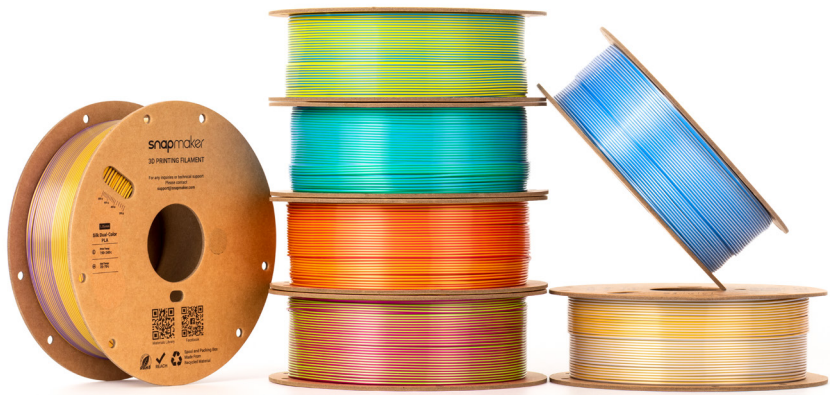
snapmaker

Silk Dual-Color PLA User Guide

Snapmaker Silk Dual-Color PLA is a printing filament compatible with the full range of Snapmaker 3D printers and most mainstream FDM (Fused Deposition Modeling) 3D printers on the market. This guide covers the filament's technical specifications, usage procedure, storage instructions, common issues and troubleshooting, and safety precautions.

1 Product Overview

Snapmaker Silk Dual-Color PLA delivers a vibrant, satin-like gloss with dual-color shifts. It comes in a variety of harmonized color options for versatile, eye-catching creations. Enjoy bubble-free, clog-free, and tangle-free performance with consistent extrusion for reliable, eco-friendly printing thanks to its recyclable design.



2 Specifications

Subjects	Data
Diameter	1.75 ± 0.05 mm
Net Filament Weight	1 kg
Length	335 m/kg
Spool Material	Cardboard Spool
Spool Size	Diameter: 200 mm; Height: 66 mm

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	190–240°C
Bed Type	PEI Steel Plate (Smooth)/Textured PEI Plate
Bed Surface Preparation	Glue Stick/Liquid Glue
Bed Temperature	25–70°C
Cooling Fan	ON
Printing Speed	50–150 mm/s
Retraction Length	0.2–0.6 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

Physical Properties

Subjects	Testing Methods	Data
Density	ISO 1183	1.24 g/cm³ at 23°C
Melt Index	210°C , 2.16 kg	21.17 g/10 min
Melting Temperature	DSC, 10 °C/min	162.3°C
Glass Transition Temperature	DSC, 10 °C/min	58.2°C
Decomposition Temperature	N/A	365.7°C
Crystallization Temperature	DSC, 10 °C/min	107.1°C
Vicat Softening Temperature	ISO 306, GB/T 1633	64.7°C
Heat Deflection Temperature	ISO 75, 1.8 MPa	54.7°C
Heat Deflection Temperature	ISO 75, 0.45 MPa	57.7°C
Saturated Water Absorption Rate	23°C, 70% RH	0.45%

Mechanical Properties

Subjects	Testing Methods	Data
Young's Modulus (X-Y)	ISO 527, GB/T 1040	2403.7 ± 74.5 MPa
Young's Modulus (Z)	ISO 527, GB/T 1040	2292.5 ± 208.7 MPa
Tensile Strength (X-Y)	ISO 527, GB/T 1040	41.1 ± 0.8 MPa
Tensile Strength (Z)	ISO 527, GB/T 1040	23.8 ± 2.8 MPa
Breaking Elongation Rate (X-Y)	ISO 527, GB/T 1040	> 40%
Breaking Elongation Rate (Z)	ISO 527, GB/T 1040	1.2 ± 0.16%
Bending Modulus (X-Y)	ISO 178, GB/T 9341	2241.4 ± 140.4 MPa
Bending Modulus (Z)	ISO 178, GB/T 9341	2063.5 ± 95.9 MPa
Bending Strength (X-Y)	ISO 178, GB/T 9341	69.1 ± 1.6 MPa
Bending Strength (Z)	ISO 178, GB/T 9341	37.3 ± 5.5 MPa
Impact Strength (X-Y)	ISO 179, GB/T 1043	13.8 ± 1.3 kJ/m²
Impact Strength (Z)	ISO 179, GB/T 1043	11.2 ± 0.9 kJ/m²

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 Resistant
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

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.

