

# PR777

## References :

**Polyol : PR777-POLYOL-ST777000**

**Isocyanate : PR7SERIES-ISO-ST000401**

**Fiber glass filler : SynFill G**

## Definition :

### → PR777 :

Polyurethane resin for the production of PP / PE / HDPE-like parts in vacuum casting.

Good flowability, low aggressiveness to silicone moulds.

Colorable material.

REACH compatible material meeting the requirements of the 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

### → PR777 + SynFill G :

- « **SynFill G** » fiberglass filler allows one to increase the rigidity of the parts and some mechanical and thermal characteristics.
- Three filler rates are available in order to guarantee the best compromise between the flowability and the product performances.
- High modulus of elasticity up to 2200 MPa in traction with 25% of filler.
- Improvement of the maximum stresses in traction and flexion.

## Average physical properties of the components :

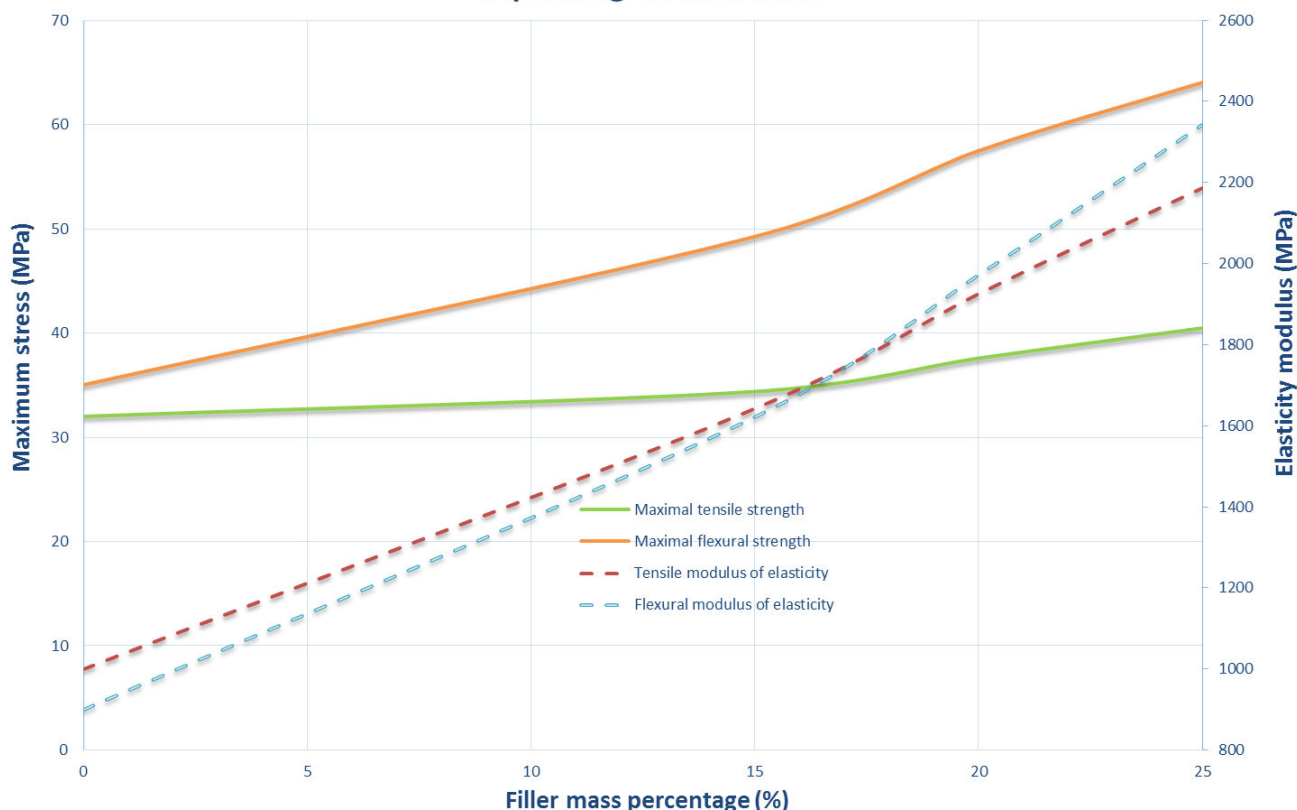
|                                                                     | PR777 Polyol<br>ST 777 000 | PR7 Series Iso<br>ST 000 401 | Mix<br>ST 777 401                 | Mix +15%<br>SynFill G             | Mix + 20%<br>SynFill G            | Mix +25%<br>SynFill G             |
|---------------------------------------------------------------------|----------------------------|------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| <b>Aspect - Colour</b>                                              | Amber liquid               | Transparent liquid           | Translucent liquid<br>Milky solid | Translucent liquid<br>Milky solid | Translucent liquid<br>Milky solid | Translucent liquid<br>Milky solid |
| <b>Brookfield LVT<br/>Viscosity (mPa.s)<br/>According to MO-051</b> | 230                        | 1200                         | 700                               | 800                               | 940                               | 1100                              |
| <b>Density at 25°C<br/>According to MO-032</b>                      | 1,10                       | 1,16                         | 1,13                              | 1,22                              | 1,24                              | 1,27                              |

