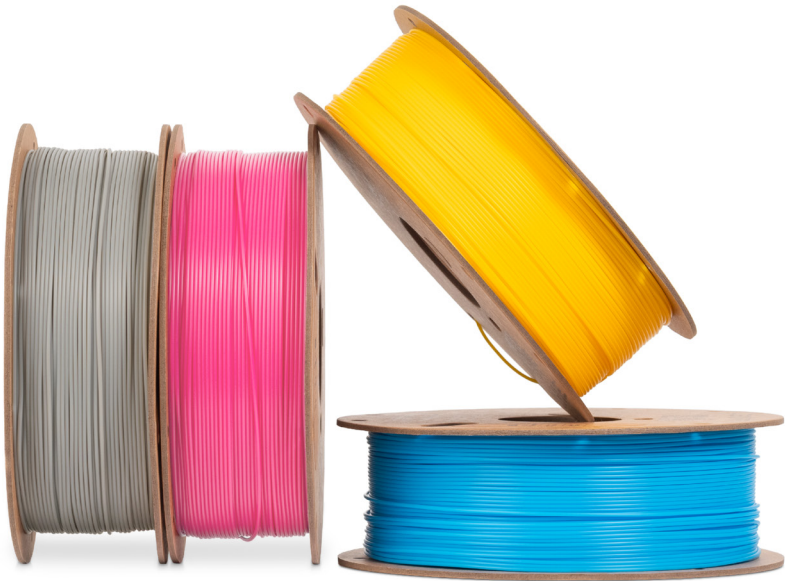


snapmaker

PLA Full Spectrum Filament Bundle

Technical Data Sheet



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1 Filament Introduction

The Snapmaker PLA Full Spectrum Filament Bundle includes Cyan, Magenta, Yellow, and Gray filaments specially designed for layered color mixing with Snapmaker Orca's Full Spectrum feature. By alternating thin layers along the Z-axis, the four filaments visually blend into a broader palette beyond four fixed colors. Carefully tuned for color and Transmission Distance (TD), the bundle delivers more natural blending with fewer visible horizontal stripes—giving you richer color possibilities with fewer spools to store.

2 Specifications

Subjects	Data
Diameter	1.75 ± 0.02 mm
Net Filament Weight	1 kg
Length	328 m
Spool Material	Cardboard Spool
Spool Size	Diameter: 200 mm; Height: 66 mm

3 Recommended Printing Settings

Subjects	Data
Drying Settings Before Printing	55°C, 6 h
Printing and Storage Humidity	< 20% RH (Sealed, with Desiccant)
Nozzle Size	0.2, 0.4, 0.6, 0.8 mm
Nozzle Temperature	190–230°C
Bed Type	Textured PEI Plate, Smooth PEI Plate, Graphic Effect Steel Plate (Carbon-Fiber Textured)
Bed Surface Preparation	Glue
Bed Temperature	25–65°C
Cooling Fan	ON
Printing Speed	< 200 mm/s

Subjects	Data
Retraction Length	1–1.5 mm
Retraction Speed	20–30 mm/s
Chamber Temperature	25–45°C
Max Overhang Angle	60°
Max Bridging Length	≤ 30 mm
Support Material	Support for PLA

Please Note

1. Full Spectrum is designed to explore richer color variations, not for high-accuracy color reproduction. Color mixing is not precise color matching and cannot reproduce every target color. Final colors vary depending on filament color and transmission distance, model geometry, slicing settings, layer height, toolpaths, and other factors.
2. The software preview is intended only to indicate color trends and help fine-tune settings. The final print may differ from the preview due to filament properties and printing conditions. Before the final print, print a small color swatch with your current settings and fine-tune them based on the result.
3. Color mixing works best on models with sufficient volume or surface area. The effect may be less visible on small models, while fragmented surfaces or dense details may weaken the color-mixing effect. Such models are therefore not recommended.
4. Full Spectrum color mixing delivers better color results on three-dimensional models and is not recommended for flat models.
5. Mixing two to three filaments typically produces cleaner, more controllable colors, while mixing four may result in darker or grayer tones. Choose based on your desired effect, and use four-filament mixing with caution if you wish to avoid darker or grayer colors.

Printing Tips

1. Drying & Storage

- **Pre-Drying:** The filament has low moisture sensitivity and generally does not require drying. However, pre-drying is recommended for optimal print results. The recommended setting is 55°C for 6 hours.

- **Storage:** When not in use, store the filament in a dry place away from direct sunlight to maintain consistent print quality.

2. Printing

- **Update the Software:** Update Snapmaker Orca to V2.3.6 or later and select the built-in "Snapmaker PLA Full Spectrum" profile to use the color-mixing feature and achieve better print results.

- **Refer to the Full Spectrum Guide and Color Reference:** Refer to [Full Spectrum](#) for detailed instructions, or view the [Full Spectrum Color Reference](#) for color examples with corresponding filament combinations and mixing ratios.

- **Use the Recommended Nozzle and Layer Height:** Use hotends of 0.4 mm or smaller with a layer height of 0.1 mm or lower. Larger hotends and higher layer heights may result in visible horizontal stripes.

