Technical Datasheet

Sampo MAX

HPU 95 Shore A natural

Sampo MAX is a polycarbonate-based thermoplastic polyurethane (TPU) developed primarily for processing via injection moulding.

Sampo MAX has excellent hydrolysis and chemical resistance, which in combination with very high dynamic load and wear resistance makes it a universally applicable material. Very low compression set values, low gas permeability and high dynamic load capacity complete the property profile of this FDA approved material.

Sampo MAX is characterised by the following features:

- Very good tensile strength, elongation at break and tear resistance
- Wide range of application temperature from -20°C to 115°C
- Low gas permeability
- Excellent hydrolysis and chemical resistance
- Suitable for turning, milling and grinding operations with very low tool wear

Sampo MAX is suitable for a wide range of thick- and thin-walled components and is used primarily in the following applications:

- Hydraulic and pneumatic seals of any kind
- Rollers
- Vibration and damping elements
- Functional surfaces with good haptic properties such as handles

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Product features	Value	Unit	Testing standard
Colour	white	---	---
Density	1200	[kg/m³]	ISO 1183
Mechanical properties	**Value**	**Unit**	**Testing standard**
Hardness Shore A	95±2	[SHORE]	ISO 868
Hardness Shore D	48±3	[SHORE]	ISO 868
Tensile strength	≥50	[MPa]	DIN 53 504
Tear resistance	≥110	[kN/m]	DIN ISO 34-1
Abrasion	32	[mm³]	ISO 4649 A
Modulus 100%	≥15	[MPa]	DIN 53 504
Modulus 300%	≥28	[MPa]	DIN 53 504
Elongation at break	≥350	[%]	DIN 53 504
Compression set [1]	≤27	[%]	ISO 815
Compression set [2]	≤33	[%]	ISO 815
Thermal properties	**Value**	**Unit**	**Testing standard**
Min. operating temperature	-20	[°C]	---
Max. operating temperature	115	[°C]	---

[1] Testing parameters: 24h, 70°C, 25% deformation / [2] testing parameters: 24h, 100°C, 25% deformation

Processing instructions for injection moulding of Sampo MAX

Pre-treatment, drying

Sampo MAX is a hygroscopic TPU and therefore attracts moisture during storage. For this reason, it is recommended to dry the granules to a residual moisture content of ≤ 0.03% with a dry-air dryer before processing.

Drying parameters (reference values))

Dew point:	≤ -40°C
Temperature:	80°C
Drying time:	3h

Machine parameters

Feeding section:	25 – 40°C
Zone 1:	185 – 195°C
Zone 2:	210 – 220°C
Zone 3:	215 – 225°C
Nozzle:	225 – 235°C
Die/Mould:	20 – 60°C
Plastic melt:	225 – 235°C
Dosing volume:	50 – 80%
Injection speed:	medium
Holding pressure:	70 – 90% P_I

Post-treatment, post-curing

Post-curing temperature:	120°C
Post-curing time:	16 – 24h

Note: the parts must be cooled to a minimum temperature of 40°C before taking out of the oven

Barrel capacity:

Avoid underutilization of the barrel wherever possible since it can lead to long residence times. Small shots run on a large capacity barrel complicate processing. The specifically best practice for any moulding is to utilize 40 % to 80% of the barrel capacity for each shot. This typically translates to 1,3 to 2,5 shots in the barrel.

Shrinkage:

Shrinkage is dependent on the geometry and processing parameters. Melt temperature and cooling rate impacts the shrinkage. The common range is between 1,5% and 2,2%.

General notes:

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