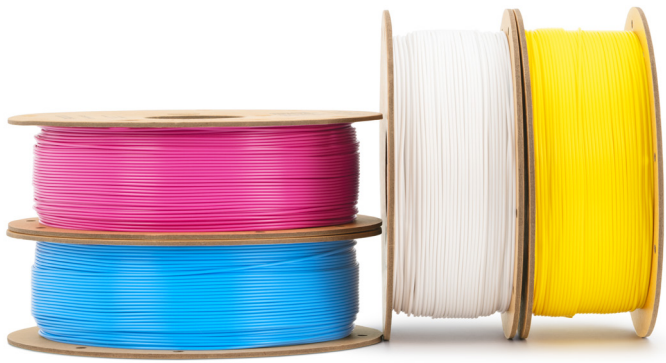
snapmaker | **SnapSpeed PLA CMYK Lithophane Filament Bundle**

# Technical Data Sheet



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# 1 Filament Introduction

SnapSpeed PLA CMYK Lithophane Filament Bundle uses four filaments to turn photos into vibrant backlit artwork. Filament combinations, layer thicknesses, and Transmission Distance (TD) values shape the image's colors, brightness, and depth. This bundle includes four spools of SnapSpeed PLA high-speed filament, supporting print speeds of up to 300 mm/s, which helps reduce printing time and is suitable for personalized creations. It can be used for desktop decoration, lightbox art, artistic creation, and personalized gifts.

# 2 Specifications

| Subjects | Data |
|---|---|
| Diameter | 1.75 mm ± 0.03 mm |
| Net Filament Weight | 1 kg |
| Length | 337 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 | Classic: 190–210 °C<br>High-speed: 210–230°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 |

(continued)

| Subjects | Data |
| --- | --- |
| Printing Speed | < 300 mm/s |
| 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 |

# Printing Tips

## 1. Drying & Storage

- **Pre-Drying:** The SnapSpeed PLA CMYK Lithophane 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, we recommend keeping the filament away from direct sunlight in a sealed container with desiccant.

## 2. Printing

- **Refer to the Lithophane Printing Guide:** Use the *Snapmaker Lithophane Generator* to create lithophane models. For detailed instructions on model generation, slicing, and printing, refer to the *CMYK Color Lithophane Printing Instructions* on the Snapmaker's offical Wiki.

- **Prepare the Backlight:** The Snapmaker Lithophane Generator creates a lithophane with a frame or light box, depending on your selected style. The backlight is sold separately. For instructions on preparing the backlight and assembly, refer to the *Color Lithophane Companion Backlight Board & LED Strip Assembly Guide*.

- **Choose a Suitable Image:** For clearer details and better backlit results, choose an image with strong tonal contrast, a prominent subject, and a simple background. Avoid images with low contrast, cluttered backgrounds, or an indistinct subject.

- **Use the Recommended Hotends:** 0.2 mm hotends are recommended for finer image details. 0.4 mm hotends can also be used, but the finished print may show less detail.

## Please Note

1. The SnapSpeed PLA CMYK Lithophane Filament Bundle cannot guarantee an exact color match to the original image and is therefore not suitable for applications requiring high color accuracy. Final colors may vary depending on the filament colors and their transmission distance (TD) values, lithophane model generator settings, slicing settings, and other printing conditions.

2. The transmission distance (TD) values of the four filaments in this bundle are specifically optimized for lithophanes and flat layered-color models. This bundle is not recommended for 3D models created using Full Spectrum color mixing, as it will produce visible horizontal stripes.

# 4 Properties

## Physical Properties

| Subjects | Testing Methods | Data |
|---|---|---|
| Density | ISO 1183, GB/T 1033 | 1.23g/cm³ at 21.5°C |
| Melt Index | 210°C, 2.16 kg | 15.4 g/10min |
| Melting Temperature | DSC, 10°C/min | 164°C |
| Glass Transition Temperature | DSC, 10°C/min | 59°C |
| Decomposition Temperature | TGA, 20°C/min | 370°C |
| Crystallization Temperature | DSC, 10°C/min | 96°C |
| Vicat Softening Temperature | ISO 306, GB/T 1633 | 61°C |
| Heat Deflection Temperature | ISO 75, 1.8 MPa | 52°C |
| Heat Deflection Temperature | ISO 75, 0.45 MPa | 53°C |
| Saturated Water Absorption Rate | 23°C, 70% RH | 0.40% |

## Mechanical Properties

| Subjects | Testing Methods | Data[1] |
|---|---|---|
| Young's Modulus (X-Y) | ISO 527, GB/T 1040 | 2878.3±74.3 MPa |
| Young's Modulus (Z) | ISO 527, GB/T 1040 | 2689.8±92.0 MPa |
| Tensile Strength (X-Y) | ISO 527, GB/T 1040 | 46.0±0.5 MPa |
| Tensile Strength (Z) | ISO 527, GB/T 1040 | 37.3±0.7 MPa |
| Breaking Elongation Rate (X-Y) | ISO 527, GB/T 1040 | 21.5±5.02% |

