

Casting Resin Plus 90



Casting compound | crystal clear | low viscosity | up to 90 mm layer thickness

The epoxy resin system Casting Resin Plus 90 is a casting compound which cures crystal clear. Its special formulation allows high layer thicknesses up to 90 mm. The compound can also be used to coat sensitive surfaces and protects against damages. The casting resin has a low viscosity, high mechanical stability, is impact-resistant, has a high moisture resistance and a good UV resistance. It can be processed very well manually and mechanically - whether by grinding, filing or drilling. Casting Resin Plus 90 is particularly suitable for applications with high optical requirements. Whether in the production of design objects, furniture construction, trade fair construction, yacht and boat building, wood processing, arts and crafts, or gardening and landscaping - the casting resin is suitable for a wide range of applications.

Characteristics

Base	Epoxy
Filler	unfilled
Texture	liquid
Colour	crystal clear
Minimum shelf life	at room temperature 24 mon.

Processing

Processing temperature	+20°C to +25°C
Component temperature	>3 °C above dew point
Relative air humidity	< 85 %
Mixing ratio by weight	100:42
Mixing ratio by volume	100:50
Viscosity of the mixture	at +25 °C 180-230 mPa·s
Density of the mixture	1,1 g/cm ³
Consumption	Layer thickness 1.0 mm 1,1 kg/m ²
Max. layer thickness	per step 90 mm

Curing

Pot life	at 25 °C, 1 kg batch	30-35 h
Additional layer after	(35 % strength)	2,5 days
Working strength after	(50 % strength)	4 days
Final strength	(100 % strength)	14 days
Shrinkage		0,35 %

Mechanical properties after curing

- Measured after curing at		24 h RT + 24 h 60 °C
Tensile strength	DIN EN ISO 527-2	33 MPa
Elongation at break (tensile)	DIN EN ISO 527-2	14 %
E-modulus (tensile)	DIN EN ISO 527-2	1.000-1.200 MPa
Compressive strength	DIN EN ISO 604	30 MPa
Bending strength	DIN EN ISO 178	21 MPa
Hardness (Shore D)	DIN ISO 7619	73±3
Taber Test	DIN ISO 9352 (H18, 1 kg, 1000 rotations)	0,7 g / 0,7 cm ³
Lap shear strength material thickn. 1,5mm DIN EN 1465		
	Steel 1.0338 sandblasted	15 MPa
	Stainless steel V2A sandblasted	12 MPa
	Aluminium sandblasted	10 MPa
	Galvanized steel	12 MPa

Thermal parameters

Temperature resistance		-35°C (-4°F) to +120°C (+248°F)
Heat deflection resistance	DIN EN ISO 75-2	+29 °C
Thermal conductivity	DIN EN ISO 22007-4	0,24 W/m·K
Heat capacity	DIN EN ISO 22007-4	1,86 J/(g·K)

Electrical parameters

Resistance	DIN EN 62631-3-1	2,26·10 ¹⁴ Ω·m
Magnetic		no

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 Plus 90 depends on the thorough pre-treatment of all surfaces. This is the most important factor for overall success. Dust, dirt, grease, oil, and moisture or wetness have a negative impact on the

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adhesion. Therefore, before processing Casting Resin 90, the following points must be observed:

The workpieces to be cast must be dry, dust-free, free of dirt and loose parts as well as oil and grease. Therefore, remove all impurities and loose parts thoroughly. For cleaning and degreasing, we recommend WEICON Surface Cleaner. Cavities must be cleaned with compressed air or vacuumed very carefully. After each mechanical pre-treatment, the surfaces should be cleaned with compressed air and with WEICON Surface Cleaner again. Best results are achieved at an ambient temperature between 20 °C and 25 °C. The Casting Resin Plus 90 as well as the workpieces should also be in this temperature range. Cracks, holes, gaps and porous surfaces should be filled or sealed in advance with Casting Resin Plus 90 or MS 1000. To do so, work the casting resin intensively into the surface in crosswise layers for a thin pre-coat to achieve maximum adhesion and to avoid air bubbles. By means of this technique, the epoxy resin penetrates well into all cracks and roughness depths. After surface pre-treatment, allow the parts to cure for a few hours (52 hrs. for Plus 90/ 8 hrs. for MS 1000) and protect them from contamination.