Disclaimer

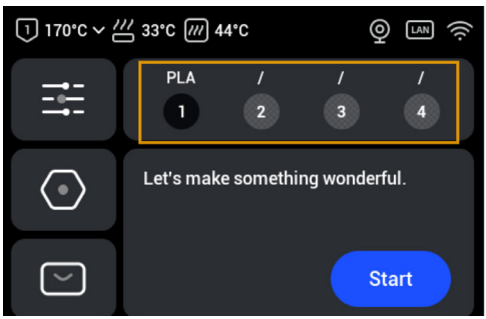
The performance and printing parameters of the aforementioned filaments are obtained by Snapmaker through testing filament samples with sample 3D printers. All data provided is for reference and comparison purposes only, and does not constitute design specifications or any warranty of quality. Actual 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.

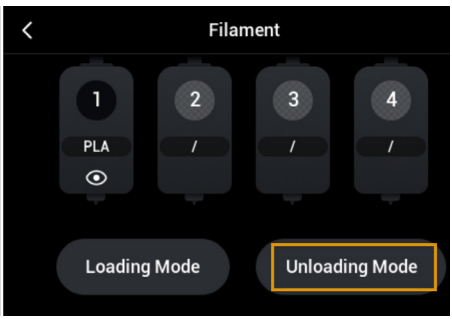
3 Usage Procedure

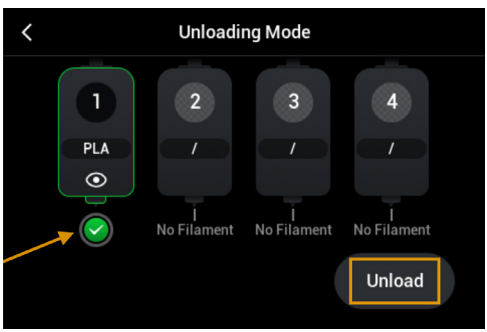
This section demonstrates the usage procedure using the Snapmaker U1 model.

Filament Unloading

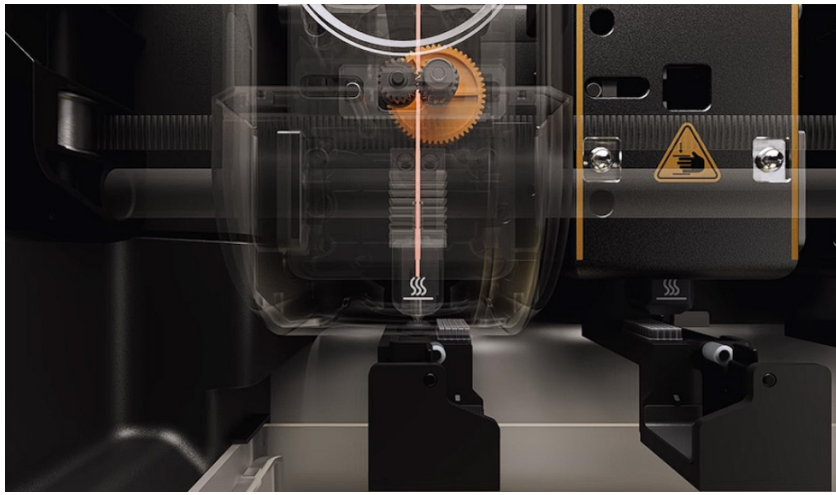
1. On the touchscreen main interface, navigate to the Filament page. Tap **Unloading Mode**. Select all toolheads requiring unloading, then tap **Unload**.



