

# Technical Data Sheet

## Ultrasint PA6 LM black

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Version No.: 1.1, revised 11/2019

### General information

#### Components

**Low melting Polyamide 6-based powder for Laser Sintering**

#### Product Description

All Ultrasint PA6 grades have in common that they show high modulus, high strength and excellent thermal distortion stability. These properties ensure precise feature control, very good mechanical properties and simple surface reprocessing of 3D printed parts.

Ultrasint PA6 LM black is a reinforced Polyamide 6 based material with a balanced mechanical and thermal property profile. Its lower melting temperature compared to other Ultrasint PA6 powders allows for a processing of the material on standard LS equipment. The processing temperature is at 175-185°C. It can fulfil the requirements of functional applications regarding high accuracy and mechanical strength as well as a high heat distortion temperature – properties, where existing 3D printing materials often show limitations.

Typical applications are:

- Functional prototypes (i.e. in automotive industries)
- High performance spare parts
- Multi-purpose industrial goods
- Durable and rigid jigs & fixtures

#### Delivery form & warehousing

Ultrasint PA6 LM black powder should be stored at 15 – 25°C (60-77°F) in its originally sealed package in a clean and dry environment.

#### Product safety

Mandatory and recommended industrial hygiene procedures and the relevant industrial safety precautions must be followed whenever this product is being handled and processed. Product is sensitive to humid environment conditions. For additional information please consult the corresponding material safety data sheets.

#### For your information

Ultrasint PA6 LM black comes in solid black color. Electrical properties (e.g. volume resistivity, surface resistivity), chemical properties (e.g. resistance against particular substances) and tolerance for solvents are available upon request. Generally, these properties correspond to publicly available data on polyamides.

#### Notice

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

The safety data given in this publication is for information purposes only and does not constitute a legally binding Material Safety Data Sheet (MSDS). The relevant MSDS can be obtained upon request from your supplier or you may contact Forward AM directly at [sales@basf-3dps.com](mailto:sales@basf-3dps.com).

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General Properties	Test Method	Typical Values
Bulk Density / kg/m <sup>3</sup>	DIN EN ISO 60	590
Printed Part Density / kg/m <sup>3</sup>	DIN EN ISO 1183-1	1370
Mean particle size d50 / µm	Laser Diffraction	80
Melting Temperature / °C	ISO 11357 (20 K/min)	193
Crystallization Temperature / °C	ISO 11357 (20 K/min)	149
Melt Volume Flow Rate / cm <sup>3</sup> /10min	ISO 1133 (240 °C, 2.16 kg)	3

Thermal Properties	Test Method	Typical Values
HDT/A (1.8 MPa) / °C	ISO 75-2	98
HDT/B (0.45 MPa) / °C	ISO 75-2	183
Vicat/A (10 N) / °C	ISO 306	194
Vicat/B (50 N) / °C	ISO 306	185

Mechanical Properties	Test Method	Typical Values X-direction		Typical Values Z-direction	
		Dry <sup>1</sup>	Cond. <sup>2</sup>	Dry <sup>1</sup>	Cond. <sup>2</sup>
Tensile Strength / MPa	ISO 527-2 (23 °C)	73	44	49	32
Tensile Modulus / MPa	ISO 527-2 (23 °C)	4950	1500	4250	1350
Tensile Elongation at break / %	ISO 527-2 (23 °C)	2.8	17	1.3	5.5
Tensile Strength / MPa	ISO 527-2 (80 °C)	38	25	28	18
Tensile Modulus / MPa	ISO 527-2 (80 °C)	1250	650	1100	600
Tensile Elongation at break / %	ISO 527-2 (80 °C)	19	24	6.5	7.8
Flexural Modulus / MPa	DIN EN ISO 178	4500	1450	3650	1200
Charpy Impact Strength (notched) / kJ/m <sup>2</sup>	ISO 179-1	3.0	5.6	2.8	4.2
Charpy Impact Strength (unnotched) / kJ/m <sup>2</sup>	ISO 179-1	18	52	5.7	9.7
Izod Impact Strength (notched) / kJ/m <sup>2</sup>	ISO 180	3.8	6.6	3.3	5.3
Izod Impact Strength (unnotched) / kJ/m <sup>2</sup>	ISO 180	15	28	6.0	6.0

1) Measured after drying 14 days at 80°C / vacuum. Water content is about 0.18% acc. to DIN EN ISO 15512

2) Measured after conditioning 14 days at 70°C / 62% r.h. Water content is about 2.1% acc. to DIN EN ISO 15512

All values measured with virgin material.