

PR600

References:

Polyol : PR600-POLYOL-SL600000

Isocyanate : PR600-PRA610-ISO-SL000600

Fiber glass filler : SynFill G

Definition:

→ PR600:

Polyurethane resin for the realisation of PA, PC or filled ABS like parts with the vacuum casting process. The product shows high thermal and mechanical properties and excellent impact resistance. Slightly yellow transparent material, easily colourable, with good flowability in silicone moulds and a short demoulding time. 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

→ PR600 + SynFill G:

- « SynFill G » fiberglass filler increases 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 5700 MPa in traction with 25% of filler.
- Improvement of the maximum stresses in traction and flexion

Average physical properties of the components:

	PR600 Polyol SL 600 000	PR600-PRA610 ISO SL 000 600	Mix SL 600 600	Mix + 15% SynFill G	Mix + 20% SynFill G	Mix + 25% SynFill G
Aspect - Colour	Colourless transparent liquid	Yellow translucent liquid	Whitish liquid Golden transparent solid	Whitish liquid Golden translucent solid	Whitish liquid Golden translucent solid	Whitish liquid Golden translucent solid
Brookfield LVT Viscosity (mPa.s) According to MO-051	820	1200	2000	2400	3200	4000
Density at 25°C According to MO-032	1,09	1,24	1,19	1,23	1,26	1,29

Application properties:

	PR600 Polyol SL 600 000	PR600 -PRA610 ISO SL 000 600	Mix SL 600 600	Mix + 15% SynFill G	Mix + 20% SynFill G	Mix + 25% SynFill G
Mixing ratio by weight	50	100		22,5	30	37,5
Mixing ratio by volume	57	100		-	-	-
Recommended mixing time			≤ 500 g ≈ 2 min. > 500 g ≈ 1 min.	≤ 500 g ≈ 2 min. > 500 g ≈ 1 min.	≤ 500 g ≈ 2 min. > 500 g ≈ 1 min.	≤ 500 g ≈ 2 min. > 500 g ≈ 1 min.
Pot life on 150g at 25°C According to MO-062			8 min.	8 min.	8 min.	8 min.
Demoulding time at 70°C According to MO-116			50 – 60 min.	50 – 60 min.	50 – 60 min.	50 – 60 min.
Optimal curing time	2h at 70°C + 2h at 100°C + 24h at room temperature					

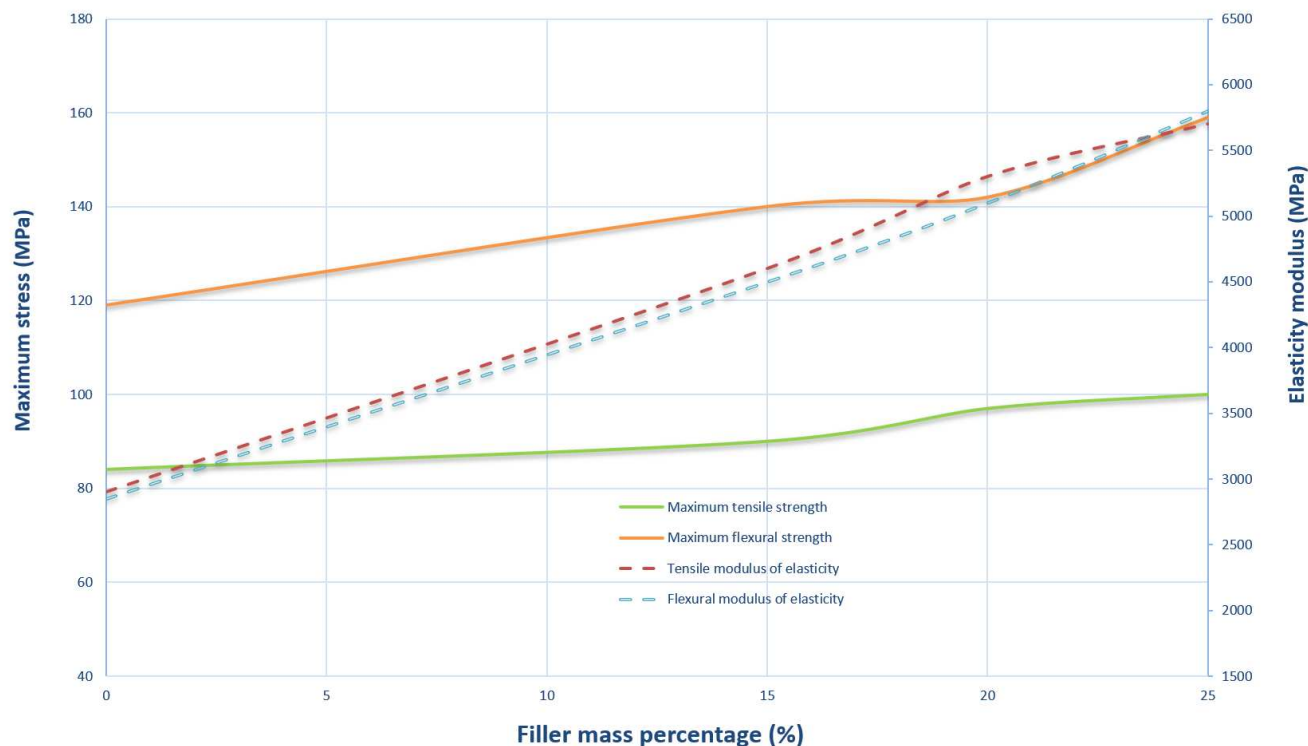
The values provided in this document are based on tests and research conducted in SYNTHENE's laboratory under specific, controlled conditions. This document shall not, under any circumstances, be considered a product specification. It is the user's responsibility to determine the suitability of the product for its intended application under their own processing and operating conditions. SYNTHENE shall not be liable for any consequences arising from the use of this product.

Average mechanical and thermal properties of the cured material:

- Average values obtained after curing: 2h at 70°C + 2h at 100°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 D	84	84	84	84
Flexural modulus	ISO 178 : 2011	MPa	2850	4500	5100	5800
Maximum flexural strength	ISO 178 : 2011	MPa	119	140	142	159
Tensile modulus	ISO 527-1 : 2012	MPa	2900	4600	5300	5700
Maximum tensile strength	ISO 527-1 : 2012	MPa	84	90	97	100
Elongation at break	ISO 527-1 : 2012	%	11	3	3	3
Charpy impact resistance	ISO 179-1 : 2010 unnotched-1eU ^b	kJ/m ²	>100 (Does not break)	35	30	32
Heat deflection temperature (HDT)	ISO 75-2 : 2013 Method B	°C	105	110	111	111
Transition glass Temperature (T _g)	ISO 6721-10 : 2015	°C	112	114	114	114

Evolution of the mechanical characteristics of the PR600 depending on filler rates



The values provided in this document are based on tests and research conducted in SYNTHENE's laboratory under specific, controlled conditions. This document shall not, under any circumstances, be considered a product specification. It is the user's responsibility to determine the suitability of the product for its intended application under their own processing and operating conditions. SYNTHENE shall not be liable for any consequences arising from the use of this product.

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 approximately 60 seconds.
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 mould in an oven at 70°C.
10. Demoulding is possible after:

- 50 to 60 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: 2h at 70°C + 2h at 100°C + 24 h at room temperature

Packaging:

- PR600 : Box of 4 kits of (1.0kg polyol + 2x1.0kg isocyanate) = 12kg
- PR600 : Box of 1 kit of (5.0kg polyol + 2x5.0kg isocyanate) = 15kg

SynFill G:

- Box of 25 kg
- Pail of 10 kg

Storage:

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

Comments:

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