

HPE ELASTOMER SYSTEM

Definition :

High performance elastomer system designed for the production of mechanically and/or thermally stressed technical parts, moulds and models.

This system, based on 2 polyols and 2 isocyanates, allows to answer the users' needs on a very wide range of hardnesses, while keeping the same high level of performance, be it in Shore A or in Shore D.

Mercury free product suitable with the European Directives : 2011/65/UE (RoHS), 2002/96/EC, 2000/53/EC, 2000/11/EC.

Properties :

- Curing at room temperature (18 – 20°C).
- Good elongation resistance.
- Very good tear resistance, even on notched parts.
- Good chemical resistance.
- Good thermal resistance.
- Good abrasion resistance.

Average physical properties of the components

| Product references | Aspect – Colour | BROOKFIELD viscosity LVT at 25 °C in mPa.s According to MO-051 | Density at 25 °C According to MO-032 |
|--------------------|--|--|--------------------------------------|
| SL240000 | Transparent liquid Light to dark amber | 550 | 1.04 |
| SL285000 | Transparent liquid Light to dark amber | 650 | 1.09 |
| SL000105 | Transparent liquid Light amber | 3300 | 1.08 |
| SL000501 | Transparent liquid Light amber | 3000 | 1.08 |

Application properties depending on the requested properties

| HARDNESS | 40A | 50A | 60A | 70A | 85A | 90A 35-40D | 50-55D |
|--|------|------|------|------|------|---------------|--------|
| SL240000 HPE 40 A Polyol (g) | 100 | 75 | 50 | 25 | | | |
| SL285000 HPE 85 A Polyol (g) | | 8 | 16 | 24 | 32 | 40 | 50 |
| SL000105 HPE 40-85 Iso (g) | 100 | 100 | 100 | 100 | 100 | 50 | |
| SL000501 HPE 55 D Iso (g) | | | | | | 50 | 100 |
| BROOKFIELD viscosity LVT at 25 °C in mPa.s According to MO-051 | 2000 | 2400 | 2700 | 3000 | 3200 | 2500 | 1600 |
| Geltime on 300g at 25 °C (min.) | 60 | 55 | 50 | 45 | 40 | 15 | 8 |
| Demoulding time at 25 °C (h) | 24 | 24 | 24 | 24 | 24 | 12 | 10 |

This document cannot be, in any case, considered as a specification datasheet. The values mentioned on this document are based on tests and researches carried on in our laboratories in precise conditions.

It is the responsibility of the user to check the suitability of this material for his own application, according to his proper conditions. SYNTHENE company disclaims all responsibility for any consequence occurred by the use of this product.

Average mechanical and thermal properties of the cured material

- **Average values measured on specimens after post-curing 24h at room temperature + 16h 70°C + 48h room temperature**

| | | | | | | | |
|--|-------------|-------------|-------------|-------------|---------|---------|---------|
| Shore A hardness ISO 868 | 40 | 50 | 60 | 70 | 85 | 90 | |
| Shore D hardness ISO 868 | | | | | | 35-40 | 50-55 |
| Working temperature | -40/+90 | -40/+90 | -40/+90 | -40/+90 | -40/+90 | -40/+90 | -40/+90 |
| Maximum casting thickness (mm) | 100 | 80 | 80 | 60 | 50 | 30 | 20 |
| Elongation at break at 23°C (%) ISO 37 | 270 | 400 | 500 | 800 | 900 | 820 | 750 |
| Tensile strength at break at 23°C (MPa) ISO 37 | 2.7 | 3,6 | 6 | 7.2 | 13 | 14 | 15 |
| Tear resistance at 23°C (kN.m ⁻¹) ISO 34 | 11.5 | 18 | 27 | 40 | 54 | 64 | 74 |
| Abrasion resistance (TABER 1000 Tr/H22) ISO 5470 (mg/100U) | In progress | In progress | In progress | In progress | 18 | 17 | 15 |

Hygiene and safety instructions 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.

Application process with mixing machine :

All parts have to be homogeneous before pumping or filling tanks.

Depending on the storage conditions, a crystallization can appear into the polyol components. In this case, put at the oven at 40 – 50°C until the product is homogeneous and clear again.

In case of application with a vacuum casting machine in moulds with intricated shapes, we recommend to use a differential pressure system to cast low (40-60 Shore A) and high (50-55 D) hardnesses.

For an optimal use of the system :

- In **Shore A** hardnesses, the two polyol components have to be mixed in the chosen ratio before filling the tanks.
- In **Shore D** hardnesses, the two isocyanate components have to be mixed in the chosen ratio before filling the tanks.

Check the mixing ratio at the entrance of the mixing head before starting to cast, according to the selected hardness.

In order to get an optimal result, the support (part or mould) must be totally dry, without any trace of moisture.

Make sure that a proper release agent is used.

Once the casting is done, let the polymerization happen at room temperature to help the self-degasification of the product.

In case of post-curing, it is recommended to wait until the gellation of the product.

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Process with hand mixing :

All parts have to be homogenous before weighting.

Depending on the storage conditions, a crystallization can appear into the polyol components. In this case, put at the oven at 40 – 50°C until the product is homogeneous and clear again.

Depending on the selected hardness :

- In **Shore A** hardnesses, the two polyol components should be properly mixed before adding the isocyanate component.
- In **Shore D** hardnesses, the two isocyanate components should be properly mixed before adding the polyol component.

In order to obtain the best possible result, the support (part or mould) must be completely free of any trace of moisture.

Make sure that a proper release agent is used.

After weighing both components, mix with a spatula or with a motorized mixer at low rotational speed.

Even though the product shows good self-degassing properties, it may be necessary to put it under vacuum before casting, depending on the complexity of the part, and the shape details that are likely to retain air bubbles.

Once the casting is done, let the polymerization happen at room temperature to help the self-degasification of the product.

In case of post-curing, it is recommended to wait until the gellation of the product.

Packaging:

| | |
|--------------------------------|--------------------------------|
| SL240000 - HPE 40 A polyol : | Parcel of 6 x 1 kg or 4 x 5 kg |
| SL285000 - HPE 85 A polyol : | Parcel of 6 x 1 kg or 4 x 5 kg |
| SL000105 - HPE 40 – 85 A Iso : | Parcel of 6 x 1 kg or 4 x 5 kg |
| SL000501 - HPE 55 D Iso : | Parcel of 6 x 1 kg or 4 x 5 kg |

HPE 40 – 85 A system kit :

- 2 x 5 kg HPE 40-85 A iso
- + 4 X 1 kg HPE 40 A polyol
- + 2 X 1 kg HPE 85A polyol

Storage:

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

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.