

## Technical Data Sheet

### SG CRYSTAL CAST

#### 1. SG CRYSTAL CAST - UV STABLE

Two Part Polyurethane Casting System Water Clear UV Stable.

SG Crystal Cast is a two component thermoset system which is water clear when cured. SG Crystal Cast is ideal for rapid prototyping, embedding or any type of clear casting application. SG Crystal Cast L is ideal for bulk casting applications such as art work, sculptures, embedding decorative objects and similar applications.

LOW VISCOSITY / OPTICALLY CLEAR / UV STABLE / POLISHABLE TO A HIGH GLOSS / EASILY PIGMENTED

#### 2. PHYSICAL PROPERTIES & MIX RATIO

	Material	Mix ratio by weight	Pot life (200g, 25°C)	Demould Time (200g, 25°C)	Hardness Shore D	Viscosity (25°C) mPa.s	Density (25°C) g/cm <sup>3</sup>	Linear Shrinkage % 500 x 50 x 5 mm	Tensile Strength MPa	Elongation at break %	Flexural Strength MPa	Flexural Modulus MPa
	Clear Resin with normal and long working time											
SG Clear Cast S	PU	100A:120B	8-10 Min.	See curing section	75 - 80	100 - 350	1.16 - 1.21	< 0.4 %	60-64	4.5-5.5	95 - 100	2150 - 2450
SG Clear Cast M	PU	100A:120B	23-27 min.	See curing section	75 - 80	100 - 350	1.16 - 1.21	< 0.4 %	60-64	4.5-5.5	95 - 100	2150 - 2450
SG Clear Cast	PU	100A:120B	50-70 min.	See curing section	75 - 80	100 - 350	1.16 - 1.21	< 0.4 %	60-64	4.5-5.5	95 - 100	2150 - 2450

#### 3. TEMPERATURE RESISTANCE

	Standard	Units	Glass Transition Temperature (Tg)
Curing Schedule			
7 Day Room Temp.	DMA	°C	46 - 50
3 hours at 80°C	DMA	°C	58 - 62
16 hours at 100°C	DMA	°C	86-90

#### 4. 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 such as Release Agent Pol-Ease 2300. For flexible moulds we recommend Eurosil 22 Blue addition cure silicone rubber. Condensation cured silicone rubber should not be used with SG Crystal Cast. It may be necessary to preheat the mould to 40°C in order to prevent shrinkage at the corners and sides of the casting. Always do some test with the mold and the cast materials.

#### 5. MIXING INSTRUCTIONS

First open the A and B containers and examine for any signs of crystallization. If crystals are observed, place in the oven at 45 - 60 °C before mixing. If you use the pigments, please add 1-3% to Part A. please be sure both components are between 20-25 °C before mixing.

Mix the two components at 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 may become 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 in one place to reduce air bubbles. Degas again if necessary, avoid boiling the material at very high vacuum.

### 6. CURING

The cure rate of SG Crystal Cast is affected by temperature, the product must be cast at temperatures greater than 20°C. SG Crystal Cast L is a slow curing resin, incomplete cure could occur if cast in thin section. Exact cure time will depend on the size and geometry of the casting and should be determined by customer testing. Thinner castings will take longer to cure than thicker castings, but generally, the product can be demoulded after 24 hours at 25°C. Incomplete cure can result in slight distortions or deformations of the components if forces are applied.

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 3 hours at 80°C. To achieve maximum thermal performance an extended post cure of 16 hours at 100°C is advised. 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.

	Recommended Casting Thickness	Pot Life (200g, 25°C)	Cure Time Temperature (Tg)	Approximate Demould Time * (10mm)
Curing Schedule				
SG Crystal Cast S	2 – 10 mm	8 – 10 minutes	24 hours	6 – 8 hours
SG Crystal Cast M	5 – 30 mm	23 – 27 minutes	24 hours	12 – 16 hours
SG Crystal Cast L	20 – 100 mm	50 – 70 minutes	24 – 48 hours	Not recommend for this thickness.

\* Demould time will vary depending on the shape of the casting and should be tested by user.

### 7. POLISHING TIPS

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. 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 such as Farècla G7 or Farècla G10 should then be used finishing with G100. This information is for guidance only.

### 8. STORAGE

SG Crystal Cast (L) A and B should be stored in original, unopened containers between 20 and 25°C. SG Crystal Cast 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. USE POLY PURGE TO RESEAL THE CONTAINER.

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

### 10. AVAILABLE PACKAGING

Please contact Schouten SynTec for Bulk supply.

SG Crystal Cast is available with production on request in:  
Set 9,175 KG - (4.175 Gram A + 5.000 Gram B)