Material Data Sheet
PET-G

General Information

Extruded amorphous co-polyester Polyethylene Terephthalate Glycol (PET-G) for easy processing and high toughness. This high definition odourless filament conforms to tight diameter and ovality tolerances and enables print details with precision, good surface and high resolution. It exhibits excellent colour coverage and batch-to-batch colour consistency. PET-G is naturally UV resistant.

3D processing method: FFF (Fused Filament Fabrication)

Diameter (mm): 1,75 and 2,85

Form: wound on a spool (app 326/123 m per 1 kg of 1,75/2,85 mm filament)

Diameter tolerance (mm): ± 0,05/± 0,06 on 100 % of the 1,75/2,85 filament length

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

Colours (with RAL code where applicable): Transparent, Black (9017), Dark Blue (5002), Light Blue (5015), Light Green (6018), Dark Green (6002), Red (3020), Orange (2008), White (9003), Silver (9006), Yellow (1023), Dark Grey (7011)

Physical Properties	Standard	Value	Unit
Density	ISO 1183	**1,26-1,29**	g/cm^3
Melt Flow Index	ISO 1133-1 (230°C/2,16 kg)	**10,8**	g/10 min

Thermal Properties	Standard	Value XY (Flat)	Value	Unit
Heat Deflection Temperature	ISO-75-2 (0,45 MPa)	**69,5**		°C
Vicat Softening Temperature	ISO 306:2014, B/50	**69,1**		°C
Glass Transition Temperature	DSC (10°C/min)		**82,3**	°C
Melting Temperature			**amorphous**	°C

Mechanical Properties	Standard	Value XY (Flat)	Value Z (Up)	Unit
Tensile Modulus	ISO 527-2:2012 (1 mm/min)	**2.159**	**2.014**	MPa
Tensile Stress at Yield	ISO 527-2:2012 (50 mm/min)	**54,3**	**41,1**	MPa
Tensile Stress at Break	ISO 527-2:2012 (50 mm/min)	**46,1**	**41,1**	MPa
Elongation at Yield	ISO 527-2:2012 (50 mm/min)	**3,5**	**2,3**	%
Elongation at Break	ISO 527-2:2012 (50 mm/min)	**5,8**	**2,3**	%
Flexural Modulus	ISO 178:2019 (1 mm/min)	**2.267**	**2.010**	MPa
Flexural Strength	ISO 178:2019 (5 mm/min)	**76,7**	**67,1**	MPa
Charpy Impact Strength Notched	ISO 179-1:2011 (2,9 m/s; 0,5 J)	**3,2 (C)***	**2,5 (C)***	kJ/m²
Hardness	ISO 868:2004	**74,4**		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):** Prusa i3MKS3, nozzle: 245 °C, nozzle type: brass, nozzle diameter: 0,4 mm, bed temperature: 80/85 °C, layer height 0,2 mm, infill: 100 %, active cooling fan: 30-50 %, perimeter No: 3, printing speed: 45 mm/s, chamber: closed. Printed parts were conditioned. * C = complete break.

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Printing Conditions

Processing Method: FFF (Fused Filament Fabrication)

Drying: Dry at up to 60°C for up to 8 hours before printing. Use a dry-box / controlled environment during printing (e.g. relative humidity 20% or lower). Store in a sealed bag. Pre-drying of the filament reduces stringing.

Dry box: Recommended.

Adhesion: Use glue for glass bed and cool down for better part removal from.

Nozzle Temperature (°C): 245 ± 15. Use nozzle temperature 230 °C for less stringing.

Speed (mm/s): up to 350. Maximum printing speed depends on part complexity, efficiency of cooling (increased cooling with increased speed) and printing temperature (260 °C is recommended for the highest speeds.) For simpler shapes speed up to 500 mm/s can be achieved.

Bed temperature (°C): 80 ± 10

Bed type: satin coated sheet, glass.

Retraction speed (mm/s): 45

Retraction length (mm): direct drive 1,2-1,4; Bowden drive (12-16)

Active cooling (%): 30 – 100

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

Notes

The diameter of our filament is measured with **triple axis diameter gauges** for the most precise measurement readings. This leaves less room for error and reduces the possibility of ovality deviation in comparison to both, single- and double-axis gauges. With the accuracy of ± 1 µm and resolution 0,01 µm, our laser devices take 30.000 scans per second (or 10.000 scans/second/axis). The chance of an undetectable filament over-extrusion is reduced three-fold compared to a double-axis gauge.

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Contact Information

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