SELECTIVE LASER SINTERING

PA12 WHITE

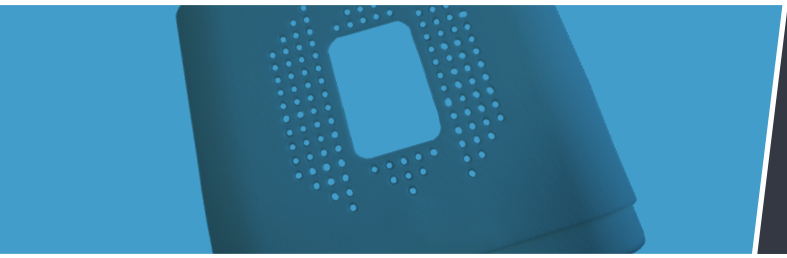
Supplier Data Sheet: EOS PA 2200 Balance 1.0

PRODUCT DESCRIPTION

PA12 White is an economical material choice for functional prototypes and end-use parts. It offers high impact and temperature resistance, is very durable, and remains stable under a range of environmental conditions.

APPLICATIONS

The material's high strength is ideal for jigs and fixtures, housings, and other functional parts. It also has a low coefficient of friction, making it suitable for many types of gears and bearings.



KEY PRODUCT BENEFITS

- Strength and stiffness
- Well-balanced material properties

PROPERTIES

PROPERTY	TEST METHOD	VALUE (STANDARD)	VALUE (VAPOUR SMOOTH)
Colour	-	White	White (shiny)
Sintered Density*	ASTM D792	0,93 g/cm³	0,93 g/cm³
Surface Roughness**	DIN EN ISO 4287	Ra = 10-25 µm; Rz = 60-140 µm	Ra = 5-15 µm; Rz = 25-65 µm
Water absorption, 20 °C, 50% Relative Humidity	DIN EN ISO 62	0.5 ± 0.2%	0.5 ± 0.2%
Water absorption, 24 hrs. in boiling water		2.0 ± 0.3%	2.0 ± 0.3%
E-Module (x-y plane)	DIN EN ISO 527, test speed 10mm/min	2000 ± 200 MPa	1900 ± 200 MPa
E-Module (z plane)		1900 ± 200 MPa	1900 ± 200 MPa
Tensile strength (x-y plane)		50 ± 4 MPa	46 ± 4 MPa
Tensile strength (z plane)		42 ± 4 MPa	42 ± 4 MPa
Elongation at break (x-y plane)		11 ± 4%	15 ± 4%
Elongation at break (z plane)		4 ± 2%	6 ± 2%
Vicat Softening Point*	ISO 306 (50°C/h 50N)	163 °C	163 °C

*From supplier data sheet

**Surface roughness may vary depending on orientation

TOLERANCES

For well-designed parts, tolerances of ± 0.20mm plus 0.002mm/mm can typically be achieved. Note that tolerances may change depending on part geometry.

PROTOLABS

Version 1.0 | December 2024

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SELECTIVE LASER SINTERING

PA 11 BLACK

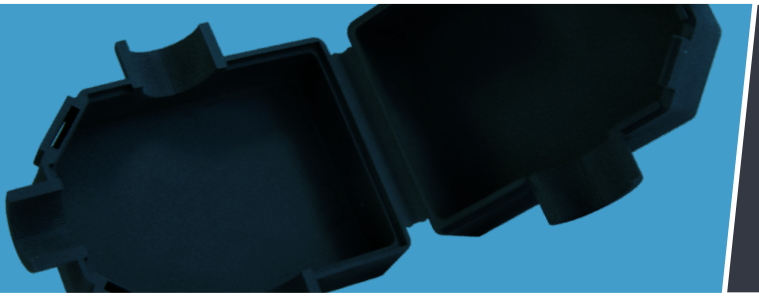
Supplier Data Sheet: EOS PA 1102 Black

PRODUCT DESCRIPTION

PA 11 Black provides excellent ductility and temperature resistance without sacrificing tensile strength. It offers one of the highest elongation break thresholds in the nylon family.

APPLICATIONS

The material is suited for functional, moving parts with features like snap fits and living hinges. Its black colour makes it desirable for optical applications due to low reflectivity.



KEY PRODUCT BENEFITS

- High elongation at break
- Flexibility
- Uniform black colour

PROPERTY	TEST METHOD	VALUE
Colour	-	Black
Sintered Density*	ASTM D792	1.03 g/cm³
Water absorption, 20 °C, 50 % Relative Humidity	DIN EN ISO 62	0.3 ± 0.2%
Water absorption, 24 hrs. in boiling water		1.5 ± 0.2%
E-Module (x-y plane)	DIN EN ISO 527, test speed 10mm/min	1800 ± 200 MPa
E-Module (z plane)		1800 ± 200 MPa
Tensile strength (x-y plane)		52 ± 4 MPa
Tensile strength (z plane)		49 ± 4 MPa
Elongation at break (x-y plane)		30% ± 7%
Elongation at break (z plane)		18 +/- 7%
Heat deflection temperature @ 0.46 MPa*	DIN EN ISO 75	188 °C
Heat deflection temperature @ 1.82 MPa*		48 °C

