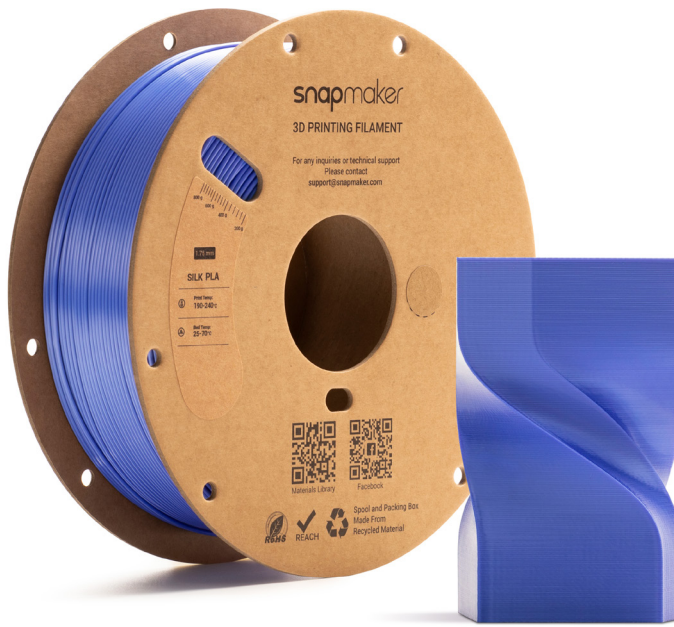
snapmaker

Silk PLA User Guide



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Snapmaker Silk 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 procedures, storage guidelines, common issues and solutions, and safety precautions.

1 Product Overview

Snapmaker Silk PLA is a 3D printing filament that combines a striking silk-like gloss with structural strength. Compared to standard or matte PLA, it delivers a stunning satin-like finish, specifically designed for models requiring an elegant, premium appearance. With excellent interlayer adhesion, it overcomes the conventional "brittle" limitation of silk filaments, maintaining toughness under moderate flexing. The upgraded formulation enhances extrusion stability and flow consistency, producing crisp lines and refined surface quality on intricate textures and complex curves, thereby reducing post-processing. A wide range of vibrant colors adds visual impact and unique charm to decorative pieces, character models, and more.

2 Specifications

Subjects	Data
Diameter	1.75 ± 0.03 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	Smooth PEI Plate, Textured PEI Plate
Bed Surface Preparation	Glue Stick/Liquid Glue
Bed Temperature	25–70°C
Cooling Fan	ON
Printing Speed	< 250 mm/s
Retraction Length	0.4 mm
Retraction Speed	30 mm/s

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	TGA, 20 °C/min	365.7°C
Crystallization Temperature	DSC, 10 °C/min	107.1°C
Vicar 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 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

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

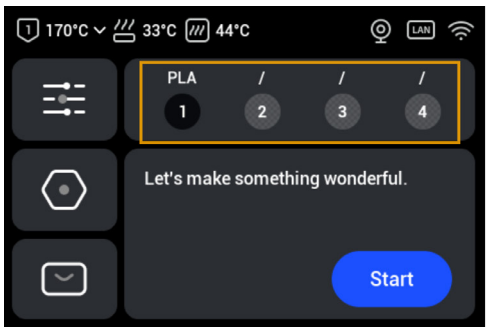
The performance and printing parameters of the aforementioned filaments are obtained by Snapmaker through testing filament samples with sample 3D printers. All data provided is for reference and comparison purposes only, and does not constitute design specifications or any warranty of quality. Actual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

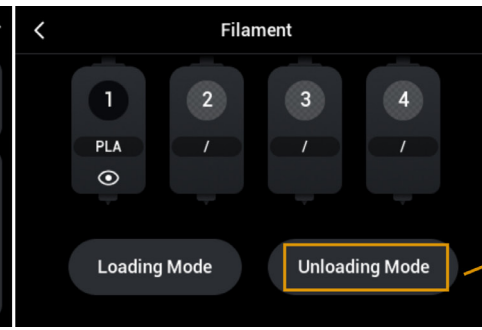
3 Usage Procedure

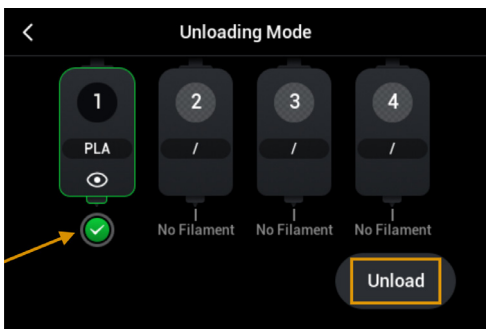
This section demonstrates the usage procedure using the Snapmaker U1 model.

