DARK
PA 11

FABULOUS MATERIALS

DARK is a fine powder based on polyamide 11 (thermoplastic) especially formulated to function on powder bed systems by laser sintering (SLS, LS). It enables to obtain productions of models and functional parts in "plastic engineering" with long cycle of life and excellent chemical resistance.

Typical features :

Bio-sourcing
(Castor oil) Better elasticity than PA12 with 75 shore A
Fine granulometry
Resistance in **extreme low and high temperatures**

Applications examples :

- ➔ Mechanical parts
- ➔ Aerospace
- ➔ Automotive industry, Innovative applications
- ➔ Luxury industry
- ➔ Large parts as Fuel or oil tanks .

Refresh rate :

40% to 50%

limited to 6-8 cycles

The process ability of the powder on your systems is optimized ; thus **all the powder** of a building can be re-used after sifting.

Key Points :

Ductility
Elongation
Impact Resistance
Black in mass

La FRENCH FAB — Offreurs de solutions Industrie du futur — MADE IN

General Properties :

Chemical Nature of the Preparation :	POLYAMIDE 11, Presence of additives Possible presence of : Carbon black Colored grade = DARK	
Physical State (20°C) and Color :	**Solid (powder) Colored Grade : Mass Black**	
Average Particle Size :	**Diffraction laser :**	**45 < _ < 60 µm**
Grain Size :	D10	35 µm
Grain Size :	D50	45 µm
Grain Size :	D90	70 µm
Powder packed Density 23 ° C :	**Method FABULOUS :**	**0,55 +/- 0,05 g/cm³**
Part Density :	**Method FABULOUS :**	**1 +/- 0,05 g/cm³**
23°C Moisture absorption 24 hrs :	ASTM D570	1,12 +/- 0,05 %

Mechanical Properties :

Young Modulus*	**ISO 527**	**> 1500 MPa**
Flexural Modulus*	ISO 178	> 1300 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**	**40 +/- 5 %**
Elongation at break (Average Z)*	ISO 527	20 +/- 3 %
Charpy – Impact strength*	**ISO 179 (20°C)**	**NO BREAK** dry/Cond.24 hrs KJ/m²
**statistics after several cycles*		*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.

FABULOUS MATERIALS
FABULOUS SAS - FABULOUS materials
N°Siret France 799529383 00017 RCS Lyon
European VAT : FR 00 799529383 - APE 6201Z
Headquarters : 55 Quai Saint Vincent 69001 LYON - Tech Center : 2 Avenue Roger Salengro, Carré de Soie, 69120 VAULX-EN-VELIN - FRANCE
contact@fabulous.com.co
06.61.94.70.71 - 04.37.26.05.06
www.fabulous.com.co
@ Fabulous 3D Print
FABULOUS MATERIALS

DARK
PA 11

FABULOUS MATERIALS

Thermal Properties :

T°f Melting Point : T° Process : According to machine the Black color offset the reading :	**DSC** Glazing Method	**196 < _ < 204 °C** - 12 +/- 2 °C (ex : 187 °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	**Colored grade: HC** Out Classification

Electrical Properties :

According to the value reach in CEI 93 the material is considered as : **ISOLANT**

Volume resistivity Horizontal surface Voluminal resistivity Vertical surface Voluminal resistivity	**CEI 93** **CEI 93** **CEI 93**	**1.3 E+13** Ohms/m **1.2 E+15** Ohms **1.5 E+15** Ohms

Surface Finish :

Natural Coloration : **Shore D Hardness :** Surface Ra/ Upper Facing processed & blasting : Surface Ra/ Upper Facing after Finishing :	**Visual** **ISO 868 (20°C)** ISO 4287 ISO 4287	**Mass Black** **80 +/- 2 Shore D** 10 +/- 2 µm 6 +/- 1 µm

Chemical Properties :

Matrix in Polyamide 11 with a good chemical resistance to alkaline, hydrocarbons, oils, gasoline's, gas oil and solvents.
Attack by the acids. Sealing of wall starting **from 1.6 mm thickness.**

SOLUBILITY : WATER : Solvents : Odor : pH:	 Insoluble in Water on the basis of its structure at 20 °C < 1 mg/m3 (estimated) Soluble in :Mineral acids, Phenols Insoluble in most organic solvents Insoluble in : Chlorinated solvents, Alkaline conditions None NA
Melting Point / Range : Decomposition Temperature : Explosive Properties : Explosive Limits :	> 180 °C Polymer: > 350 ° 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 Lower : in air **30 - 60 g/m3** Higher: In air Approximately 200 g/m3 (estimated)

Data Sheet_DARK PA11_ Dec 2020.