TDS

Technical data sheet

EPOXYPLAST 3D B20 JEWELCAST

ULTRA DIAMOND CLEAR I MAXIMUM UV PROTECTION I JEWELRY CASTING

Version 2.0 February 2023

I. Brief description and characteristics

EpoxyPlast 3D B20 JewelCast is a solvent-, alkylphenol- and benzyl alcohol-free **2K** epoxy resin. This system impresses with its excellent UV resistance & self-venting ability and is therefore ideally suited for highly transparent or coloured decorative castings in the artistic field up to approx. **20 mm** pouring height at room temperature curing.
Due to its new formula update, the **EpoxyPlast 3D B20 JewelCast** System has a very good resistance to fogging due to moisture.

II. Areas of application

- Decorative and highly transparent castings (flower embedding, lamps, cubes, spheres, etc.).
- Small and medium sized coloured artistic applications (e.g., coasters, trays).
- Production of river tables and furniture.
- Production of glass, carbon laminates or moulds where excellent transparency is required.

III. System properties

Mixing ratio:	**100**:**50** parts by weight (**2**:**1**)
Potting height (20°C):	from **1 mm** to **20 mm**, higher potting possible at lower ambient temperature <16°C
Crystal clear components:	Gardner **<0.5** = results in a highly transparent (diamond clear) cure
Excellent UV protection:	Highest possible protection through maximum synergy of UV blockers & n-HALS additives
Excellent flow:	Excellent flowability due to ideal viscosity for resin art casting applications
Solvent-free:	VOC-free epoxy technology
Maximum solid content:	**100 %** solid content
Exothermic:	Very marginal volume shrinkage, very low exothermic reaction during cure
Superior deaeration:	Latest formulation with the most effective & fastest deaeration additives
Resistance:	Good chemical resistance to moisture & water after full cure
Non-toxic:	Harmless to humans and animals after full chemical cure

IV. Typical properties

Description: Highly transparent two-component epoxy resin system.

Optical aspects

• EpoxyPlast 3D Component A	bluish-highly transparent liquid (EP resin)
• EpoxyPlast 3D B20 JewelCast	highly transparent liquid (EP hardener)
• EpoxyPlast 3D A + B20 JewelCast	Highly transparent liquid (mixture)

Specification EpoxyPlast 3D (Component A)

Density at 20°C:	approx. 1.13 g/cm³	(ISO 2811-2)
Viscosity at 20°C:	approx. 550 ± 100 mPa*s	(ISO 3219)
Refractive index:	1,542 ± 0,001	(ASTM D 1747)

Specification EpoxyPlast 3D B20 JewelCast (Component B)

Density at 20°C:	approx. 1.02 g/cm³	(ISO 2811-2)
Viscosity at 20°C:	approx. 675 mPa*s	(ISO 3219)
Refractive index:	1,478 ± 0,001	(ASTM D 1747)
Hazen colour number:	<45 mgPt/L	(DIN EN ISO 6271)

DIPON.DE REMOVABLE AUTOMOTIVE COATINGS GMBH & CO. KG
Ringofenstr. 39 (Industrial Complex & Factory)
44287 Dortmund – DEUTSCHLAND / GERMANY
Telefon: +49 231 187 30 332
Fax: +49 231 999 52 946
E-Mail: info@dipon.de
business@dipon.de
Internet: www.dipon.de

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System specification EpoxyPlast 3D (component A) + EpoxyPlast B20 JewelCast (component B)

Mixing ratio:	100 / 50 parts by weight resin/hardener
Density at 20°C:	approx. 1.10 g/cm³
Initial viscosity at 20°C:	approx. 545 mPa*s (ISO 3219)
Pot life (20°C) 100 gram, 2 cm:	approx. 50 min.
Setting time (20°C) 100 gram, 2 cm:	approx. 100 min.
Shore hardness after 16 h (80°C)	D 84 (ISO 868)
Shore hardness after 7 days (20°C):	D 82 (DIN ISO 7619-1)

V. Thermal properties

Adhesion-free time 5 mm (25°C):	approx. 12 hours
Time until demoulding 20 mm (25°C):	approx. 20 hours
Glass transition temperature (Tg)	
After 16 h at 80°C, ISO 11359:	approx. 56°C

