

PRF100

References :

Polyol: PRF100-POLYOL-SL140000

Isocyanate: PRF100-ISO-SL000140

Definition :

→ **PRF100 :**

Unfilled polyurethane resin dedicated to the realisation of parts that can be placed in contact with foodstuffs. Clear transparent material, with a low viscosity to facilitate the casting. REACH-compatible material complying with the following European Directives:

- 10/2011 and 1935/2004 article 3, decree 2007/766 for a long contact with dry, humid and greasy (meat, fish) food, clear and cloudy drinks, alcoholic beverages of an alcoholic strength below 20%.
- 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 :

| | PRF100 Polyol SL 140 000 | PRF100 Iso SL 000 140 | PRF100 Mix SL 140 140 |
|--|-------------------------------------|----------------------------------|---|
| Aspect - Colour | Colourless transparent liquid | Colourless transparent liquid | Colourless transparent liquid Colourless transparent solid |
| Brookfield LVT viscosity (mPa.s) According to MO-051 | 450 | 390 | |
| Density at 25°C According to MO-032 | 1,02 | 1,07 | 1,05 |

Application properties :

| | PRF100 Polyol SL 140 000 | PRF100 Iso SL 000 140 | PRF100 Mix SL 140 140 |
|--|---|----------------------------------|----------------------------------|
| Mixing ratio by weight | 100 | 130 | |
| Mixing ratio by volume | 100 | 124 | |
| Mixing time at 25°C Milkytime | | | 2 min. |
| Potlife on 150g at 25°C According to MO-062 | | | 14 min. |
| Demoulding time at 70°C (on 3 mm) According to MO-062 | | | 4h |
| Maximum casting thickness | | | 10 mm |
| Minimum curing time | 2h at 70°C + 2h at 100°C + 24h at room temperature | | |
| 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.

Average mechanical and thermal properties of the cured material :

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

| | Standard | Unit | Values PRF100 |
|--|--|-------------------|---------------|
| Hardness | ISO 868 : 2003 | Shore D1 | 82 |
| Flexural modulus | ISO 178 : 2011 | MPa | 2000 |
| Maximum flexural strength | ISO 178 : 2011 | MPa | 71 |
| Tensile modulus | ISO 527-1 : 2012 | MPa | 2160 |
| Elongation at break | ISO 527-1 : 2012 | % | 14 |
| Maximum tensile strength | ISO 527-1 : 2012 | MPa | 47 |
| Tensile strength at break | ISO 527-1 : 2012 | MPa | 38 |
| Charpy impact resistance | ISO 179-1 : 2010 unnotched-1eU ^b | KJ/m ² | 102 |
| Heat Deflection Temperature (HDT) | ISO 75-2 : 2013 method B | °C | 69 |
| Glass transition temperature (Tg) | ISO 6721-10 : 2015 | °C | 75 |

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

| | Standard | Unit | Values PRF100 |
|--|-----------------------------|----------|---------------|
| Hardness | ISO 868 : 2003 | Shore D1 | 83 |
| Flexural modulus | ISO 178 : 2011 | MPa | 2100 |
| Maximum flexural strength | ISO 178 : 2011 | MPa | 75 |
| Heat Deflection Temperature (HDT) | ISO 75-2 : 2013 method B | °C | 71 |
| Glass transition temperature (Tg) | ISO 6721-10 : 2015 | °C | 75 |

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 :

The PRF100 polymerised resin complies with the requirements of the European Directives : 10/2011 and 1935/2004 article 3 for a long contact with dry, humid and greasy (meat, fish) food, clear drinks (water, fruit juice,...), cloudy drinks (juices, nectars containing pulp,...), and alcoholic beverages of an alcoholic strength below 20%. This validation has been obtained under precise conditions, on completely polymerised specimens. It is the responsibility of the user to make sure that all the used equipment (containers, moulds, ovens...), and the using conditions for the realisation of the parts, respect the basic criteria of these directives in order to obtain the certification of the final part.

Depending on storage conditions, the isocyanate component may have a thick and cloudy aspect. In this case, place the product in an oven at 70°C until the product is clear and fluid again. Wait until the product is back at room temperature before using.

Application process in a vacuum casting machine :

1. Preheat the polyaddition silicone mould at 70°C.

The use of silicone moulds is possible, however they have to be food-contact compliant. If metal moulds are used, requiring a release agent, the releasing treatment has to be food-contact compliant.

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.

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 :

- 4 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 :

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

Packaging :

- Box of 6 kits of (0,85 kg polyol + 1,1 kg isocyanate) = 11,7 kg
- Box of 2 kits of (3,85 kg polyol + 5,0 kg isocyanate) = 17,7 kg

Storage :

9 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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