Filament Unloading

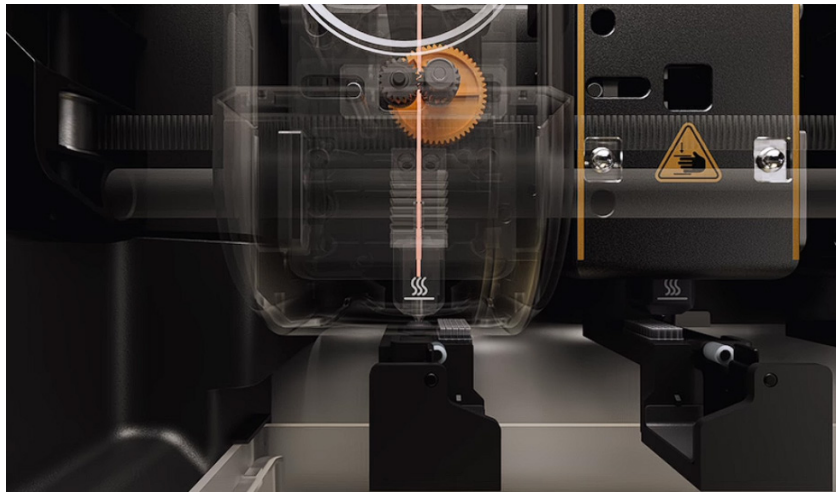
1. On the touchscreen main interface, navigate to the Filament page. Tap **Unloading Mode**. Select all toolheads requiring unloading, then tap **Unload**.



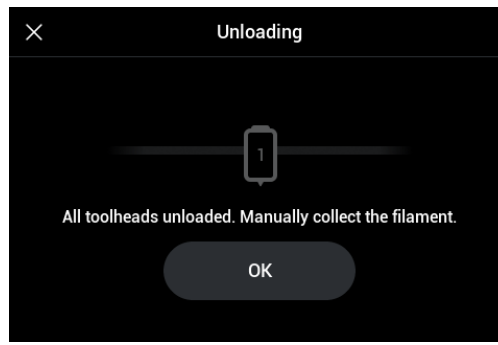




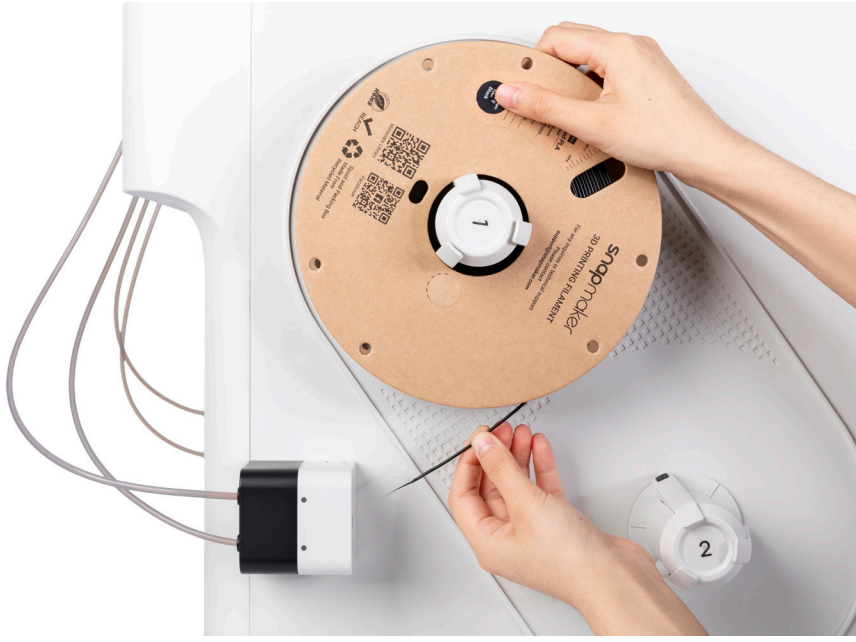
2. The printer will extract the selected toolhead and automatically heat the nozzle. Once the nozzle reaches the target temperature, the extrusion gears will retract the filament upwards, completing the unloading process.