VI. Processing instructions

- Ensure a low temperature fluctuation **(<1°C** difference) and very well-ventilated environment. Please wear protective clothing (mask, skin and respiratory protection). Epoxy resins and hardeners can cause allergic reactions.
- Before starting work, always check whether an epoxy resin component has crystallised (for information, see the item "Crystallisation"), which is identified by a milky, viscous or cloudy mass in the A-component.
- Check the ambient and material temperature. The ambient room temperature should ideally be at least **18°C**. The media temperature of component A+B is each ideally at least **19°C** - **25°C** for better self-venting. With colder media, the density increases, which limits the self-venting ability and microbubbles may not be able to rise on their own. At ambient temperatures **>20°C**, the maximum potting height will be reduced. At temperatures <18°C the maximum possible potting height will increase in small steps (independent test trials necessary). **Attention!** An excessively high potting height will result in a strong exothermic reaction, causing vapour, cracking, discolouration, and excessive bubble formation. The higher the ambient temperature and the larger the quantity mixed, the lower the possible potting height with constant transparency. The lower the ambient temperature with a constant dispensing quantity, the higher the possible dispensing height.
- Before using **EpoxyPlast 3D B20 JewelCast**, check the materials to be coated for compatibility by carrying out a preliminary test.
- The recommended approach for the most accurate measurement of the ingredients of all components is by weight. **EpoxyPlast 3D B20 JewelCast** is weighed out exactly with **100**:**50** or **2**:**1** parts by weight, starting with component (A). Any deviation, even marginal, will result in prolonged or non-occurring curing. Adding too much hardener increases the elasticity of the material and reduces the degree of hardness. Excessive addition of the A component results in a permanently sticky film, which is no longer reversible due to the polyaddition. A maximum excess or shortfall of **0.1 %** is within the tolerance range. Do not mix by volume (millilitres or litres).
- Never mix the original containers together without exact dosing in the measuring cup. As residues remain in the canister/bottle, a homogeneous mass cannot be achieved in this way. Always pour the canister/bottle into a measuring cup and weigh it accurately with a scale.
- Pay attention to the recommended mixing time of **three** - **four** minutes + subsequent repotting in a clean container and mixing again for **three** - **four** minutes for a maximum homogeneous mass. Use a mixing cup only **once**.
- Observe the recommended maximum speed for mixing the two components, which is approx. **300 rpm**, to prevent or minimise air inclusions during stirring.

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- It should be noted that coatings which are exposed to prolonged UV radiation may discolour locally. Any discolouration has no influence on the material properties.
- Prevent the humidity from exceeding or falling below the **40** to **60 %** range.
- Prevent contact with moisture during the chemical curing process. Please allow at least seven, ideally **14 days** at room temperature curing without contact with water or moisture.

VII. Crystallisation

Storage below **20°C** may accelerate crystallisation. Crystallised components in tightly closed containers are liquefied or the crystalline resin melted by heating to **55°C** - maximum **70°C** in a hot water bath. The maximum temperature of **70°C** should not be exceeded. After successful Recrystallisation in the epoxy resin (A), allow to cool to room temperature. Crystallisation is not an indication of quality degradation, further this is a regular chemical process that occurs with bisphenol A based epoxy resins. Crystallisation-stabilised epoxy resins are based on bisphenol A + bisphenol F and are referred to as A/F resins. These A/F resins are very stable to crystallisation, but they are particularly sensitive to heat, so that they have the disadvantage that they turn yellow strongly (thermal yellowing) even without sunlight when only a small amount of heat is added (from approx. **60°C**). In the case of potting resins for jewellery, furniture construction, outdoor, art and decorative activities, you should always choose an epoxy resin based on bisphenol A in order to prevent thermal yellowing.

VIII. Storage

EpoxyPlast 3D (A), resin in original container	approx. 12 months
EpoxyPlast 3D B20 JewelCast (B), hardener in original container	approx. 12 months

Store products in original packaging in a dry and well-ventilated room at room temperature. Opened containers must be immediately sealed moisture-proof. Use up any remaining material quickly.

IX. Cleaning

Clean tools immediately after use with e.g., DIPON® Epoxy Resin Tool Cleaner Liquid.

X. Safety

EpoxyPlast 3D B20 JewelCast should only be used in well ventilated areas. Avoid contact with skin and eyes. It is strongly recommended to wear safety goggles, gloves, and appropriate work clothing during application without exception. Do not stand near open flames or use the material during work. Detailed information on occupational safety, transport, handling, storage, safety, and environmental protection can be found in the DIPON® **EpoxyPlast 3D B20 JewelCast** safety data sheet which you can request online via ***info@dipon.de***.

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