4 Properties

Physical Properties

Subjects	Testing Methods	Data
Density	ISO 1183, GB/T 1033	1.17 g/cm ³ at 23°C
Melt Index	210°C, 2.16 kg	7-11 g/10 min
Melting Temperature	DSC, 10°C/min	150°C
Glass Transition Temperature	DSC, 10°C/min	61°C
Decomposition Temperature	TGA, 20°C/min	325°C
Crystallization Temperature	DSC, 10°C/min	114°C
Vicat Softening Temperature	ISO 306, GB/T 1633	63°C
Heat Deflection Temperature	ISO 75, 1.8 MPa	58°C
Heat Deflection Temperature	ISO 75, 0.45 MPa	60°C
Saturated Water Absorption Rate	23°C, 70% RH	0.51%

Mechanical Properties

Subjects	Testing Methods	Data
Young's Modulus (X-Y)	ISO 527, GB/T 1040	3426.9 ± 64.8 MPa
Young's Modulus (Z)	ISO 527, GB/T 1040	3064.9 ± 83.4 MPa
Tensile Strength (X-Y)	ISO 527, GB/T 1040	52.3 ± 0.3 MPa
Tensile Strength (Z)	ISO 527, GB/T 1040	40.5 ± 0.5 MPa
Breaking Elongation Rate (X-Y)	ISO 527, GB/T 1040	6.3 ± 0.6%
Breaking Elongation Rate (Z)	ISO 527, GB/T 1040	1.8 ± 0.1%
Bending Modulus (X-Y)	ISO 178, GB/T 9341	3230.9 ± 55.3 MPa
Bending Modulus (Z)	ISO 178, GB/T 9341	N/A
Bending Strength (X-Y)	ISO 178, GB/T 9341	86.9 ± 1.2 MPa
Bending Strength (Z)	ISO 178, GB/T 9341	N/A
Impact Strength (X-Y)	ISO 179, GB/T 1043	3.3 ± 0.2 kJ/m ²
Impact Strength (Z)	ISO 179, GB/T 1043	N/A

Other Physical and Chemical Properties

Subjects	Data
Odor	Odorless
Composition	Polylactic Acid
Skin Hazards	Non-Hazardous
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in Water
Resistance to Acid	Weak Acid Resistance
Resistance to Alkali	Non-Resistant
Resistance to Organic Solvent	Poor
Resistance to Oil and Grease	Fair
Flammability	Flammable
Combustion Products	Water, Carbon Oxides
Odor of Combustion Products	Odorless

5 Specimen Test

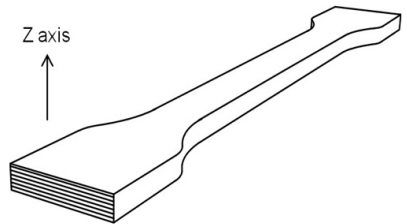
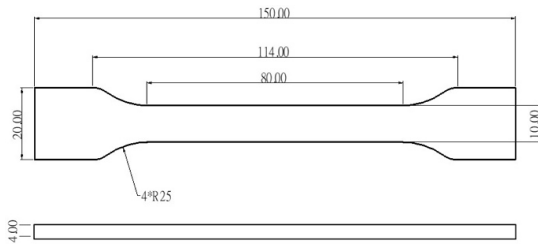
Specimen Printing Conditions

Subjects	Data
Nozzle Temperature	230°C
Bed Temperature	50°C
Printing Speed	50 mm/s
Infill Density	100%



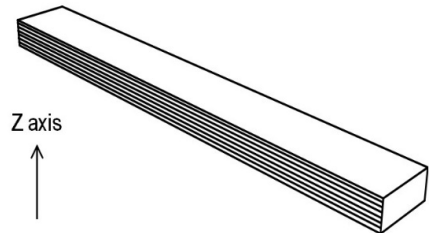
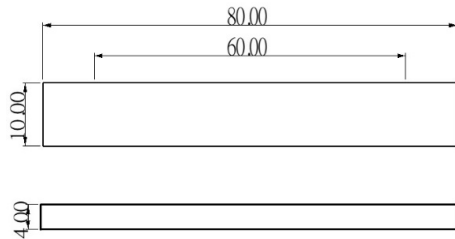
Based on 0.4 mm nozzle. Printing conditions may vary with different nozzle diameters.

Tensile Testing Specimen



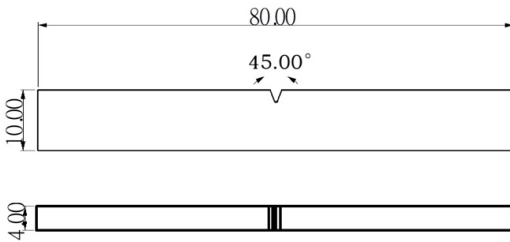
ISO 527, GB/T 1040

Flexural Testing Specimen

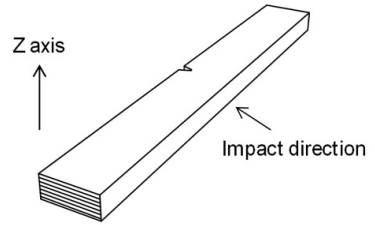


ISO 178, GB/T 9341

Impact Testing Specimen



ISO 179, GB/T 1043



6 Disclaimer

The performance and printing parameters of the aforementioned filaments are obtained by Snapmaker through testing filament samples with sample 3D printers. All data provided is for reference and comparison purposes only, and does not constitute design specifications or any warranty of quality. Actual 3D printing quality and final part performance are subject to various factors including, but not limited to, printer equipment, model design, environmental conditions, and printing parameters. Users shall independently evaluate the compliance and safety of printed models and finished parts, including legal compliance, application safety, and structural reliability. Snapmaker shall not be held liable for any direct or indirect losses arising from the use of the aforementioned filaments, including equipment damage, print failure, personal injury, and property damage.

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