

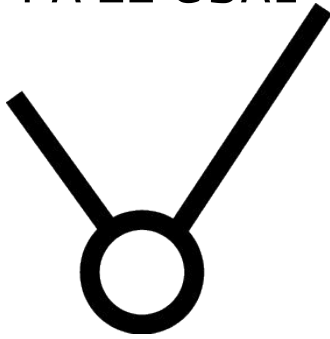
# PERFORM

## PA 11 GLASS BEADS & ALUMINIUM

**FABULOUS**  
MATERIALS

PERFORM is a fine composite powder charged with glass beads and aluminium particles based on polyamide 11 (thermoplastic) especially formulated to function on rapid prototyping systems by laser sintering (SLS, LS) or radiation (IRS, MJF). It enables to obtain productions of models and functional parts in "plastic engineering" with long cycle of life and excellent chemical resistance.

### PERFORM PA 11 GBAL



Typical features :

Glass beads filled PA11  
Fine granulometry  
**Specifically designed  
to produce large parts  
on large machines**

Applications examples :

- Automotive hot parts
- Aerospace
- Military industry
- Drones
- Large parts on large machines

Refresh rate :

# 50 %

LIMITED TO MAX 12 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. The refreshing factor for regeneration is lower than the usual rates giving a real economic advantage.

Key Points :

# High T°

resistance  
performances

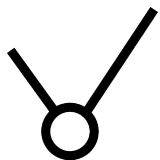
#### General Properties :

Chemical Nature of the Preparation :	POLYAMIDE 11, Presence of additives with carbon black pigment and additives	
Physical State (20°C) and Color :	Solid (powder) Natural Grade : BLACK	
Average Particle Size :	Diffraction laser :	45 <_ < 65 μm
Grain Size :	D10	35 μm
Grain Size :	D50	60 μm
Grain Size :	D90	90 μm
Powder packed Density 23 °C :	Method FABULOUS :	1 +/- 0,05 g/cm <sup>3</sup>
Part Density :	Method FABULOUS :	1,35 +/- 0,05 g/cm <sup>3</sup>
23°C Moisture absorption 24 hrs :	ASTM D570	0,85 +/- 0,05 %

#### Mechanical Properties :

Young Modulus*	ISO 527	2200 - 2700 MPa
Flexural Modulus*	ISO 178	Estimate > 2000 MPa
Tensile strength (Average XY)*	ISO 527	30 +/- 3 MPa
Tensile strength (Average Z)*	ISO 527	27 +/- 3 MPa
Elongation at break (Average XY)*	ISO 527	Estimate 20 %
Elongation at break (Average Z)*	ISO 527	Estimate > 10 %
Charpy – Impact strength*	ISO 179 (20°C)	NC
*statistics after several cycles >10 refresh		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.



# PERFORM

## PA 11 GLASS BEADS & ALUMINIUM

**FABULOUS**  
MATERIALS

### Thermal Properties :

T <sup>o</sup> f Melting Point : T <sup>o</sup> g Glazing Point : T <sup>o</sup> Process : According to machine the Grey color offset the reading :	DSC DSC Glazing Method	196 < _ < 204 °C 40 < _ < 46 °C -12 +/- 2 °C (ex : 186 °C +/-2)
Flammability – Fire Classification UL-94 following ASTM D618(ISO 921) with a barrel 125 mm x 13	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**

Volume resistivity Horizontal surface Voluminal resistivity Vertical surface Voluminal resistivity	CEI 93 CEI 93 CEI 93	Estimate < 1 E+10 Ohms/m Estimate < 1 E+9 Ohms Estimate < 1 E+9 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	Aluminium GREY Estimate > 80 Shore D 12 +/- 2 µm 8 +/- 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 **1.8 mm thickness**.

SOLUBILITY : WATER :  Solvents :  Odor : pH:	Insoluble in Water (20 °C) < 1 mg/m3 (estimated) 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 None NA
Melting Point / Range : Decomposition Temperature : Explosive Properties :   Explosive Limits :	130 ° 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 PURE / 301 m.bar/s Explosibility class : St2 PURE Standard : ISO 6184/1 - ASTM E 1226 Lower : (in air 30 - 60 g/m3) Higher : In air Approximately 200 g/m3 (estimated)

Data Sheet\_PERFORM PA11GBAL\_ May 2020.