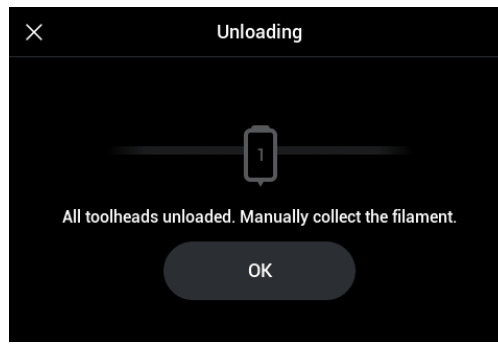




2. The printer will extract the selected toolhead and automatically heat the nozzle. Once the nozzle reaches the target temperature, the extrusion gears will retract the filament upwards, completing the unloading process.



3. The printer will sequentially unload the filament from the other selected toolheads. Once all unloading is complete, tap **OK**.



4. Rotate the spool to retract the filament from the tube until it is fully with drawn. If an automatic filament feeder is used, the corresponding white indicator light on the feeder will turn off once the filament has been completely retracted.

5. Thread the end of the filament through the two locking holes on the spool to prevent loosening or tangling.

6. Remove the spool from the spool holder.

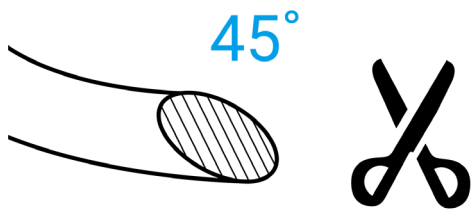
7. Repeat the steps above until all intended filaments have been successfully retrieved.

Filament Loading

For rigid filament or flexible filament rated 95A or above, the default Automatic Loading mode is recommended. For flexible filament rated below 95A, please follow the instructions for Manual Loading.

For dual-color filament, automatic filament feeders significantly increase the travel distance to the extruder, elevating the risk of minor filament self-rotation inside the PTFE tubing. Manual loading and a direct-spool setup are recommended.

1. Trim the end of the filament to an approximately 45° angle using diagonal cutters.

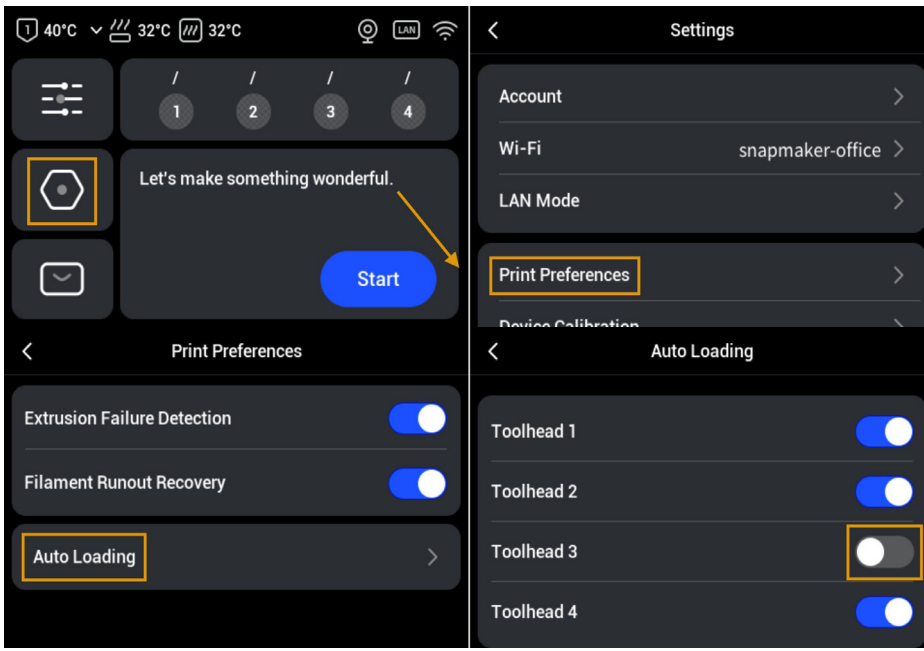


This reduces feeding resistance and improves loading reliability.

