

DEEP is a fine composite powder charged with specific glass beads based on a polyamide 11 black in mass (thermoplastic) especially formulated to function on powder bed systems by laser sintering (SLS, LS). It enables to obtain productions with long cycle of life and excellent chemical resistance.



PA11 Black Glass Beads

Typical features :

- PA11 Black in mass filled with Glass beads
- Fine granulometry
- Compatible with desktop SLS 3d printers

Applications examples :

- ➔ Outdoor use
- ➔ parts in T°C
- ➔ MotorSports Racing
- ➔ Aerospace
- ➔ Military industry
- ➔ UAV components

Refresh rate :

50%

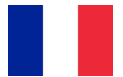
limited to 8 cycles

Key Points :

- Compact SLS compatible
- Bio-sourced components
- High mechanical properties



MADE IN



General Properties :

Chemical Nature of the Preparation :	POLYAMIDE 11 black in mass composite with glass beads, Presence of additives	
Physical State (20°C) and Color :	Solid (powder) Grade : Deep Black	
Average Particle Size : Grain Size : Grain Size : Grain Size :	Diffraction laser : D10 D50 D90	30 <_ < 90 µm 35 µm 52 µm 80 µm
Powder packed Density 23 ° C : Part Density : 23°C Moisture absorption 24 hrs :	Method FABULOUS : Method FABULOUS : ASTM D570	0,91 +/- 0,05 g/cm³ 1,38 +/- 0,05 g/cm³ 0,85 +/- 0,05 %

Mechanical Properties :

Young Modulus*	ISO 527	> 2900 MPa
Flexural Modulus*	ISO 178	> 2400 MPa
Tensile strength (Average XY)*	ISO 527	45 +/- 3 MPa
Tensile strength (Average Z)*	ISO 527	40 +/- 3 MPa
Elongation at break (Average XY)*	ISO 527	Estimate 4-6 %
Elongation at break (Average Z)*	ISO 527	Estimate 4 %
Charpy – Impact strength*	ISO 179 (20°C)	NC
<i>*statistics after several cycles</i>		50 cond. 24 hrs

The mechanical properties can vary according to the positioning of the tensile bars, operating conditions and exposure parameters of the systems used. These data rest on the current state of our knowledge. They do not give the exact characteristics of material and does not represent a guarantee.

Thermal Properties :

T°f Melting Point :	DSC	196 <_ < 204 °C
T° Process : According to machine the Grey color offset the reading :	Glazing Method	-12 +/- 2 °C (ex : 186 °C +/-2)
Flammability – Fire Classification UL-94 following ASTM D618(ISO 921) with a barrel 125 x 13 x 13 mm	UL94 vertical & Horizontal test	Charged grade: HC Out Classification

Electrical Properties :

According to the value reach in CEI 93 the material is considered as : **ANTISTATIC to DISSIPATOR to be confirmed**

Volume resistivity	CEI 93	<i>around 2.1 E+11 Ohms/m</i>
Horizontal surface Voluminal resistivity	CEI 93	<i>around 1.7 E+11 Ohms</i>
Vertical surface Voluminal resistivity	CEI 93	<i>around 1.7 E+11 Ohms</i>

Surface Finish :

Natural Coloration :	Visual	Deep Black in Mass
Shore D Hardness :	ISO 868 (20°C)	80 +/- 2 Shore D
Surface Ra/ Upper Facing processed & blasting :	ISO 4287	10 +/- 2 µm
Surface Ra/ Upper Facing after Finishing :	ISO 4287	4 +/- 1 µm

Chemical Properties :

Matrix in Polyamide 11 with a good chemical resistance to alkaline, hydrocarbons, oils, gasoline, gas oil and solvents.

Attack by the acids. Sealing of wall starting from **1.6 mm thickness**.

SOLUBILITY : WATER :	Insoluble in Water (20 °C) < 1 mg/m3 (estimated)
Solvents :	Soluble in : Mineral acids, Phenols Insoluble in most organic solvents Insoluble in : Chlorinated solvents ,Alkaline conditions Charge: Insoluble in almost all chemicals, except hydrofluoric acid
Odor : pH:	None NA
Melting Point / Range : Decomposition Temperature : Explosive Properties :	160 °C < T < 220 °C > 400 °C Dust may form explosive mixture in air (30 - 60 g/m³) Test of dust behavior in explosions : Kst = 200 - 250 m.bar/s CARE / 301 m.bar/s Explosibility class : St2 CARE Standard : ISO 6184/1 - ASTM E 1226
Explosive Limits :	Lower : in air 30 - 60 g/m3 Higher : In air Approximately 200 g/m3 (estimated)

Data Sheet_DEEP_PA11BLACKGB_Sep 2023