Epoxy Resin Systems
**Plastic Metal**

# Casting Resin Plus 90

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

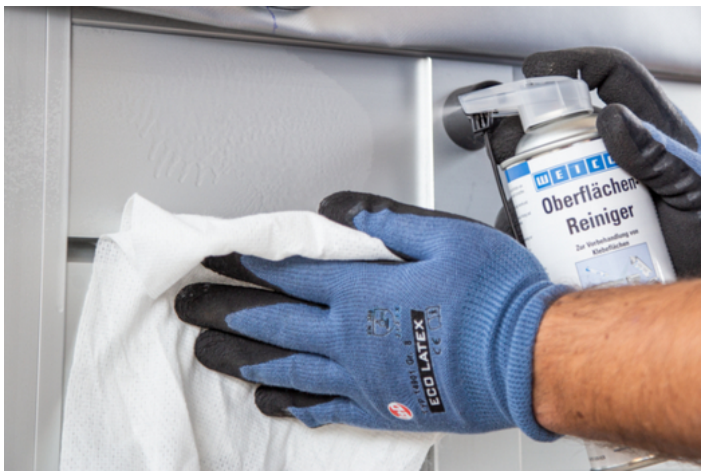
The epoxy resin system Casting Resin Plus 90 is a casting compound which cures crystal clear. Its special formulation allows high layer thicknesses up to 90 mm. The compound can also be used to coat sensitive surfaces and protects against damages. The casting resin has a low viscosity, high mechanical 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 |
| **Processing** | | |
| Processing temperature | | +20°C to +25°C |
| Component temperature | | >3 °C above dew point |
| relative air humidity | | < 85 % |
| Mixing ratio by weight | | 100:47 |
| Mixing ratio by volume | | 100:53 |
| Viscosity of the mixture | at +25 °C | 180-230 mPa·s |
| Density of the mixture | | 1,1 g/cm³ |
| Consumption | Layer thickness 1.0 mm | 1,1 kg/m² |
| 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 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 | | 10 MPa |
| Galvanized steel | | 12 MPa |
| Colour | | crystal clear |
| **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,



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oil, and moisture or wetness have a negative impact on the 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 compresses 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



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## 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

| | |
|---|---|
| 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 |
| 10604515 | Mould Release Agent Wax P 500, 150 g |
| 10604025 | Mould Release Agent Liquid F 1000, 250 ml, white, milky |
| 13305200 | Flex 310 M® Classic MS-Polymer, 200 ml, grey |
| 10519250 | Colour Paste Black, 250 g |
| 10953001 | Processing spatula, 1 PCE |
| 10953003 | Processing spatula, 1 PCE |
| 10953064 | Can, 1 PCE |
| 10953010 | Stirrer Stainless Steel, 1 PCE |
| 15841500 | Pump Dispenser WPS 1500, 1 PCE |
| 52000035 | Cable Scissors No. 35, 1 PCE |

## Recommended equipment

Drilling machine | Orbital sander | Router | Hot air gun, gas cartridge burner, fan heater or heating packs | Laminating and modelling brush | Vacuum pump | Polishing material | Industrial vacuum cleaner | Compressed air |Fabric tape | Screw clamps | 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 |
| 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

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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