1 *Based on 0.4mm nozzle and 0.2mm layer thickness. Classic prirhting speed = 46.7mm/s, printing temperature = 210 °C*

(continued)

| | | |
|---|---|---|
| Breaking Elongation Rate (Z) | ISO 527, GB/T 1040 | 4.2±2.0% |
| Bending Modulus (X-Y) | ISO 178, GB/T 9341 | 2868.2±78.4 MPa |
| Bending Modulus (Z) | ISO 178, GB/T 9341 | N/A |
| Bending Strength (X-Y) | ISO 178, GB/T 9341 | 76.5±0.9 MPa |
| Bending Strength (Z) | ISO 178, GB/T 9341 | N/A |
| Impact Strength (X-Y) | ISO 179, GB/T 1043 | 6.1±0.6 kJ/m² |
| Impact Strength (Z) | ISO 179, GB/T 1043 | N/A |

## Other Physical and Chemical Properties

| Subjects | Data |
|---|---|
| Odor | Odorless |
| Composition | Polylactic Acid (PLA) |
| Skin Hazards | No hazard |
| Chemical Stability | Stable under normal conditions |
| Solubility | Insoluble in water |
| Resistance to Acid | Weak Acids: Good |
| Resistance to Alkali | Non-Resistant |
| Resistance to Organic Solvent | Non-Resistant |
| Resistance to Oil and Grease | Fair |
| Flammability | Flammable |
| Combustion Products | Water, Carbon Oxides |
| Odor of Combustion Products | Odorless |

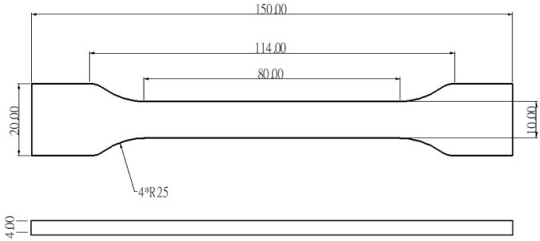
# 5 Specimen Test

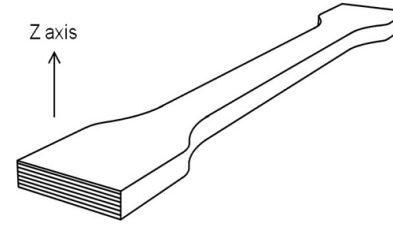
## Specimen Printing Conditions

| Subjects | Data |
|---|---|
| Nozzle Temperature | 210°C |
| Bed Temperature | 55°C |
| Printing Speed | 50 mm/s |
| Infill Density | 100% |

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

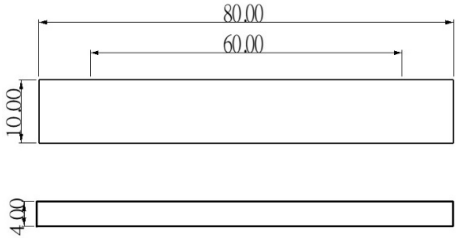
### Tensile Testing Specimen

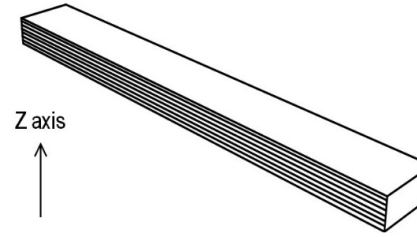



ISO 527, GB/T 1040

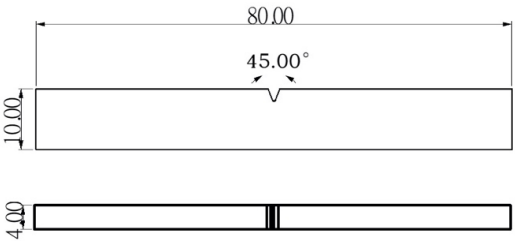
### Flexural Testing Specimen

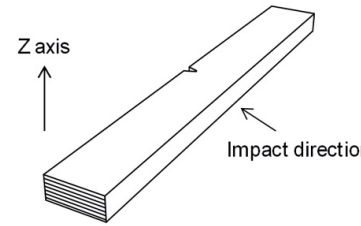



ISO 178, GB/T 9341

## Impact Testing Specimen

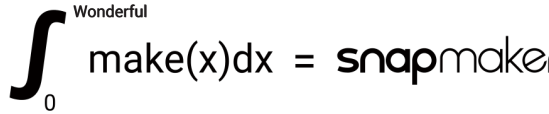



ISO 179, GB/T 1043

# 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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