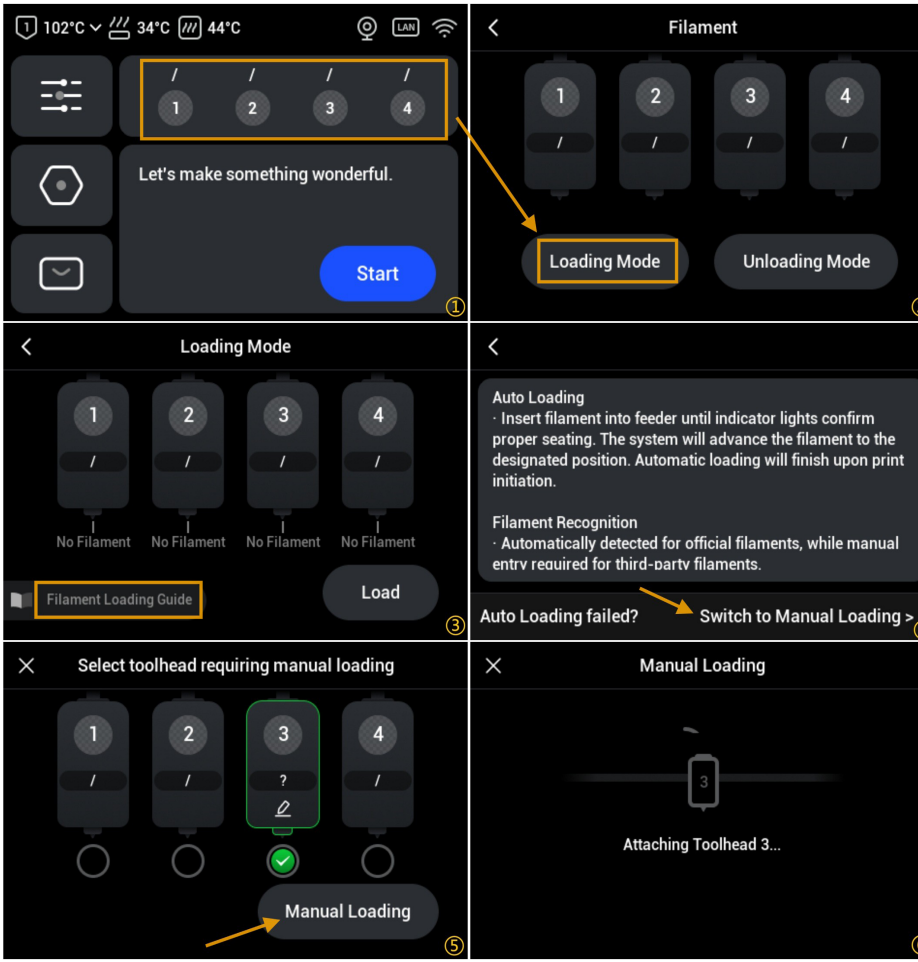
2. Mount the filament spool on the spool holder. Make sure the filament can be pulled tangentially from the bottom of the spool.

3. Press the round clamp at the end of the corresponding feeder. Unplug the tube connected to the target toolhead.

4. Before manual loading, Auto Loading mode should be disabled. On the touchscreen main interface, navigate to Settings > Print Preferences > Auto Loading, and disable Auto Loading for the corresponding toolhead.

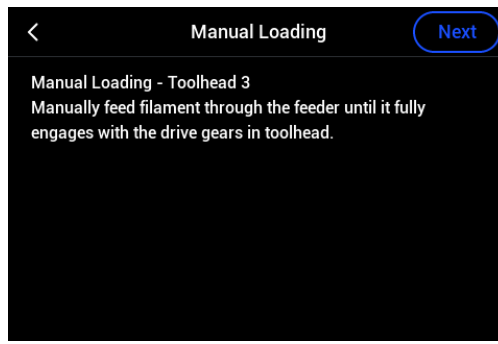


5. Return to the main interface and navigate to the Filament page. Tap Loading Mode > Filament Loading Guide > Switch to Manual Loading. Select the target toolhead and tap **Manual Loading**. The printer will extract the selected toolhead.