## Application properties :

|                                                                   | PR777 Polyol<br>ST 777 000                         | PR7 series Iso<br>ST 000 401 | Mix<br>ST 777 401 | Mix +15%<br>SynFill G | Mix + 20%<br>SynFill G | Mix +25%<br>SynFill G |
|-------------------------------------------------------------------|----------------------------------------------------|------------------------------|-------------------|-----------------------|------------------------|-----------------------|
| <b>Mixing ratio<br/>by weight</b>                                 | 100                                                | 100                          | -                 | 30                    | 40                     | 50                    |
| <b>Mixing ratio<br/>By volume</b>                                 | 100                                                | 95                           | -                 | -                     | -                      | -                     |
| <b>Potlife on 200g<br/>at 25°C<br/>According to MO-062</b>        |                                                    |                              | 10 min.           | 10 min.               | 10 min.                | 10 min.               |
| <b>Demoulding time<br/>at 70°C (min.)<br/>According to MO-116</b> |                                                    |                              | 45 min.           | 45 min.               | 45 min.                | 45 min.               |
| <b>Minimum curing time</b>                                        | 2h at 70°C + 24h at room temperature               |                              |                   |                       |                        |                       |
| <b>Optimal curing time</b>                                        | 2h at 70°C + 2h at 100°C + 24h at room temperature |                              |                   |                       |                        |                       |

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### Evolution of the mechanical characteristics of the PR777 depending on filler rates



#### Average mechanical and thermal properties of the cured material :

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

|                                   | Test standard                               | Unit              | Values without filler | 15% SynFill G | 20% SynFill G | 25% SynFill G |
|-----------------------------------|---------------------------------------------|-------------------|-----------------------|---------------|---------------|---------------|
| Hardness                          | ISO 868 : 2003                              | Shore D1          | 75                    | 78            | 79            | 80            |
| Flexural modulus                  | ISO 178 : 2011                              | MPa               | 900                   | 1600          | 2000          | 2300          |
| Maximum flexural strength         | ISO 178 : 2011                              | MPa               | 35                    | 50            | 58            | 64            |
| Tensile modulus of elasticity     | ISO 527-1 : 2012                            | MPa               | 1000                  | 1600          | 1900          | 2200          |
| Elongation at break               | ISO 527-1 : 2012                            | %                 | 35                    | 25            | 11            | 7             |
| Maximum tensile strength          | ISO 527-1 : 2012                            | MPa               | 34                    | 34            | 38            | 40            |
| Charpy impact resistance          | ISO 179-1 : 2010 unnotched-1eU <sup>b</sup> | KJ/m <sup>2</sup> | 60                    | 37            | 28            | 27            |
| Heat deflection temperature (HDT) | ISO 75-2 : 2013 Method A                    | °C                | -                     | 76            | 82            | 86            |
|                                   | ISO 75-2 : 2013 Method B                    | °C                | 94                    | -             | -             | -             |
| Transition glass Temperature (Tg) | ISO 6721-10 : 2015                          | °C                | > 120                 | -             | -             | -             |

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### **Hygiene and safety instructions for using :**

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

Work in a ventilated room.

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

### **Application process with vacuum casting machine :**

1. Pre-heat the polyaddition silicone mould at 70°C
2. Weigh the separated components (Upper cup: Polyol / Lower cup: Iso), with addition of the necessary residual quantity in the upper cup. If Synfill G filler is added, weigh the needed quantity in the lower cup. Then, put the cups and the mould inside the vacuum casting machine.
3. Degas for 10 minutes, with agitation in the lower cup (Iso).
4. Stop the agitation and pour the content of the upper cup (Polyol) into the lower cup (Iso).
5. Start the agitation and mix for at least 1 minute.
6. 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 mould in an oven at 70°C.
10. Demoulding is possible after :
  - 45 minutes at 70°C, depending on the thickness of the partIn 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 + 24 h at room temperature
  - Optimal curing time : 2h at 70°C + 2h at 100°C + 24 h at room temperature

### **Packaging :**

PR777 :

- Box of 2 kits of (5,0 kg polyol + 5,0 kg isocyanate) = 20kg
- Box of 6 kits of (1,0 kg polyol + 1,0 kg isocyanate) = 12kg

Synfill G :

- Box of 30 kg
- Pail of 10 kg

### **Storage :**

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

### **Comment :**

The cured product colour may vary depending on its exposure to UV, without changing the other characteristics.

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