

# Technical Data Sheet

# Ultrasint® PA6 MF black

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Version No.: 3.4, revised 04/2021

## General information

### Components

**Mineral-filled 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 MF black contains a mineral reinforcement. In contrast to simple dry blends, the reinforcement is embedded within the particles, leading to improved powder homogeneity, better spreading and easier recycling. Tensile and flexural modulus, as well as impact strength are significantly higher compared to unfilled material.

Ultrasint® PA6 MF black therefore lends itself for applications where high stiffness and high strength are the most important requirements – a material suitable for parts with demanding mechanical property combinations

Typical applications are:

- Engine compartment parts
- Media flow & storage parts (i.e. oil)
- Housings & covers
- Tooling equipment & molds

### Delivery form & warehousing

Ultrasint® PA6 MF black powder should be stored at 15 – 25°C 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 MF 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	600
Printed Part Density / kg/m <sup>3</sup>	DIN EN ISO 1183-1	1440
Mean particle size d50 / μm	Laser Diffraction	65-75
Melting Temperature / °C	ISO 11357 (20 K/min)	219
Crystallization Temperature / °C	ISO 11357 (20 K/min)	174
Melt Volume Flow Rate / cm <sup>3</sup> /10min	ISO 1133 (240 °C, 2.16 kg)	7

Thermal Properties	Test Method	Typical Values
HDT/A (1.8 MPa) / °C	ISO 75-2	121
HDT/B (0.45 MPa) / °C	ISO 75-2	209
Vicat/A (10 N) / °C	ISO 306	217
Vicat/B (50 N) / °C	ISO 306	210

Electrical Properties	Test Method	Typical Values (X-direction)	Typical Values (Z-direction)
Dielectric strength (1mm) / kV/mm	IEC 60243-1	27	10
CTI	IEC 60112	600	600

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	91	62	50	40
Tensile Modulus / MPa	ISO 527-2	6250	3300	5900	3100
Tensile Elongation at break / %	ISO 527-2	2.1	7.0	0.9	1.6
Flexural Modulus / MPa	DIN EN ISO 178	6000	2750	5400	2600
Charpy Impact Strength (notched) / kJ/m <sup>2</sup>	ISO 179-1	2.7	3.1	1.9	2.3
Charpy Impact Strength (unnotched) / kJ/m <sup>2</sup>	ISO 179-1	13.2	27.8	4.6	3.9
Izod Impact Strength (notched) / kJ/m <sup>2</sup>	ISO 180	4.2	4.4	2.8	3.6
Izod Impact Strength (unnotched) / kJ/m <sup>2</sup>	ISO 180	13.1	24.1	5.1	4.6

 Detailed material data and support for FEA simulations available on request ([sales@basf-3dps.com](mailto:sales@basf-3dps.com)).

1) Measured after drying 14 days at 80°C / vacuum. Water content is about 0.06% acc. to DIN EN ISO 15512

2) Measured after conditioning 14 days at 70°C / 62% r.h. Water content is about 1.5% acc. to DIN EN ISO 15512

All values measured with virgin material.