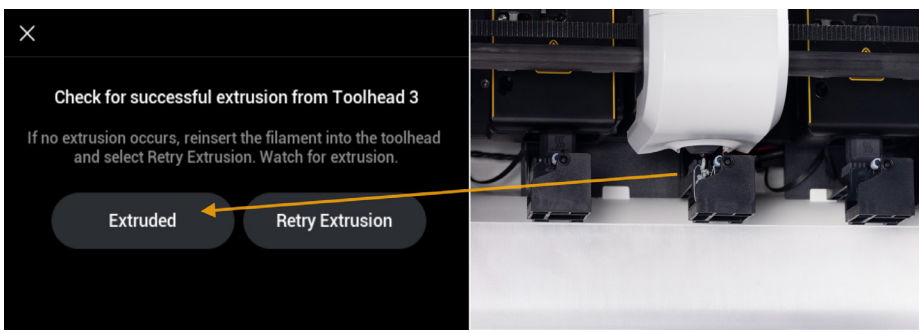


6. Follow the on-screen instructions to manually feed the filament through the tube into the toolhead. It is recommended to unplug the tube from the top of the toolhead, expose part of the filament, and push it downward manually to ensure proper contact with the extrusion gears.

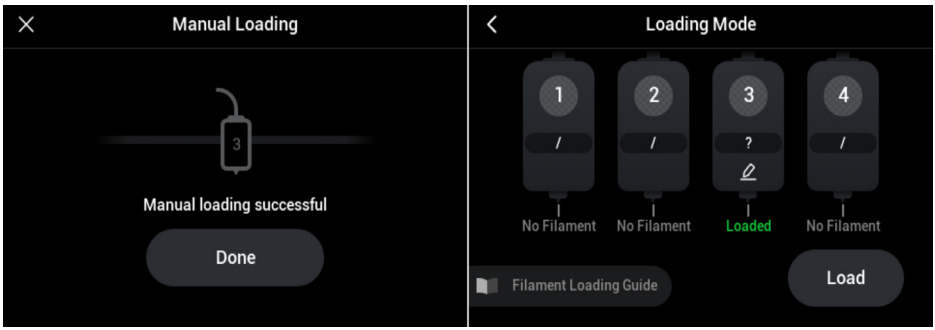
7. Tap **Next**. The printer will heat the nozzle to the target temperature and automatically extrude filament.



8. If the filament is successfully extruded, tap **Extruded** > **Done**.
If not, re-insert the filament into the toolhead, tap **Retry Extrusion**, and continue monitoring the extrusion.



