Technical Data Sheet

Polycraft Opti-Cast 100

Two Part Hand Casting Polyurethane System, Water Clear & UV Stable

Polycraft Opti-Cast 100 is a two component polyurethane system which is water clear when cured. Polycraft Opti-Cast 100 is ideal for rapid prototyping, embedding or any type of clear casting with or without a vacuum.

Special Features

- Optically Clear
- UV Stable
- Polish able to a high gloss
- Low viscosity
- Easily Pigmented
- Rapid Demould

Mix Ratio

Polycraft Opti-Cast 100 is mixed with an easy to measure 1:1 by weight ratio

1 Part A - 1 Part B by weight

Product Data

Property	Units	Opti-Cast 100 A	Opti-Cast 100 B	Mix
Material	-	Formulated Polyol	Isocyanate	Polyurethane
Appearance	-	Clear Liquid	Clear Liquid	Clear Liquid
Viscosity (25˚C)	mPa.s	300 - 500	50 - 100	200 - 400
Density (25˚C)	g/cm³	1.01 - 1.06	1.04- 1.09	1.02 - 1.07
Pot Life (25˚C)	Minutes	-	-	8 - 11
Cure Time	Minutes	-	-	60
Full Cure Time	Hours	-	-	12 - 24
Rec Casting Depth	mm			2 - 15

Cured Data

Property	Standard	Units	Opti-Cast 100 (Unfilled)
Hardness	BS 2782 : Part 3 : Method 365B	Shore D	80 - 85
Linear Shrinkage	500 x50 x 10 mm	%	< 0.2
Tensile Strength	BS 2982 Part 3: Method 320B	MPa	48 - 52
Elongation at Break	BS 2782 Part 3: Method 320B	%	5.0 – 7.0
Heat Distortion Temp. (HDT)	TMA	˚C	45 - 50

Method of Use

Mould Preparation

Before use ensure that the master model from which the mould is made has the exact finish that is required in the cast or finished units, for optimum clarity polish the master model to a very high sheen. A dull finish on your master will result in casts that require polishing to achieve clarity. Ensure that the mould is clean and dry and if the mould is made from metal, wood or resin, use a release agent. When embedding an object ensure the object is thoroughly dry. Very thin Perspex rods are useful for holding the units in place this will eliminate the need for casting in layers and so avoid join lines.

Do not use this resin in moulds made from condensation cure silicones as this will inhibit the cure.

When casting rectangular shapes preheat the mould to 45 - 50˚C in order to prevent shrinkage at the corners of the block.

Resin Preparation

Open both A and B containers and examine for any signs of crystallisation, place in the oven at 45 - 60˚C is any crystals are observed. Ensure that both components are between 20 - 30˚C before mixing. If using pigments add the pigment to part A, add the pigment at 1 - 3 %. Do not use water based pigments.

Mixing Instructions

Do not use paper cups or wooden mixing sticks as these may introduce moisture to the mix which may cause excess air in the cast or cure inhibition. Mix the two components at the correct ratio, mixing carefully to avoid air inclusion and making sure the material at the sides and bottom of the mix vessel is well stirred into the middle. The material may become cloudy in appearance for a few

minutes. Pour the material into the mould, ideally onto the sides and in one place to reduce air bubbles.

Polishing Tips

For general polishing of a moulded part use a fine liquid polish such as Farecla G100. If a deep scratch needs to be removed then wet and dry paper should be used in the following descending grit sizes 400, 800, 1000 and 1200. A course and fine polishing paste such as Farecla G7 or G10 should then be used with G100. This information is for guidance only. To avoid distortion ensure that the material does not reach temperatures above 60˚C during machining or polishing

Curing

The casting can generally be demoulded in 1 - 2 hours at 25°C. The precise demould time will vary with casting thickness, as thin section units will cure slower than thicker section units. When casting thin wall sections, ensure that the mould and resins are at least 20 – 25°C to facilitate a good cure and reduce the risk of brittleness. The cure rate is affected by temperature, the product must be cast at temperatures greater than 20°C. To optimise the cure, especially if the casting has thin sections, it is advisable either to use preheated moulds (see “Mould Preparation” above), or to post cure the castings after gelation. To achieve optimum properties, a post cure is recommended. A typical post cure schedule would be to heat the material for 1 hour at 40°C, followed by 1 hour at 60°C, followed by 3 hours at 80°C. To prevent any distortion during the post cure cycle, the unit should be placed on a conformer. When post-curing is complete, let the unit cool down slowly to room temperature, preferably in the oven. Sudden change in temperature can cause distortion or warping.

Storage

Polycraft Opti-Cast 100 A and B should be stored in original, unopened containers between 20 and 25°C. Polycraft Opti-Cast 100 B may crystallise partially or completely if not stored at above 20°C. Like all polyurethanes, both components are moisture sensitive. Moisture absorption will cause excessive aeration in cast parts. KEEP THE PACKING TIGHTLY SEALED WHEN NOT IN USE.

Storage

All data listed relates to typical values. This data should not be considered a product specification. Our technical advice, whether verbal, or in writing is given in good faith, but without warranty – this also applies where proprietary rights of third parties are involved. It does not release you from the obligation to test the products supplied by us as to their suitability for the intended process and use.

Before using any of our products, users should familiarise themselves with the relevant Technical and MSDS.