

CRISTAL HRI 35

References:

Polyol : CRISTAL HRI 35-POLYOL-SL 350 000

Isocyanate : CRISTAL HRI 35-ISO-SL 000 350

Definition:

→ CRISTAL HRI 35

Rigid transparent polyurethane casting resin for the production of massive optical parts and / or inclusion.

High refractive index, high UV stability.

Countertype of PMMA or PC.

Colourable, easy machining and polishing.

Mercury-free product complying with the following European Directives:

- 2011/65/UE - 2015/863 - 2017/2102/UE (RoHS 1 and 2)
- 2002/96/EC (DEEE)
- 2000/53/EC (VHU)
- 2000/11/EC

Average physical properties of the components:

	CRISTAL HRI 35 Polyol SL 350 000	CRISTAL HRI 35 Iso SL 000 350	CRISTAL HRI 35 Mix SL 350 350
Aspect – Colour	Colourless Transparent liquid	Colourless Transparent liquid	Colourless Transparent liquid Colourless Transparent solid
Brookfield LVT viscosity (mPa.s) According to MO-051	400	800	
Density at 25°C According to MO-032	1.28	1.15	1.21

Application properties

	CRISTAL HRI 35 Polyol SL 350 000	CRISTAL HRI 35 Iso SL 000 350	CRISTAL HRI 35 Mix SL 350 350
Mixing ratio by weight	65	100	
Minimum mixing time at 25°C (sec.)			120
Potlife on 100g at 25°C (min.) According to MO-062			35
Demoulding time at 70°C (3mm) (min.) According to MO-116			120
Total curing time			2 h at 70°C + 16 h at 100°C + 24 h at RT
Maximum casting thickness (mm)			100

The values mentioned on this document are based on tests and researches carried out in our laboratories, in precise conditions. This document cannot be, in any case, considered as a specification data sheet. It is the responsibility of the user to check the suitability of the product in his own conditions, defined and tried by himself. Synthene company disclaims any responsibility for any consequence occurred by the use of this product.

Average mechanical and thermal properties of the cured material:

- Average data obtained after stabilization : 2 h at 70°C +16 h at 100°C + 24 h at room temperature

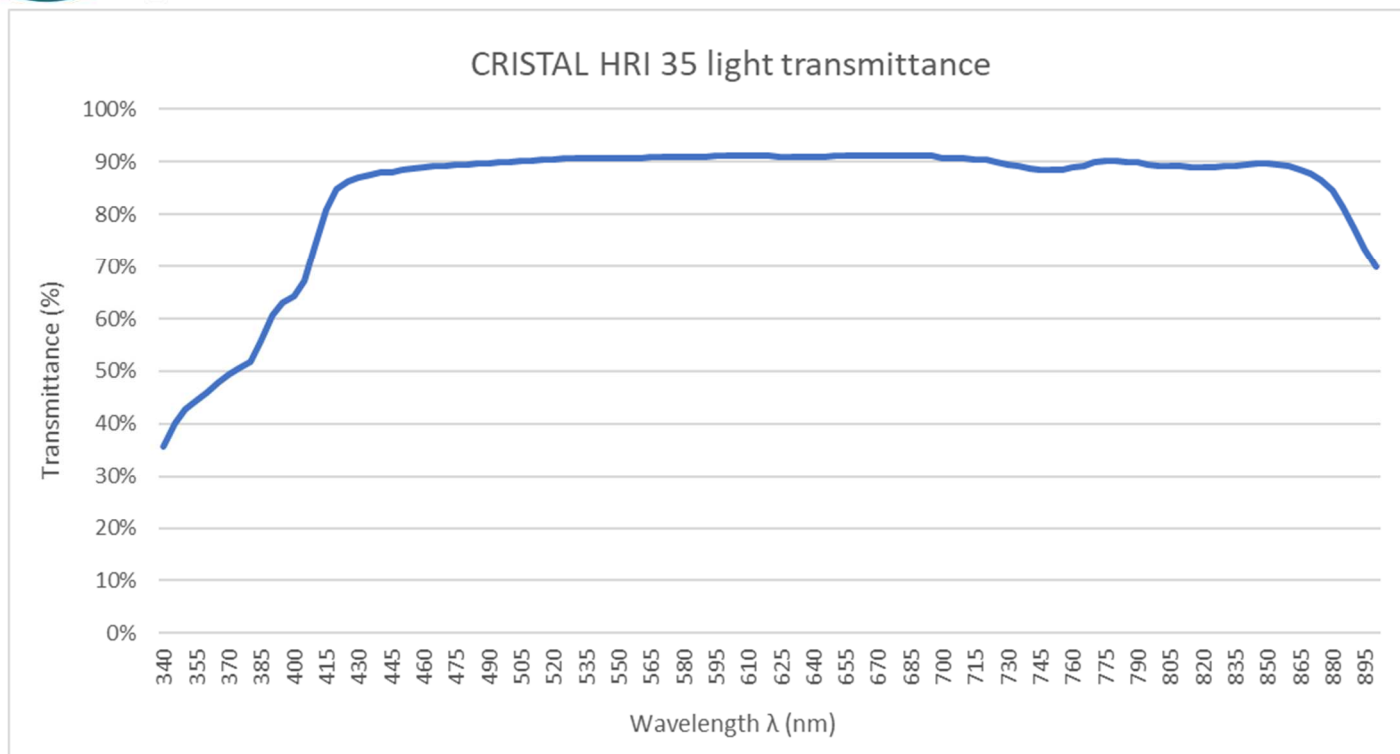
	Standard	Unity	Values
Shore D1 hardness	ISO 868 : 2003	Shore D1	84
Heat Deflection Temperature (HdT)	ISO 75-2 : 2013 Method B	°C	62
Flexural modulus	ISO 178 : 2011	MPa	2000
Maximum flexural strength	ISO 178 : 2011	MPa	75
Tensile modulus	ISO 527-1 : 2012	MPa	2200
Elongation at break	ISO 527-1 : 2012	%	5
Maximum tensile strength	ISO 527-1 : 2012	MPa	60
Maximum stress at break	ISO 527-1 : 2012	MPa	60
Charpy impact resistance	ISO 179-1 : 2010 unnotched-1eU ^b	KJ/m ²	50