9. After the nozzle is automatically cleaned, tap **Done**.

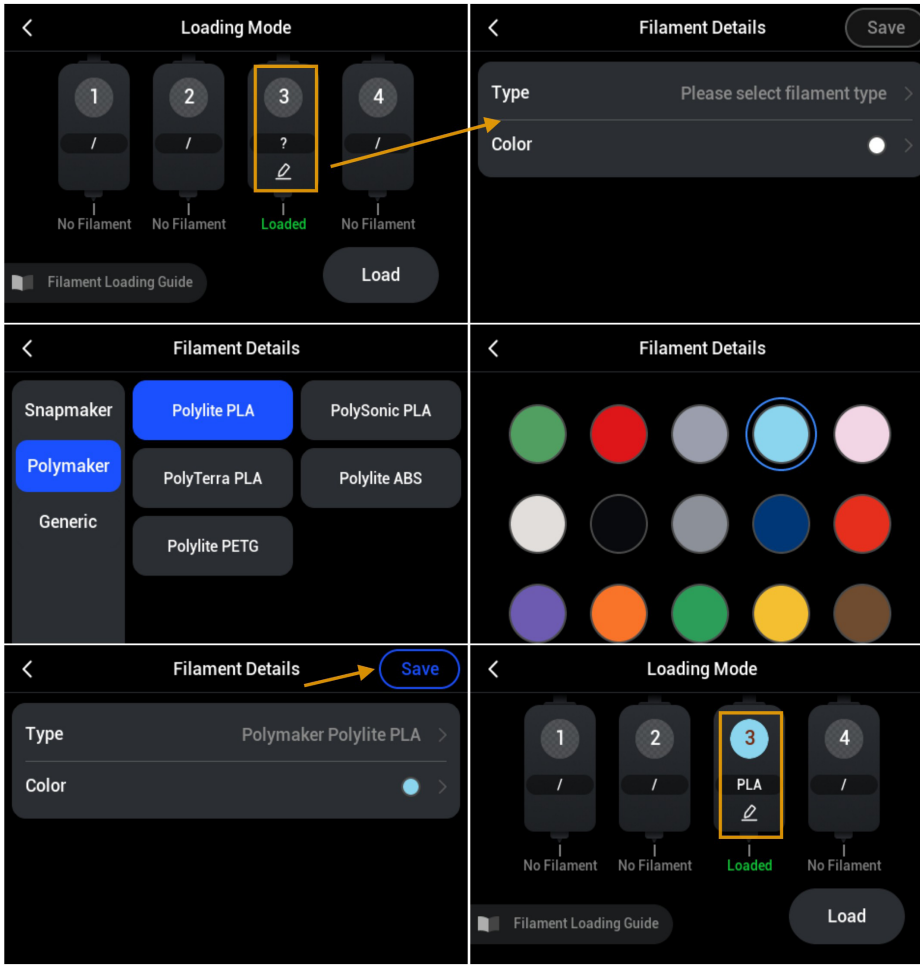


The filament status is now updated to Loaded..

10. After successful loading, re-insert the tube into the top of the toolhead.

11. Edit the filament information.

- When using official Snapmaker filament with RFID, the printer will automatically recognize the filament information; no manual editing is required.
- For third-party filament or Snapmaker filament without RFID, manual editing is required. Tap the icon below the corresponding filament, select the filament type and color, then tap **Save**.



12. Repeat the steps above to load filament for other toolheads.

Test Printing and Final Printing

1. Test Printing: Before printing a final part, it is recommended to print a small test model (e.g., a 20 mm × 20 mm × 20 mm calibration cube) to verify smooth extrusion, proper formation, and nozzle condition. Proceed with final printing only if no abnormalities are observed.

2. Final Printing: Upload the sliced model file to the 3D printer and start the printing process. Ensure the filament spool is securely positioned to prevent it from falling off the spool holder during printing, which could disrupt the process.

Printing Tips

1. Drying & Storage

- **Drying:** Silk Dual-Color PLA is moderately sensitive to moisture. Drying before printing is optional, however, pre-drying is recommended for optimal print results. Recommended settings: 55°C for 6 hours.
- **Storage:** When not in use, store the filament in a dry place to prevent moisture absorption.

2. Printing

- **Getting the Best Shine:** The glossiness of Silk Dual-Color PLA depends on temperature and speed. For a shinier finish, print slower or use a higher temperature.
- **Maximizing the Dual-Color Transition:** The visual impact of the dual-color transition depends on model geometry. Flat or strict geometric prints may not fully showcase the two-tone effect; prints with curves and multi-faceted surfaces are recommended.
- **Achieving Finer Surface Quality:** Keep the cooling fan at maximum speed to achieve a more refined surface finish.

3. Color Swapping & Flipping Troubleshooting

Featuring a split-color structure, Silk Dual-Color PLA may experience slight twisting during extrusion, occasionally resulting in color flipping or uneven color transitions. The following adjustments can effectively minimize these issues:

- **Check Extruder Tension:** Significant color misalignment typically indicates loose extruder tension, which allows the filament to rotate 180° within the gears. Check and appropriately tighten the tension screw on the side of the extruder.
- **Normalize Printing Speeds:** Frequent speed changes cause inconsistent pressure within the extruder, leading to filament twisting. Keep the speed settings for infill, inner walls, and outer walls at similar values to avoid sudden speed fluctuations.
- **Optimize the Feed Path:** Automatic filament feeders significantly increase the travel distance to the extruder, elevating the risk of minor filament self-rotation inside the PTFE tubing. Where possible, using an external, direct-spool setup is recommended.
- **Avoid Manual Twisting:** This filament is factory-wound in a strictly controlled orientation to maintain a consistent color alignment. Do not twist or tangle it, as this may affect color alignment. Keep it neatly aligned during use and storage.

4 Storage Instructions

The storage environment significantly affects the performance of 3D printing filament. Follow these guidelines to extend the filament's usable life:

1. Storage Environment: PLA softens under prolonged sunlight exposure and is not resistant to water or corrosion. Store PLA filament and printed parts in a dry, cool, well-ventilated area, away from direct sunlight, high temperature, and high humidity (recommended ambient temperature: 5–30°C, humidity ≤20%). Keep away from open flames, heat sources (e.g., heaters, ovens), and corrosive substances.

