

# PR752

## References :

**Polyol: PR752-POLYOL-ST152000**

**Isocyanate: PR7SERIES-ISO-ST000401**

**Fiber flass filler: SynFill G-PF0400**

## Definition :

### → PR752 :

Polyurethane resin for the production of vacuum casted ABS or PEEK countertypes, with a requirement for high thermal resistance.  
Good flowability, low aggressiveness to silicone moulds.  
Good chemical resistance.

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

### → PR752 + SynFill G :

- « **SynFill G** » fiberglass filler allows one to increase the rigidity of the parts and some mechanical and thermal properties.
- 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 5400 MPa in traction with 25% of filler.
- Improvement of the maximum stresses in traction and flexion.

## Average physical properties of the components :

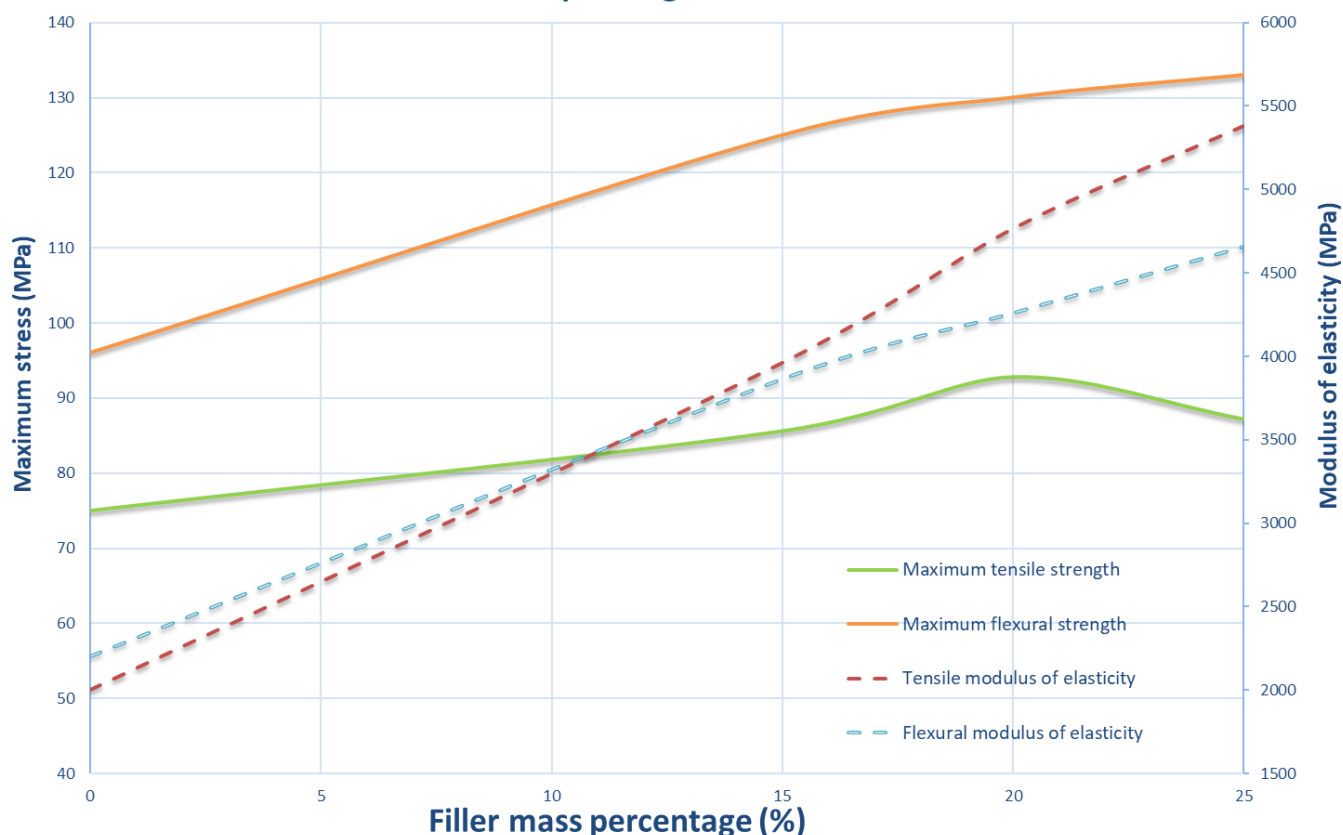
|                                                                        | PR752 Polyol<br>ST 152 000 | PR 7 Series Iso<br>ST 000 401 | PR 752 Mix<br>ST 152 401    | Mix + 15%<br>SynFill G      | Mix + 20%<br>SynFill G      | Mix + 25%<br>SynFill G      |
|------------------------------------------------------------------------|----------------------------|-------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| <b>Aspect - Colour</b>                                                 | Amber liquid               | Colourless liquid             | Amber liquid<br>Amber solid | Amber liquid<br>Amber solid | Amber liquid<br>Amber solid | Amber liquid<br>Amber solid |
| <b>Brookfield LVT<br/>viscosity<br/>(mPa.s)</b><br>According to MO-051 | 600                        | 1200                          | 1000                        | 2300                        | 2500                        | 2700                        |
| <b>Density at 25°C</b><br>According to MO-032                          | 1,15                       | 1,16                          | 1,16                        | 1,33                        | 1,38                        | 1,42                        |

