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PRC1810

References :

Polyol: PRC1710-PRC1810-POLYOL-SL120000 **Isocyanate: PRC1810-PRC1819-ISO-SL000221**

Definition :

→ **PRC1810 :**

Clear and transparent polyurethane resin for the realisation of PMMA or PC like parts with the vacuum casting process.
The material has an excellent UV stability. Colourable material, with good thermal properties and high impact resistance.
REACH-compatible material complying with the following European Directives:

- 2011/65/EU – 2015/863 – 2017/2102/EU (RoHS 1 and 2)
- 2002/96/EC (WEEE)
- 2000/53/EC (ELVs)
- 2000/11/EC

Average physical properties of the components :

	PRC1810 Polyol SL 120 000	PRC1810 Iso SL 000 221	PRC1810 Mix SL 120 221
Aspect - Colour	Colourless transparent Liquid	Colourless transparent Liquid	Colourless transparent liquid Colourless transparent solid
Brookfield LVT viscosity (mPa.s) According to MO-051	450	450	450
Density at 25°C According to MO-032	1,08	1,10	1,10

Application properties :

	PRC1810 Polyol SL 120 000	PRC1810 Iso SL 000 221	PRC1810 Mix SL 120 221
Mixing ratio by weight	56	100	
Mixing ratio by volume	57	100	
Mixing time at 25°C Milkytime			2 min.
Potlife on 100g at 25°C According to MO-062			9 min.
Demoulding time at 70°C (on 3mm) According to MO-116			2h
Optimal curing time	2h at 70°C + 16h at 100°C + 24h at room temperature		

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

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Average mechanical and thermal properties of the cured material :

- **Average values obtained after post-curing : 2h at 70°C + 16h at 100°C + 24h at room temperature**

	Standard	Unit	Values PRC1810
Hardness	ISO 868 : 2003	Shore D1	85
Flexural modulus	ISO 178 : 2011	MPa	2200
Maximum flexural strength	ISO 178 : 2011	MPa	88
Tensile modulus	ISO 527-1 : 2012	MPa	2350
Elongation at maximum strength	ISO 527-1 : 2012	%	6,5
Elongation at break	ISO 527-1 : 2012	%	15
Maximum tensile strength	ISO 527-1 : 2012	MPa	65
Tensile strength at break	ISO 527-1 : 2012	MPa	46
Charpy impact resistance	ISO 179-1 : 2010 unnotched-1eU[b]	KJ/m²	84
Heat Deflection Temperature (HDT)	ISO 75-2 : 2013 method B	°C	84
Glass transition temperature (Tg)	ISO 6721-10 : 2015	°C	91

Optical properties of the cured material :

	Standard	Unit	Values PRC1810
Refractive index at 20°C	ISO 489 : 1999	-	1,51
Hazen colouration on a 50 mm thickness	-	-	< 30
UV resistance -QUV-B accelerated ageing after 1000h (313 nm)	ASTM G154 - ISO 4892-3:2016	ΔE.CIELAB	< 3

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.

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Operating conditions :

➔ **Application process in a vacuum casting machine :**

1. Preheat the polyaddition silicone mould at 70°C.
2. Rehomogenise and weigh the separated components (upper cup : Iso / lower cup : Polyol), with addition of the necessary residual quantity in the upper cup. Then, put the cups inside the vacuum casting machine.
If a pigment is added, it should imperatively be mixed to the polyol component. A 1 to 3% rate of the total product quantity (polyol + isocyanate) is recommended.
3. Degas the products during 10 minutes, with agitation in the lower cup (Polyol).
4. Stop the agitation and pour the content of the upper cup (Iso) into the lower cup (Polyol).
5. Start the agitation and mix for at least 2 minutes.
6. Slightly release the vacuum in the chamber to a pressure of about 100 hPa (0,1bar).
7. Cast the mixture into the silicone mould until complete filling.
8. Break the vacuum back to atmospheric pressure.
9. Place the mould in an oven at 70°C.
10. Demoulding is possible after :
    - 2 hours at 70°C, depending on the thickness of the part.

Slightly cool down the mould with compressed air before extracting the part. If any distortion occurs, place the part in an oven at 70°C again, so it can take back its original shape. In order to obtain the mechanical properties of the material, it is necessary to realise a complete curing, demoulding time included, of :

- Optimal curing time : 2h at 70°C + 16h at 100°C + 24h at room temperature

Packaging :

- Box of 6 kits of (0,6 kg polyol + 1,07 kg isocyanate) = 10,02 kg
- Box of 2 kits of (3,0 kg polyol + 5,4 kg isocyanate) = 16,8 kg

Storage :

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

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