Formwork

First, cut the formwork material to size and clean the edges with Surface Cleaner. Note that the side walls should be 2 cm higher than the workpiece. It is especially important to seal the edges carefully. For this purpose, we recommend the flexible adhesive and sealant WEICON Flex 310 M. The sealant is applied to the contact surfaces between the edges and the base plate. Then join the workpieces and fixate with screws. Next, seal the angle joints as well and allow to cure for approx. 24 hours. In order to be able to remove the cast material from the mould more easily afterwards, the formwork material should first be thoroughly treated with silicone-free mould release agent before assembly. 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 formwork is finished, it can be prepared for casting the resin. For a perfect cast, flame the formwork evenly with an open flame, e.g. with a gas cartridge burner, shortly before casting.

Mixing

The work area should be dust-free, dry and well ventilated. Mix the resin and hardener together thoroughly and bubble-free for at least four minutes at 20°C to 25°C. 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 mix as much as is needed for one casting process. The indicated pot

life of 30-35 hours refers to a material batch of 1kg and 25°C material temperature. Mixing larger quantities or higher processing temperatures will result in faster curing due to the typical reaction heat of epoxy resins. After mixing, the casting compound should be transferred to a clean container and left to rest for approx. 30 minutes to allow air pockets to escape. In case of strong air inclusions, we recommend the use of a vacuum pump.



Casting

Pour the Casting Resin Plus 90 into the mould from a very low height. The maximum layer thickness of 90 mm should not be exceeded. Higher layer thicknesses produce strong exothermic reactions that can lead to yellowing and cracking. After casting, air pockets can be removed by heating the resin surface, e.g. with a hot air gun or gas cartridge burner. After the recoat time of 52 hours, another layer can be applied up to a height of 90 mm. Extreme temperatures, hot or cold, and humidity can have a negative effect on the appearance and properties of epoxy casting resins.

Curing

Final hardness is reached after two weeks at 20°C (68°F) at the latest. At lower temperatures, the curing can be accelerated by evenly applying heat, e.g. with a heating pack, hot air blower or fan heater. 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.

Sheeting

After full cure, the formwork can be removed carefully. Post-treatment: Prepare smooth edges with a router before sanding. Then sand and polish until clear. The orbital sander can be used for this. The final surface can be sanded clear with the following grit: At the beginning, 80/120 grit up to 2500 grit, if desired up to 4000 grit. The surface can then be polished with acrylic or plexiglass paste and polishing pads. This removes all traces of sanding and makes the surface shiny and clear.

Post-treatment

Prepare smooth edges with a router before sanding. Then sand and polish until clear. The orbital sander can be used for this. The final surface can be sanded clear with the following

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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.

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
10026712	Mould Release Agent Wax P 500, 150 g
10026647	Mould Release Agent Liquid F 1000, 250 ml, white, milky
10057240	Flex 310 M® Classic MS-Polymer, 200 ml, grey
10024676	Colour Paste Black, 250 g
10010887	Processing Spatula short, 1 PCE
10022562	Processing Spatula long, 1 PCE
10008633	Can, 1 PCE
10001978	Stirrer Stainless Steel, 1 PCE
10016002	Pump Dispenser WPS 1500, 1 PCE
10039667	Cable Scissors No. 35, 1 PCE

Recommended equipment

Drill

Orbital sander

Router

Heat gun

Gas cartridge burner

Hot or fan heater

Heat pocket

Laminating and modelling brush

Vacuum pump

Polishing material

Industrial vacuum cleaner

Compressed air

Fabric tape

Screw clamps

Lint-free cloth

Conversion table

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$

$\text{mm}/25.4 = \text{inch}$

$\mu\text{m}/25.4 = \text{mil}$

$\text{N} \times 0.225 = \text{lb}$

$\text{N}/\text{mm}^2 \times 145 = \text{psi}$

$\text{MPa} \times 145 = \text{psi}$

$\text{Nm} \times 8.851 = \text{lb}\cdot\text{in}$

$\text{Nm} \times 0.738 = \text{lb}\cdot\text{ft}$

$\text{Nm} \times 141.62 = \text{oz}\cdot\text{in}$

$\text{mPa}\cdot\text{s} = \text{cP}$

$\text{N}/\text{cm} \times 0.571 = \text{lb}/\text{in}$

$\text{kV}/\text{mm} \times 25.4 = \text{V}/\text{mil}$

Available sizes

10060675 Casting Resin Plus 90, 200 g, crystal clear

10060677 Casting Resin Plus 90, 0,5 kg, crystal clear

10060681 Casting Resin Plus 90, 1 kg, crystal clear

To the product detail page:



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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 <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	+	Trichloroethylene	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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