*From supplier data sheet

TOLERANCES

For well-designed parts, tolerances of ± 0.20mm plus 0.002mm/mm can typically be

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SELECTIVE LASER SINTERING

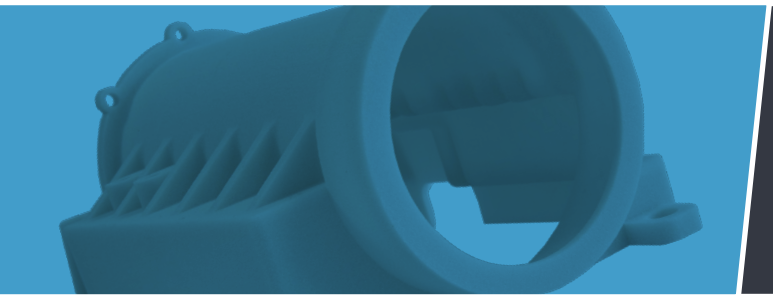
PA 12 40% GLASS-FILLED

Supplier Data Sheet: EOS PA 3200 GF

PRODUCT DESCRIPTION

PA 12 40% Glass-Filled is a polyamide powder loaded with glass spheres that add stiffness and dimensional stability. The material possesses higher thermal resistance than unfilled polyamides and exhibits excellent long-term wear resistance. Due to the glass additive, it has decreased impact and tensile strengths compared to other nylons.

APPLICATIONS



KEY PRODUCT BENEFITS

- Stiffness and dimensional stability
- Long-term wear resistance

PROPERTY	TEST METHOD	VALUE
Colour	-	White
Sintered Density*	ASTM D792	1.22 g/cm³
Water absorption, 20 °C, 50% Relative Humidity	DIN EN ISO 62	0.5 ± 0.2%
Water absorption, 24 hrs. in boiling water		2.0 ± 0.3%
E-Module (x-y plane)	DIN EN ISO 527, test speed 10mm/min	3600 ± 400 MPa
E-Module (z plane)		3600 ± 400 MPa
Tensile strength (x-y plane)		50 ± 4 MPa
Tensile strength (z plane)		46 ± 4 MPa
Elongation at break (x-y plane)		5% ± 2%
Elongation at break (z plane)		3% ± 2%
Heat deflection temperature @ 0.46 MPa *	DIN EN ISO 75	157 °C
Heat deflection temperature @ 1.82 MPa*		96 °C

*From supplier data sheet

TOLERANCES

For well-designed parts, tolerances of ± 0.20mm plus 0.002mm/mm can typically be

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MULTI JET FUSION

PA 12 BLACK

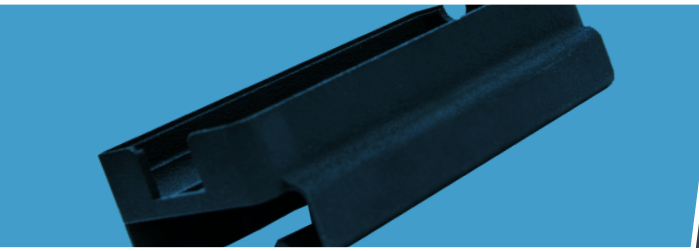
Supplier Data Sheet: HP 3D High Reusability PA12

PRODUCT DESCRIPTION

PA 12 Black is a high tensile strength nylon suitable for prototypes and end-use production parts. Final parts exhibit quality surface finishes, fine feature resolution, and more consistent mechanical properties when compared to processes like selective laser sintering.

APPLICATIONS

Multi Jet Fusion's PA 12 black is often used to build housings, enclosures, and fixtures, and can work well for snap fits and hinges.



KEY PRODUCT BENEFITS

- Near isotropic mechanical properties
- Water- and airproof without further treatment

PROPERTY	TEST METHOD	VALUE
Colour	-	Black
Sintered Density*	ASTM D792	1.01 g/cm³
Water absorption, 20 °C, 50% Relative Humidity	DIN EN ISO 62	0.5 ± 0.2%
Water absorption, 24 hrs. in boiling water		2.0 ± 0.3%
E-Module (x-y plane)	EU: DIN EN ISO 527, test speed 10 mm/min	1900 MPa ± 200 MPa
E-Module (z plane)		1900 MPa ± 200 MPa
Tensile strength (x-y plane)		49 ± 4 MPa
Tensile strength (z plane)		47 ± 4 MPa
Elongation at break (x-y plane)		12% ± 4%
Elongation at break (z plane)		9% ± 4%
Heat deflection temperature @ 0.46 MPa*	DIN EN ISO 75	175 °C
Heat deflection temperature @ 1.82 MPa*		95 °C

*From supplier data sheet

TOLERANCES

For well-designed parts, tolerances of ± 0.25mm plus 0.002mm/mm can typically be

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