## Application properties :

|                                                            | PR752 Polyol<br>ST 152 000                          | PR 7 Series Iso<br>ST 000 401 | PR752 Mix<br>ST 152 401 | Mix + 15%<br>SynFill G | Mix + 20%<br>SynFill G | Mix + 25%<br>SynFill G |
|------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-------------------------|------------------------|------------------------|------------------------|
| <b>Mixing ratio<br/>by weight</b>                          | 60                                                  | 100                           |                         | 24                     | 32                     | 40                     |
| <b>Potlife on 200 g<br/>at 25°C</b><br>According to MO-062 |                                                     |                               | 6-8 min.                | 6-8 min.               | 6-8 min.               | 7-8 min.               |
| <b>Demoulding time<br/>at 70°C</b><br>According to MO-116  |                                                     |                               | 50 min.                 | 50 min.                | 50 min.                | 50 min.                |
| <b>Optimal curing time</b>                                 | 1h at 70°C + 2h at 130 °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.*

### Evolution of the mechanical characteristics of the PR752 depending on filler rates



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

- Average values after curing: 1h at 70°C + 2h at 130°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          | 87                    | 87            | 88            | 89            |
| Flexural modulus                  | ISO 178 : 2011                              | MPa               | 2200                  | 3850          | 4250          | 4650          |
| Maximum flexural strength         | ISO 178 : 2011                              | MPa               | 96                    | 125           | 130           | 133           |
| Tensile modulus                   | ISO 527-1 : 2012                            | MPa               | 2300                  | 3950          | 4750          | 5400          |
| Elongation at break               | ISO 527-1 : 2012                            | %                 | 13                    | 4             | 3.5           | 3             |
| Maximum tensile strength          | ISO 527-1 : 2012                            | MPa               | 75                    | 85            | 93            | 87            |
| Charpy impact resistance          | ISO 179-1 : 2010 unnotched-1fU <sup>c</sup> | KJ/m <sup>2</sup> | 30                    | 23            | 21            | 20            |
| Heat Deflection temperature (HDT) | ISO 75-2 : 2013 method A                    | °C                | -                     | 157           | 159           | 160           |
|                                   | ISO 75-2 : 2013 method B                    | °C                | 150                   | 169           | 177           | 177           |

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### **Hygiene and safety 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 approximately 1 minute.
6. Release the vacuum in the chamber to a pressure of about 100 hPa (0.1 bar).
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 :
  - 40 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 :

- Optimal curing time : 1h at 70°C + 2h at 130°C + 24h at room temperature.

### **Packaging :**

PR752 :

- Box of 2 kits of (3,0kg polyol + 5,0kg isocyanate) = 16kg

Synfill G :

- Box of 30 kg
- Pail of 10 kg

### **Storage :**

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