LUVOSINT®
Additive manufacturing solutions

Preliminary data sheet

LUVOSINT X92A-2

Ester based thermoplastic polyurethane TPU
Powder, white color

Physical Properties		Test Method	Specimen	Units	Typical Value
Specific Gravity		ISO 1183	Sintered part	g/cm³	1.2
Water Absorption	23 °C, 24 h			%	< 0.5
Melt Volume Rate	MVR 190 °C/2.16 kg	ISO 1133	Power	cm³/10 min	18.0
Glass Transition Temp		ISO 6721-1		°C	-13.6
Shrinkage		Measured on test prints		%	3.0
Mechanical Properties at 23 °C/ 50 % rh (according to build orientation)					
Shore Hardness A		ISO 868	Sintered part	-	88
Flexural Modulus 20°C	1 Hz, 2 °C/min	ISO 6721-1	Sintered part	MPa	27
Flexural Modulus 60°C	1 Hz, 2 °C/min	ISO 6721-1	Sintered part	MPa	72
Tensile Strength (x-direction)		DIN 53504	Sintered S1-bar	MPa	20
Tensile Strength (z-direction)		DIN 53504	Sintered S1-bar	MPa	15
Elongation (x-direction)		DIN 53504	Sintered S1-bar	%	520
Elongation (z-direction)		DIN 53504	Sintered S1-bar	%	500
Abrasion Resistance (x-direction)		ISO 4649	Sintered part	mm³	31
Abrasion Resistance (z-direction)		ISO 4649	Sintered part	mm³	28
Compression Strength (x-direction)		ISO 604	Type A	MPa	33
Compression Strength (z-direction)		ISO 604	Type A	MPa	40
Compression Modulus (x-direction)		ISO 604	Type B	MPa	15
Compression Modulus (z-direction)		ISO 604	Type B	MPa	20
Poisson ratio (Hencky)	0.2 mm/s				0.45
Thermal Properties					
Vicat-softening Temperature	VST A	ISO 306	MPTS ISO 3167 A	°C	90
Melting Temperature		ISO 11357		°C	160
Powder Properties					
x10		Laser diff.		µm	20
x50		Laser diff.		µm	50
x90		Laser diff.		µm	105
Bulk Density				g/cm³	0.457
Part bed powder density				g/cm³	0.600

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Application Examples

Powder for laser sintering (additive manufacturing). Elastic parts with high strength and high abrasive resistance for shoe and sports industry, pipes, sealings, prosthetics and many more applications.

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Recommended Processing Instructions

General

In general LUVOSINT X92A-2 can be processed on conventional lasersinter machines while observing the usual technical guidelines. In contrast to conventional polyamide powders relatively low temperatures in the process chamber should be used here. At higher temperatures above 100 °C powder flowability and process stability will decrease. Aspiration is recommended due to formation of fume.

Predrying

No predrying necessary.
The powder should be de-agglomerated by using a screening process (250 microns sieve opening) before processing.

Processing Parameters

Due to the large variety of machines and part geometries given process parameters can only be seen as an orientation.

Please use material data base of Polystyrene and change process parameters as follows:

Process Temperature	°C	100
Piston Heater	°C	85
Scan Speed	mm/s	4000
Hatch Distance	mm	0.20
Layer Thickness	mm	0.15
Laser Power	W	40

Delivery Form & Storage

The material will be delivered as 25 kg boxes on pallets.
Preferably storage should be effected in dry and normally temperatured rooms.

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