

FASTELAST

References :

Polyol: SL035000-FASTELAST 35A-POLYOL
 Polyol: SL093000-FASTELAST 93A-POLYOL

Isocyanate: SL000935-FASTELAST-ISO

Definition :

→ FASTELAST system:

Three component polyurethane elastomer designed for the production of technical parts and soft prototypes. This system is based on 2 polyols and 1 isocyanate. It offers a large variety of hardnesses, ranging from a 35 Shore A elastomer to a 93 Shore A semi-rigid material, while keeping a high level of properties through the different possible hardnesses.

REACH-compatible product, meeting the requirements of the European Directives:

- 2011/65/EU - 2015/863 - 2017/2102/UE (RoHS 1 and 2)
- 2002/96/EC (WEEE)
- 2000/53/EC (ELVs)
- 2000/11/EC

Properties :

- Short demoulding time
- Low viscosity
- Colourable material
- Good elongation at break
- Very good tear resistance, even notched

Average physical properties of the components :

References	Aspect - Colour	Brookfield LVT viscosity at 25°C in mPa.s According to MO-051	Density at 25°C According to MO-032
SL035000	Colourless Transparent liquid	350	1,04
SL093000	Colourless Transparent liquid	300	1,04
SL000935	Colourless to cloudy transparent to white liquid	940	1,03

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Processing properties depending on the hardness :

Hardness	35A	45A	50A	60A	65A	75A	80A	86A	93A
SL035000 FastElast 35 A Polyol (g)	100	90	85	75	60	45	30	10	
SL093000 FastElast 93 A Polyol (g)		10	15	25	40	55	70	90	100
SL000935 FastElast 35-93 A Isocyanate (g)	30	37	41	48	58	69	79	93	100
Brookfield LVT viscosity at 25°C (mPa.s) According to MO-051	350	310	310	300	300	300	300	300	300
Potlife on 200g at 25°C According to MO-062	12 min.	10 min.	8min.30s	12min.	11 min.	6 min.	7 min.	5 min.	6 min.
Potlife on 200g at 40°C According to MO-062	7min.30s	7 min.	4min.30s	5 min.	4min.30s	4 min.	3 min.	3 min.	2 min.
Demoulding time at 70°C Curing in a 70°C mould	2h	1h	1h	1h	1h	1h	1h	1h	1h

The polyols and the isocyanate components crystallize under 15°C. Place them in an oven at 70°C during approximately 1 hour, or at 40°C for 16 hours. Shake them and check that the products are completely homogeneous.

Average mechanical and thermal properties of the cured material :

- Average values obtained on specimens after curing: 1h at 70°C + 7 days at room temperature
- * Average values measured on specimens after curing: 2h at 70°C + 7 days at room temperature

Shore A hardness ISO 868	35*	45	50	60	65	75	80	86	93
Shore D hardness ISO 868									50
Working temperature (°C)	-20/+80	-20/+80	-20/+80	-20/+80	-20/+80	-20/+80	-20/+80	-20/+80	-20/+80
Maximum casting thickness (mm)	30	30	30	30	30	30	20	20	20
Elongation at break at 23°C (%) ISO 37	385	1110	732	765	770	830	630	680	616
Tensile strength at break at 23 °C (MPa) ISO 37	1.4	2.7	4.7	5.8	8.3	12.5	13	26	22
Tear resistance at 23°C (kN.m-1) ISO 34	7.8	7	15.1	25	29.4	41.2	45	74	60

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Hygiene and safety for using:

Wearing safety clothes and accessories (gloves, glasses) is recommended.

Work in a ventilated room.

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

Operating conditions :

Make sure that all the components are homogeneous before using. Depending on the transport and storage conditions, crystallization can happen in both the polyols and the isocyanate components. In this case, place in an oven at 70°C until the product is homogeneous. In order to avoid any re-crystallization phenomenon, it is recommended to store the opened containers at 40°C, even if the products are going to be consumed on the following days.

For the lower hardnesses and small quantities (<130g), it is recommended to weigh the polyols and the isocyanate components directly in the lower cup before starting the vacuum pump.

In case of colourant addition, make sure to realise a compatibility test before using, particularly on the lower hardnesses.

→ 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 1 minute.
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 :
 - 1 or 2 hours at 70°C, depending on the hardness
11. The final hardness and mechanical properties of the material are obtained after :
 - Total curing time : 1 or 2h at 70°C + 7 days at room temperature

→ Application process with hand casting:

1. Pre-heat the polyaddition silicone mould at 70°C. The mould must be totally dry, without any trace of moisture.
2. Rehomogenise the polyol and the isocyanate. 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. Weigh the components, depending on the chosen hardness, mix the 2 polyols first. Mix them with a spatula or a low- speed rotational mixer.
4. Degas the mixture under vacuum if necessary, depending on the complexity of the part and the details that are likely to retain air bubbles.

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5. Cast the product on the support or inside mould. Once the casting is done, let the polymerisation happen at room temperature to help the self-degasification of the product. Then, place the mould in an oven at 70°C.

6. Demoulding is possible after :

- 1 or 2 hours at 70°C, depending on the thickness of the part.

7. The final hardness and mechanical properties of the material are obtained after :

- Total curing time : 1 or 2h at 70°C + 7 days at room temperature

Packaging:

- SL035000 FastElast 35A Polyol : box of 6 x 1 kg
- SL093000 FastElast 93A Polyol : box of 6 x 1 kg
- SL000935 FastElast Isocyanate : box of 6 x 1 kg
- FastElast System : box of 4 x (1 kg SL035000 + 1 kg SL093000 + 1 kg SL000935)

Storage:

Shelf life for unopened containers, stored in their original containers between 15 and 25 °C.

- Polyols : 12 months
- Isocyanate : 6 months

Once the packaging is opened, it must be closed back tightly, on a hermetic, moisture-free way, after each use, if possible under an inert atmosphere.