

Technical Data Sheet

CPU15 Clear casting polyurethane

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

CPU15 is a two component hand casting polyurethane system which is water clear when cured, ideal for rapid prototyping, embedding or any type of clear casting, with or without vacuum. A long pot life product for bulk casting, CPU50, is also available.

Special Features

- Optically clear
- UV stable
- Polishable to a high gloss
- Low viscosity
- Easily pigmented

Mix Ratio

CPU15A : CPU15B
By Weight 100 : 120

Product Data

Property	Units	CPU15A	CPU15B	Mix
Material	-	Formulated Polyol	Isocyanate	Polyurethane
Appearance	-	Clear liquid	Clear liquid	Clear liquid
Viscosity (25°C)	mPa.s	400 – 500	20 – 40	100 – 200
Density (25°C)	g/cm ³	1.01 – 1.06	1.04 – 1.09	1.03 – 1.08
Pot Life (200g, 25°C)	Minutes	-	-	12 – 17
Demould Time (200g, 25°C)	Minutes	-	-	60
Minimum Casting Thickness	mm	-	-	2
Maximum Casting Thickness	mm	-	-	15

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Cured Properties

Properties	Standard	Units	Result (Full Cure)
Hardness	BS 2782: Part 3: Method 365B	Shore D	85 – 90
Linear Shrinkage	500 x 50 x10 mm	%	< 0.2
Tensile Strength	BS 2782: Part 3: Method 320B	MPa	50 – 55
Elongation at break	BS 2782: Part 3: Method 320B	%	10 – 15
Flexural Strength	BS 2782: Part 3: Method 335A	MPa	50 – 55
Flexural Modulus	BS 2782: Part 3: Method 335A	MPa	2200 – 2400
Heat Distortion Temperature (HDT)	TMA	°C	48 – 53

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, i.e. for optimum clarity polish the master model to a very high sheen. Ensure that the mould is clean and dry. If the mould is made from metal or resin, use a release agent. For flexible moulds we recommend addition cure silicone rubber. Condensation cured silicone rubber should not be used with CPU15.

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.

When casting rectangular shapes, preheat the mould to 45 – 50°C in order to prevent shrinkage at the corners of the block. If the casting has thin sections, it is advisable to preheat the mould to 45 – 50°C.

Resin Preparation

Open both A and B containers and examine for any signs of crystallization, place in the oven at 45 – 60°C if any crystals are observed. *Ensure that both components are between 20 – 25°C before mixing. If using pigments, add the pigment to the part A. We suggest using 1 – 3% pigment. Do not use water based pigments.*

Mixing instructions

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Mix the two components in the correct ratio, mixing carefully to avoid air inclusion and making sure that the material at the sides and at the bottom of the mix vessel is well stirred in to the middle. The material will be cloudy in appearance for a few minutes, continue mixing until the liquid becomes clear. Degas for approximately 5 minutes before pouring. Pour the material into the mould, onto the sides and in one place to reduce air bubbles. Degas again if necessary, avoid boiling the material at very high vacuum.

Curing

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 in an oven at 40 – 50°C for 3 hours. Allow the casting to cure for at least 48 hours before machining or polishing. To avoid distortion ensure that the material does not reach temperatures above 60°C during machining or polishing.

Polishing tips

For general polishing of a moulded part use a fine liquid polish such as Farècla 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 should then be used. This information is for guidance only

Storage

CPU15A and B should be stored in original, unopened containers between 20 and 25°C. CPU15B 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.**

If stored under the above conditions, CPU15A and B will have a shelf life of 6 months, from the date of production.

Packaging

CPU15A is supplied in 835g containers.
CPU15B is supplied in 1kg containers.

Further Information

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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 provided by ABL Ltd.