2. Unopened Filament: Keep the filament sealed in its original packaging to prevent moisture absorption and contamination. Performance may degrade and printing issues may arise if stored for excessively long periods. Use the filament promptly after purchase.

3. Opened Filament: Reseal any unused filament immediately, placing it in a sealed bag or dedicated storage box. Adding desiccants (e.g., silica gel) is recommended to improve moisture protection. It is advisable to use the opened filament within 3 months to avoid moisture absorption and oxidation. In humid regions, use the filament as soon as possible or ensure it is properly sealed.

4. Spool Care: Avoid dropping, crushing, or bumping the spool to prevent deformation which could cause filament tangling. If tangles occur, do not pull aggressively. Gently untangle the filament before use to prevent breakage.

5 Common Issues and Troubleshooting

Common Issue	Potential Cause	Recommended Solution
No extrusion/filament breakage	1. Filament absorbed moisture/ clumped. 2. Nozzle temperature too low, filament not fully melted. 3. Extruder gear pressure insufficient or slipping. 4. Nozzle clogged.	1. Dry the filament. 2. Increase nozzle temperature by 5–10°C. 3. Adjust extruder gear tension; clean debris from the gear. 4. Clear nozzle clogs using appropriate tools.
Bubbles or stringing on surface	1. Filament absorbed moisture. 2. Nozzle temperature too high. 3. Cooling fan off or inadequate airflow. 4. Printing speed too fast.	1. Dry the filament. 2. Decrease nozzle temperature by 5–10°C. 3. Turn on cooling fan and adjust fan speed. 4. Reduce printing speed appropriately.
Edge warping/part detaching from bed	1. Bed temperature too low. 2. Bed surface not clean, poor adhesion. 3. Large temperature fluctuations or drafts in printing environment. 4. Filament shrinkage rate too high.	1. Increase bed temperature. 2. Clean bed with isopropyl alcohol; apply dedicated bed adhesive if needed. 3. Maintain stable ambient temperature, avoid drafts. 4. Adjust print parameters, reduce cooling fan speed.
Filament tangle/feeding jam	1. Spool deformed. 2. Spool placed at an incorrect angle. 3. Filament kinked or damaged.	1. Replace with an undamaged spool. 2. Adjust spool placement angle to ensure smooth feeding. 3. Cut away damaged/kinked sections and reload filament.
Weak layer adhesion/ delamination	1. Nozzle temperature too low. 2. Printing speed too high. 3. Cooling fan speed too high.	1. Increase nozzle temperature. 2. Reduce printing speed. 3. Lower cooling fan speed appropriately.

6 Safety Precautions

1. High-Temperature Protection: During printing, the nozzle and molten filament reach extremely high temperatures. Do not touch the nozzle, filament guide tube, or freshly printed hot models to prevent burns. Children should be supervised by an adult at all times.

2. Environmental Safety: Some materials may emit odors, ultrafine particles, or volatile substances when heated. It is recommended to use the device in a well-ventilated area.

3. Equipment Operation: Strictly follow the printer's operating guidelines. Do not disassemble or modify the printer arbitrarily. When installing or changing filament, ensure the printer is powered off or in standby mode to prevent accidental injury.

4. Disposal: Discard used filament and print waste in recyclable or general waste bins according to local regulations. PLA is a biodegradable material and can be composted where facilities exist, helping reduce environmental pollution.

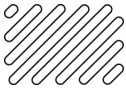
7 Additional Notes

1. This document is the user guide for Snapmaker Silk Dual-Color PLA filament. For issues not covered in this guide, contact Snapmaker official customer support for professional technical assistance.

2. Regular printer maintenance (cleaning nozzle, extruder gear, and build plate) together with high-quality filament is recommended to improve printing outcomes and extend the lifespan of both the equipment and the filament.

8 After-sales Service

For questions regarding printing techniques or filament usage, please contact Snapmaker official customer support for one-on-one operational guidance.



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"The world is but a canvas to our imagination."
— Henry David Thoreau

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