Epoxy Resin Systems

Plastic Metal

WEICON Casting Resin MS 1000

liquid
unfilled casting resin
low viscosity

ISSA-Code 75.509.36
IMPA-Code 812985

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 on 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 after cusring	transparent, slight inherent colour

Processing

Processing temperature	+15 °C up to +40 °C
Component temperature	>3 °C over dew point
Relative air humidity	max. 85 %
Mixing ratio by weight	100:20
Mixing ratio by volume	100:22
Viscosity of the mixture at 25 °C and 20 $^1/_s$	1200 mPa·s
Density of the mixture	1.1 g/cm³
Consumption at layer thickness of 1.0mm	1.1 g/cm³
Max. layer thickness per work step	10 mm

Curing

Pot life at 20 °C, 500 g batch	20 min.
Repeated application possible after (35 % strength)	8 Std.
Capable of bearing mechanical loads (80 % strength)	16 Std.
Final strength after (100 % strength)	24 Std.
Shrinkage	0.07 %

Mechanical properties after curing

Tensile strength	DIN EN ISO 527-2	57 MPa
Elongation at break (tensile)	DIN EN ISO 527-2	2 %
E-modulus (tensile)	DIN EN ISO 527-2	2800-3000 MPa
Compressive strength	DIN EN ISO 604	60 MPa
Bending strength	DIN EN ISO 178	28 MPa
Hardness (Shore D)	DIN ISO 7619	78±3
Adhesive strength	DIN EN ISO 4624	12 MPa
Lap shear strength material thickn. 1.5mm	DIN EN 1465	
Steel 1.0338 sandblasted		12 MPa
Stainless steel V2A sandblasted		16 MPa
Aluminium sandblasted		8 MPa
Galvanized steel		8 MPa

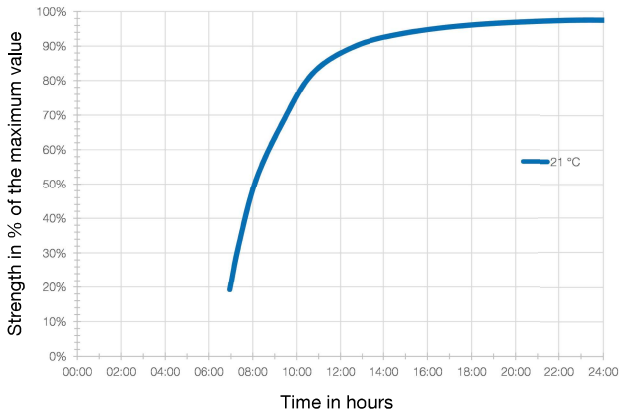
Thermal parameters

Temperature resistance		-35 °C bis +120 °C
T_g after curing at room temperature	(DSC)	approx. +50 °C
T_g after tempering (at 120 °C)	(DSC)	+61 °C
Heat deflection temperature	DIN EN ISO 75-2 (B)	+50 °C
Thermal conductivity	DIN EN ISO 22007-4	0.2 W/m·K
Heat capacity	DIN EN ISO 22007-4	1.29 J/(g·K)

Electrical parameters

Resistivity	DIN IEC93	$1.5 \cdot 10^{13}$ Ωm
Magnetic		no

Increase in strength



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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 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, the following points must be observed before processing:

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 Surface Cleaner.

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 Surface Cleaner 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, 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 20 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.

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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°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 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 36 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. Unopened containers must be used up within 6 months.

Scope of delivery

10953001 Processing Spatula, short (0.2 kg package)
10953003 Processing Spatula, long (1.0 kg package)
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
10850005 Glass Fibre Cloth Tape, 50 mm x 1 m
10519250 Colour Paste Black, 250 g
10953001 Processing Spatula, short
10953003 Processing Spatula, long
10953064 Resin Can
10953010 Stirrer Stainless Steel
15841500 Pump-Dispenser WPS 1500
13955001 Cartridge 310 ml empty
13250001 Cartridge Gun
52000035 Cable Scissors No. 35

Recommended equipment

Angle grinder
Heating pack, hot air blower or fan heater
Smoothing trowel, spatula
PE foil 0.2 mm
Fabric tape
Laminating and Modler brush
Foam and venting roller
Lint-free cloths

Available sizes

10520002 WEICON Casting Resin MS 1000 0,2 kg
10520010 WEICON Casting Resin MS 1000 1,0 kg

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/mm² x 145 = psi	N/cm x 0.571 = lb/in
MPa x 145 = psi	kV/mm x 25.4 = V/mil

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

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