

Material Data Sheet

PA6 CF15 BLACK



General Information

Extruded Polyamide 6 (PA6) reinforced with 15% carbon fibres for 3D printing with enhanced mechanical properties. The carbon fibres significantly improve the strength and rigidity of the filament making it suitable for applications that require parts with high stiffness and durability. Additional advantages of the filament are heat and chemical resistance. This high performance filament was developed for industrial use and engineering / functional parts.

3D processing method: FFF (Fused Filament Fabrication)

Diameter (mm): 1.75 and 2.85

Form: wound on a spool (app 354/133 m per 1 kg of 1,75/2,85 mm filament)

Packaging: packed in a hermetically sealed plastic bag with silica gel

Colours: Black

Physical Properties	Standard	Value	Unit
Density	ISO 1183	1,16-1,19	g/cm ³
Melt Volume Rate	ISO 1133-1 (275°C/5,0 kg)	45,2	cm ³ /10 min

Thermal Properties	Standard	Value XY (Flat)	Value	Unit
Heat Deflection Temperature	ISO-75-2 (0,45 MPa)	203,1		°C
Vicat Softening Temperature	ISO 306:2023, B/50	202,4		°C
Glass Transition Temperature	DSC (10°C/min)		tba	°C
Melting Temperature	DSC (10°C/min)		221	°C

Mechanical Properties	Standard	Value XY (Flat)	Value Z (Up)	Unit
Tensile Modulus	ISO 527-2:2012 (1 mm/min)	5.739	2.953	MPa
Tensile Stress at Break	ISO 527-2:2012 (5 mm/min)	77,5	46,5	MPa
Elongation at Break	ISO 527-2:2012 (5 mm/min)	2,7	2,0	%
Flexural Modulus	ISO 178:2019 (1 mm/min)	4.843	2.560	MPa
Flexural Strength	ISO 178:2019 (5 mm/min)	121,0	82,1	MPa
Charpy Impact Strength Notched	ISO 179-1:2011 (2,9 m/s; 0,5 J)	6,5 (H)*	3,3 (C)*	kJ/m ²
Hardness	ISO 868:2004	72,6		Shore D

The tests were performed on material in black colour either on filament or 3D printed parts (XY/Flat or Z/Up). **Printing conditions (3D specimens):** Ultimaker 5S, nozzle: 280 °C, nozzle type: hardened, nozzle diameter: 0,6 mm, bed temperature: 70 °C, layer height 0,2 mm, infill: 100 %, active cooling fan: 0-5 %, perimeter No: 3, printing speed: 45 mm/s, chamber: closed. Printed parts were conditioned. * H = hinge break. C = complete break.

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Printing Conditions

Processing Method: FFF (Fused Filament Fabrication)

Drying (hours/°C): 16-24/70. Dry before every use. Filament should be kept dry also during printing (should not be able to absorb humidity). Store in a closed bag in a dry place.

Dry box: recommended

Adhesion: for glass we recommend using glue.

Nozzle size (mm) and type: ≥ 0,6, hardened

Nozzle Temperature (°C): 265-295. For the best mechanical properties print at the higher end of temperature range, i.e. in the 280-295°C range.

Speed (mm/s): 45-60

Bed Temperature (°C): 70-110

Build chamber: closed

Heated chamber (°C): tba

Active cooling (%): 0-40

Compliance

This material is compliant with:

- **REACH:** Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the *Registration, Evaluation, Authorisation and Restriction of Chemicals* (REACH)
- **RoHS 2:** Directive 2011/65/EU

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