LUVOSINT®
Additive manufacturing solutions

Preliminary data sheet

LUVOSINT TPU Z86A-1 WT

Aliphatic thermoplastic polyurethane TPU
Powder, white color

Physical Properties		Test Method	Specimen	Units	Typical Value
Specific Gravity		ISO 1183	Sintered part	g/cm³	1.13
Water Absorption	23 °C, 24 h		Sintered part	%	< 0.5
Melt Volume Rate	MVR 160 °C/10 kg	ISO 1133		cm³/10 min	80.7
Glass Transition Temp		ISO 6721-1		°C	-47
Mechanical Properties					
at 23 °C/ 50 % rh	(according to build orientation)				
Shore Hardness A		ISO 868	Sintered part	-	86
Flexural Modulus (xy-direction)		D 790	Sintered part	MPa	
Flexural Modulus (xz-direction)		D 790	Sintered part	MPa	
Tensile Strength (xy-direction)		DIN 53504	Sintered S1-bar	MPa	10.9
Tensile Strength (xz-direction)		DIN 53504	Sintered S1-bar	MPa	11.2
Elongation (xy-direction)		DIN 53504	Sintered S1-bar	%	456
Elongation (xz-direction)		DIN 53504	Sintered S1-bar	%	384
Abrasion Resistance (xy-direction)		ISO 4649 A	Sintered part	mm³	30
Abrasion Resistance (xz-direction)		ISO 4649 A	Sintered part	mm³	30
Compression Strength (x-direction)		ISO 604	Type A	MPa	
Compression Strength (z-direction)		ISO 604	Type A	MPa	
Compression Modulus (x-direction)		ISO 604	Type B	MPa	
Compression Modulus (z-direction)		ISO 604	Type B	MPa	
Poisson ratio (Hencky)	0.2 mm/s				47
Thermal Properties					
Vicat-softening Temperature	VST A	ISO 306	MPTS ISO 3167 A	°C	
Melting Temperature		ISO 11357		°C	150
Powder Properties					
x10		Laser diff.		µm	25
x50		Laser diff.		µm	68
x90		Laser diff.		µm	119
Bulk Density				g/cm³	
Part bed powder density				g/cm³	

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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 TPU Z86A-1 WT 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.			
	The following parameters are for 3D Systems sPro60 machine platform:		
	Part bed temperature	°C	110
	Scan speed	mm/s	12500
	Fill scan spacing	mm	0.10
	Layer thickness	mm	0,12
	Fill scan laser power	W	85
	Outline laser power	W	55
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.		

Headquarters
Lehmann & Voss & Co.
Alsterufer 19
20354 Hamburg
Germany
Tel +49 40 44 197-250
Fax +49 40 44 197-487
Email: luvocom@lehvoss.de

Americas
LEHVOSS North America, LLC
185 South Broad Street
Pawcatuck, CT 06379
USA
Tel +1-855-681-3226
Fax +1 860 495 2047
Email info@lehvossllc.com

Asia
LEHVOSS (Shanghai) Chemical Trading Co., Ltd.
Unit 1590, L'Avenue,
99 Xianxia Road, Changning District,
Shanghai 200051
China
Tel +86 21 60577297
Email info@lehvoss.cn

Lehmann&Voss&Co.