark grey
10060707	WEICON Ceramic HC 220, 2 kg, dark grey

	WEICON A	WEICON B	WEICON BR	WEICON C	WEICON F	WEICON F2	WEICON HB 300	WEICON HT 111	WEICON SF	WEICON ST	WEICON TI	WEICON UW	WEICON WR2	WEICON HP	WEICON Fire Safe	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													
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:

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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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 <98 %	+
Hydrofluoric acid diluted	o	White spirit	+
Tannic acid diluted <7%	+	Carbon tetrachloride (tetrachloromethane)	+
Glycerin (trihydroxipropane)	+	Tetralin (tetrahydronaphthalene)	o
Glycol	o	Toluene	-
Humic acid	+	Trichloraethylene	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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