Epoxy Resin Systems
Plastic Metal

WEICON Casting Resin MS 1000

Liquid | unfilled | low viscosity

WEICON Casting Resin MS 1000 is a transparent and very flowable epoxy resin system with high mechanical strength. It is suitable for a wide range of applications. MS 1000 adheres well to metal, wood, rigid foam and many plastics. It can be used for large-surface adhesive bonding or for laminating composite threaded bushes and screws. Due to its low viscosity, the epoxy resin system is also suitable for the casting of electric components. It can be used for the production of fibre composites, in tool and mould making, in the electrical industry, in machine construction, and in many other industrial fields. MS 1000 shows good wetting and penetration results of glass fabric and therefore is well-suited for laminating glass, aramid and carbon fibre for the production of fibre-reinforced components. It can also be easily combined with different fillers (powdery, fibrous, fabric).

Characteristics		
Base		Epoxy
Filler		unfilled
Texture		liquid
Colour		transparent, low intrinsic colour
Processing		
Processing temperature		+15°C to +40°C
Component temperature		>3 °C above dew point
Relative air humidity		< 85 %
Mixing ratio by weight		100:20
Mixing ratio by volume		100:21
Viscosity of the mixture	at +25 °C	1200 mPa·s
Density of the mixture		1,2 g/cm³
Consumption	Layer thickness 1.0 mm	1,2 kg/m²
Max. layer thickness	per step	10 mm

Curing		
Pot life	at 20 °C, 500 g batch	~ 80 min.
Additional layer after	(35 % strength)	9 h
Working strength after	(80 % strength)	14 h
Final strength	(100 % strength)	24 h
Shrinkage		0,01 %
Mechanical properties after curing		
- Measured after curing at		24 h RT + 4 h +60 °C
Tensile strength	DIN EN ISO 527-2	56 MPa
Elongation at break (tensile)	DIN EN ISO 527-2	2,8 %
E-modulus (tensile)	DIN EN ISO 527-2	2500-2600 MPa
Compressive strength	DIN EN ISO 604	92 MPa
Bending strength	DIN EN ISO 178	90 MPa
Hardness (Shore D)	DIN ISO 7619	81±3
Taber Test	DIN ISO 9352 (H18, 1 kg, 1000 rotations)	1,1 g / 1,0 cm³
Lap shear strength material thickn. 1,5mm DIN EN 1465		
Steel 1.0338 sandblasted		16 MPa
Stainless steel V2A sandblasted		14 MPa
Aluminium sandblasted		8 MPa
Galvanized steel		7 MPa
Thermal parameters		
Temperature resistance		-35 °C to +120 °C
Tg after curing at room temperature	(DSC)	~ +47 °C
Tg after tempering (at 70°C)	(DSC)	+62 °C
Heat deflection resistance	DIN EN ISO 75-2	+52 °C
Thermal conductivity	DIN EN ISO 22007-4	0,19 W/m·K
Heat capacity	DIN EN ISO 22007-4	1,21 J/(g·K)
Electrical parameters		
Resistance	DIN EN 62631-3-1	2,31·10^14 Ω·m
Magnetic		no
Approvals / Guidelines		
ISSA Code		75.509.36
IMPA Code		812985
MIL-Spec	comply with	MIL-C-47116

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 Casting resin MS depends on the thorough pre-treatment of all 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, 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. After each mechanical pre-treatment, the surface should be cleaned again with WEICON Cleaner Spray S and protected

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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, the Casting Resin MS 1000 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 80 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

Prior to the application, the mixture should be poured into a clean container. For processing, we recommend an ambient temperature of 20°C (68 °F) at less than 85% relative humidity. For a thin pre-coat, work the Casting Resin intensively into the surface in crosswise layers using the Contour Spatula Flexy or a Modler paint brush 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.

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 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.

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
10000913	Glass Fibre Cloth Tape, 1 PCE, white
10024676	Colour Paste Black, 250 g
10010887	Processing Spatula, 1 PCE
10022562	Processing Spatula, 1 PCE
10010066	Contour Spatula Flexy, 1 PCE
10059417	Brush 35 short, flat, Plastic Metal, 1 PCE
10008633	Can, 1 PCE
10001978	Stirrer Stainless Steel, 1 PCE
10016002	Pump Dispenser WPS 1500, 1 PCE
10002034	Empty cartridge, 1 PCE
10000441	Cartridge Gun, 1 PCE
10039667	Cable Scissors No. 35, 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

Conversion table

(°C x 1.8) + 32 = °F	Nm x 8.851 = lb·in
mm/25.4 = inch	Nm x 0.738 = lb·ft
µm/25.4 = mil	Nm 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

10000168	WEICON Casting Resin MS 1000, 1 kg, transparent, low intrinsic colour
10040057	WEICON Casting Resin MS 1000, 0,5 kg, transparent, low intrinsic colour
10054402	WEICON Casting Resin MS 1000, 200 g, transparent, low intrinsic colour

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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	+	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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