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PR2000

References :

Polyol: PR2000-POLYOL-SH100000 Isocyanate: PR2000-ISO-SH000200

Definition :

→ **PR2000 :**

Polyurethane resin for the realisation of ABS-like parts with the vacuum casting process. The product has high thermal, mechanical and flexural resistance properties. White and colourable material, with a low viscosity to facilitate the casting.
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 :

	PR2000 Polyol SH 100 000	PR2000 Iso SH 000 200	PR2000 Mix SH 100 200
Aspect - Colour	Opalescent liquid	Translucid liquid Light yellow	Yellow liquid White solid
Brookfield LVT viscosity (mPa.s) According to MO-051	800	60	
Density at 25°C According to MO-032	1,09	1,15	1,13

Application properties :

	PR2000 Polyol SH 100 000	PR2000 Iso SH 000 200	PR2000 Mix SH 100 200
Mixing ratio by weight	50	100	
Mixing ratio by volume	53	100	
Mixing time at 25°C			3 min.
Potlife on 150g at 25°C According to MO-062			6 min.
Demoulding time at 70°C (on 3 mm) According to MO-062			45 min.
Minimum curing time	45 min. at 70°C + 24h at room temperature		
Optimal curing time	2h at 70°C + 16h at 100°C + 24h at room temperature		

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Average mechanical and thermal properties of the cured material :

- **Average values obtained after post-curing : 45 min. at 70°C + 24h at room temperature**

	Standard	Unit	Values PR2000
Hardness	ISO 868 : 2003	Shore D1	80
Flexural modulus	ISO 178 : 2011	MPa	2050
Maximum flexural strength	ISO 178 : 2011	MPa	68
Tensile modulus	ISO 527-1 : 2012	MPa	2200
Elongation at maximum strength	ISO 527-1 : 2012	%	3
Elongation at break	ISO 527-1 : 2012	%	4
Maximum tensile strength	ISO 527-1 : 2012	MPa	45
Tensile strength at break	ISO 527-1 : 2012	MPa	43
Heat Deflection Temperature (HDT)	ISO 75-2 : 2013 method B	°C	70
Glass transition temperature (Tg)	ISO 6721-10 : 2015	°C	77

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

	Standard	Unit	Values PR2000
Hardness	ISO 868 : 2003	Shore D1	80
Flexural modulus	ISO 178 : 2011	MPa	2000
Maximum flexural strength	ISO 178 : 2011	MPa	80
Tensile modulus	ISO 527-1 : 2012	MPa	2100
Elongation at yield	ISO 527-1 : 2012	%	5
Elongation at break	ISO 527-1 : 2012	%	6
Maximum tensile strength	ISO 527-1 : 2012	MPa	57
Tensile strength at break	ISO 527-1 : 2012	MPa	56
Charpy impact resistance	ISO 179-1 : 2010 unnotched-1eU[b]	KJ/m²	30
Heat Deflection Temperature (HDT)	ISO 75-2 : 2013 method B	°C	101
Glass transition temperature (Tg)	ISO 6721-10 : 2015	°C	113

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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.

Operating conditions :

Depending on the storage and transport conditions, a slight crystallization of the isocyanate component can be observed. *In that case, place the product in an oven at 70 °C until the isocyanate is homogeneous again.*

➔ **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 3 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 :
    - 45 minutes at 70°C, depending on the thickness of the part

In order to obtain the mechanical properties of the material, it is necessary to realise a complete curing, demoulding time included, of :

- Minimum curing time : 45 min. at 70°C + 24h at room temperature
- Optimal curing time : 2h at 70°C + 16h at 100°C + 24h at room temperature

Packaging :

- Box of 4 kits of (1,0 kg polyol + 2 x 1,0 kg isocyanate) = 12 kg
- Box of 1 kit of (5,0 kg polyol + 2 x 5,0 kg isocyanate) = 15 kg

Storage :

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

Comment :

The final product colour can vary depending on its exposure to UV light, without altering its mechanical properties.

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