Technical Data Sheet

Ultrasint® PA11 black

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Version No.: 1.3, revised 08/2021

General information

Components

Black Polyamide 11 powder for Laser Sintering

Product Description

Ultrasint® PA11 black, a bio-based material (castor oil), is an interesting alternative to PA12. Parts produced with this material show a high elongation at break, elasticity and high impact resistance. Typical applications are in environments where high deformations (e.g. hinges) and/or exposure to special surroundings (e.g. chemical, detergents, oil) may occur. Due to its high ductility and toughness, it does not splinter in most crash situations. Ultrasint® PA11 black is processable on most common SLS printers. Parameters for printing will be provided.

Typical applications are:

- Car interior parts
- Bumper components
- Living hinges
- Functional prototypes and spare parts
- Medium-loaded series parts

Delivery Form & Warehousing

Ultrasint® PA11 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® PA11 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.

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General Properties	Test Method	Typical Values
Bulk Density / kg/m³	DIN EN ISO 60	540
Printed Part Density / kg/m³	DIN EN ISO 1183-1	1030
Mean Particle Size d50 / µm	Laser Diffraction	40-50
Melting Temperature / °C	ISO 11357 (10 K/min)	203
Crystallization Temperature / °C	ISO 11357 (10 K/min)	165
Melt Volume Flow Rate / cm³/10min	ISO 1133 (220 °C, 2.16 kg)	18

Thermal Properties	Test Method	Typical Values[1]
HDT/A (1.8 MPa) / °C	ISO 75-2	62
HDT/B (0.45 MPa) / °C	ISO 75-2	177
Vicat/A (10 N) / °C	ISO 306	192
Vicat/B (50 N) / °C	ISO 306	175

Mechanical Properties	Test Method	Typical Values X-direction		Typical Values Z-direction	
		Dry[1]	Cond.[2]	Dry[1]	Cond.[2]
Tensile Strength / MPa	ISO 527-2 (23°C)	52	45	52	45
Tensile Modulus / MPa	ISO 527-2 (23°C)	1750	1150	1700	1200
Tensile Elongation at Break / %	ISO 527-2 (23°C)	26	42	27	34
Tensile Strength / MPa	ISO 527-2 (80°C)	32	28	28	26
Tensile Modulus / MPa	ISO 527-2 (80°C)	390	330	360	300
Tensile Elongation at Break / %	ISO 527-2 (80°C)	> 150	> 150	87	120
Flexural Modulus / MPa	DIN EN ISO 178	1750	1300	1700	1300
Charpy Impact Strength (notched) / kJ/m²	ISO 179-1	7.6	11	7.7	11
Charpy Impact Strength (unnotched) / kJ/m²	ISO 179-1	193	No break	56	75
Izod Impact Strength (notched) / kJ/m²	ISO 180	7.9	9.3	8.0	9.9
Izod Impact Strength (unnotched) / kJ/m²	ISO 180	No break	No break	48	63

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

1) Measured after drying 14 days at 80°C / vacuum. Water content is about 0.02% acc. to DIN EN ISO 15512

2) Measured after conditioning 14 days at 70°C / 62% r.h. Water content is about 0.8% acc. to DIN EN ISO 15512

All values measured with virgin material.