

# Technical Data Sheet

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## Clear PU 50S

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

Clear PU 50S is a two component hand casting polyurethane system which is water clear when cured. Is ideal for rapid prototyping, embedding or any type of clear casting, with or without vacuum, has a long pot life, making it ideally suited to bulk casting.

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### **Special Features**

Optically clear  
UV stable  
Polishable to a high gloss  
Long pot life – suitable for bulk casting  
Low viscosity  
Easily pigmented

### **Mix Ratio**

**PU 50SA : PU 50SB**  
By Weight 100 : 120

### **Product Data**

<b>Property</b>	<b>Units</b>	<b>PU 50SA</b>	<b>PU 50SB</b>	<b>Mix</b>
<b>Material</b>	-	Formulated Polyol	Isocyanate	Polyurethane
<b>Appearance</b>	-	Clear liquid	Clear liquid	Clear liquid
<b>Viscosity (25°C)</b>	mPa.s	400 – 500	20 – 40	100 – 200
<b>Density (25°C)</b>	g/cm <sup>3</sup>	1.01 – 1.06	1.04 – 1.09	1.03 – 1.08
<b>Pot Life (200g, 25°C)</b>	Minutes	-	-	55 – 65
<b>Demould Time (200g, 25°C)</b>	Hours	-	-	5 – 6
<b>Minimum Casting Thickness</b>	mm	-	-	10
<b>Maximum Casting Thickness</b>	mm	-	-	50

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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 this product.

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 part A. We suggest using 1-3% pigment.

Do not use water based pigments.

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## ***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 coarse and fine polishing paste such as Farècla G7 or Farècla G10 should then be used finishing with G100. This information is for guidance only

## ***Storage***

Part A and part B should be stored in original, unopened containers between 20 and 25°C. Part 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.

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

## ***Packaging***

Part A is supplied in 835g containers.  
Part B is supplied in 1kg containers.

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## ***Further Information***

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.