

# TECHNICAL DATA SHEET

## Spectrum Filaments PA6 CF15

The material offered by Spectrum Group Sp. z o.o. has been developed and adapted to general modeling. Tests performed by Spectrum Group Sp. z o.o. have showed that it is feasible to use the offered product in most 3D printers operating in FDM/FFF technology. Before the first use, it is advisable to print out a hard proof to check if the filament is compatible with user's printer. All shown data are typical properties. The information were processed with the best knowledge of the manufacturer and it is for information only. Users should confirm results by their own tests.

Identification	
Trade name	Spectrum Filaments PA6 CF15
Chemical name	Polyamide with carbon fibers
Use	Additive Manufacturing
Origin	Spectrum Group Sp. z o.o.

Filament specification	
Diameter	1.75mm ± 0.05mm
Verify your spool	Yes

Material properties			
Properties		Typical value	Test method
Density		1.25 g/cm <sup>3</sup>	ISO 1183-3
Tensile strength	at 23°C / 50% rh; @50mm/min	170 MPa	ISO 527
Elongation at max. force	at 23°C / 50% rh; @50mm/min	2%	ISO 527
Modulus of elasticity	at 23°C / 50% rh; @1mm/min	15 GPa	ISO 527
Charpy impact strength	at 23°C / 50% rh	47 kJ/m <sup>2</sup>	ISO 179 1eU
Head distortion temperature	HDT A	240°C	ISO 75
Operation temperature	max. 20.000h	150°C	IEC 60216
Service temperature	max. 200h	180°C	
Coefficient of thermal expansion		0.4 10 <sup>-5</sup> /K	ISO 11359
Water absorption	23°C / 24h	<0.3%	ISO 62
Linear mould shrinkage		0.1%	DIN 16742
Insulation resistance strip electrode	R25	≤10 <sup>2</sup> Ω	DIN IEC 60167
Surface resistance	ROB	<10 <sup>2</sup> Ω	DIN IEC 60093

Guideline for print settings*	
Nozzle temperature	240-280°C
Bed temperature	40-60°C
Active cooling fan	Yes (50% as default)
Layer height**	≥ 0.20mm
Brim/skirt	3 outlines with 1 layer
Print speed**	30-80mm/s
Nozzle diameter	≥ 0.50mm
Nozzle type	abrasion resistant
Bed adhesive	buildTak, Magigoo, 3DLac, Dimafix

\* settings are based on a 0.5mm nozzle

\*\* the range depends on the geometrical complexity

In case filament has become wet, it should be dried. Drying at 80°C for 12h is recommended.

**Key features:**

- exceptionally low processing (linear) shrinkage of 0.1 %
- high temperature and abrasion resistance
- high mechanical strength
- chemical resistance to lubricants and oils
- a wide range of applications
- very robust lamination of layers
- a high creep resistance, high hardness and rigidity of the printed items
- a very wide temperature range for prolonged operations (150°C max. 20.000h) as well as a very high temperature up to 180°C for short-time operations (max. 200h)