Average optical properties of the cured material:

- Average data obtained after stabilization : 2 h at 70°C +16 h at 100°C + 24 h at room temperature

	Standard	Unity	Values
Refractive index at 20°C	ISO 489 : 1999		1.54
Hazen coloration on a 50 mm thickness	ISO 2211 : 1973		< 30
UV resistance - QUV-B accelerated ageing (313 nm) ΔE after 1500h			4

The values mentioned on this document are based on tests and researches carried out in our laboratories, in precise conditions. This document cannot be, in any case, considered as a specification data sheet. It is the responsibility of the user to check the suitability of the product in his own conditions, defined and tried by himself. Synthene company disclaims any responsibility for any consequence occurred by the use of this product.



Hygiene and safety for using:

Wearing appropriate safety clothes and accessories (gloves, glasses) is advised.

Work in a ventilated room.

For more information, please read the Medical and Safety Data Sheet of the material.

Application process with a vacuum casting machine:

1. Pre-heat the polyaddition silicone mould at 70°C.
2. Rehomogenise and weigh the separated components (Upper cup : Iso / Lower cup : Polyol), keeping in mind the residual quantity to add in the upper cup. Then put the cups and the mould inside the vacuum casting machine and add the mixing spatula.
3. Degas for 10 minutes, with agitation in the lower cup (Polyol).
4. Stop the agitation and pour the content of the upper cup (Iso) down to the lower cup (Polyol).
5. Start the agitation and mix for at least 120 seconds.
6. Release the vacuum in the chamber to a pressure of about 100 hPa.
7. Cast the mixture into the silicone mould until complete filling.
8. Break the vacuum back to atmospheric pressure.
9. Immediately place the mould in an oven at 70°C during at least 120 minutes (duration to be adapted depending on the thickness of the part).
10. Demoulding the part is possible after 2h at 70°C, cool down the mould with air pressure before pulling the part.
11. Then it is necessary to carry out the post-curing (2h at 70°C + 16h at 100°C + 24h at room temperature) in order to obtain the technical data sheet mechanical properties. If the part has been demoulded, use a shape-holder to avoid any potential distortion of the part during the post-curing step.

The values mentioned on this document are based on tests and researches carried out in our laboratories, in precise conditions. This document cannot be, in any case, considered as a specification data sheet. It is the responsibility of the user to check the suitability of the product in his own conditions, defined and tried by himself. Synthene company disclaims any responsibility for any consequence occurred by the use of this product.

Application process with hand casting:

1. Pre-heat the polyaddition silicone moulds at 70°C.
2. Rehomogenise the components, weigh the polyol and isocyanate in a clean mixing cup.
3. Duly mix both components together, making sure that the mixture is homogeneous (approximately 1 min.)
4. Pour the mixture in a second cup without scrapping the bottom neither trying to get the residues back from the first mixing cup walls (in order to avoid problems linked to an inhomogeneous mix). Mix again with a clean spatula for approximately 60 seconds.
5. Use a vacuum pump to degas the second cup.
6. Cast in the mould at once to avoid the incorporation of air in the mould while casting (if possible, cast from a low point).
7. Immediately place the mould in an oven at 70°C during at least 120 minutes (duration to be adapted depending on the thickness of the part).
8. Demoulding the part is possible after 2h at 70°C, cool down the mould with air pressure before pulling the part.
9. Then it is necessary to carry out the post-curing (2h at 70°C + 16h at 100°C + 24h at room temperature) in order to obtain the technical data sheet mechanical properties. If the part has been demoulded, use a shape-holder to avoid any potential distorsion of the part during the post-curing step.

Packaging:

- Parcel of 6 kits of (6 x 0.65kg polyol + 6 x 1kg isocyanate) = 9.9kg

Storage:

12 months in original and unopened containers, stored between 15 and 25 °C.

The values mentioned on this document are based on tests and researches carried out in our laboratories, in precise conditions. This document cannot be, in any case, considered as a specification data sheet. It is the responsibility of the user to check the suitability of the product in his own conditions, defined and tried by himself. Synthene company disclaims any responsibility for any consequence occurred by the use of this product.