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 the white indicator light on the corresponding feeder turns off.



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

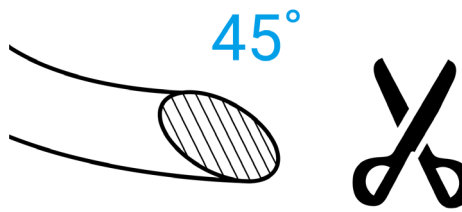
6. Remove the spool from the spool holder.

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

Automatic Loading

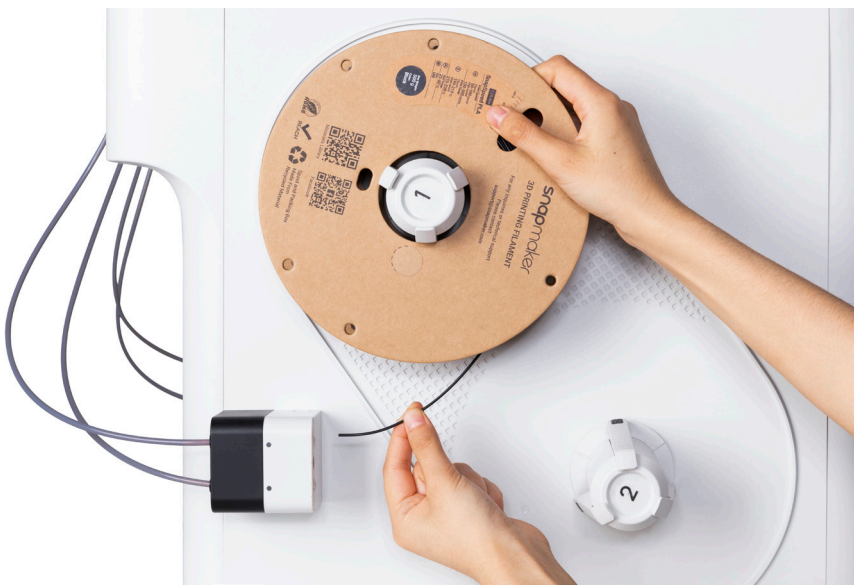
For rigid filament or flexible filament rated 95A or above, the default mode Automatic Loading is recommended. For flexible filament rated below 95A, please follow the instructions for Manual Loading.

1. Trim the end of the filament at an approximately 45° angle with diagonal cutters.



This reduces feeding resistance, thus enhancing the success rate.

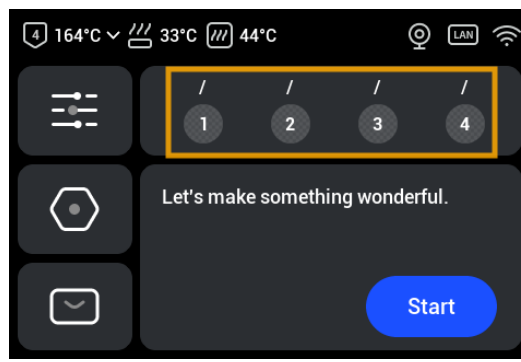
2. Mount the filament spool on the spool holder. Make sure the filament can be pulled tangentially from the bottom of the spool.



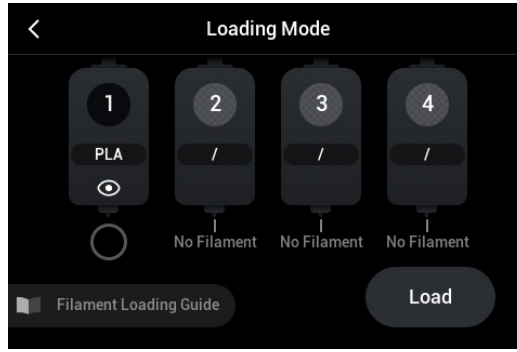
3. Insert the filament into the feeder until the white indicator light turns on.

If the feeder's white light is blinking, feeding is still in progress.
If the white light remains steady, pre-loading is complete.

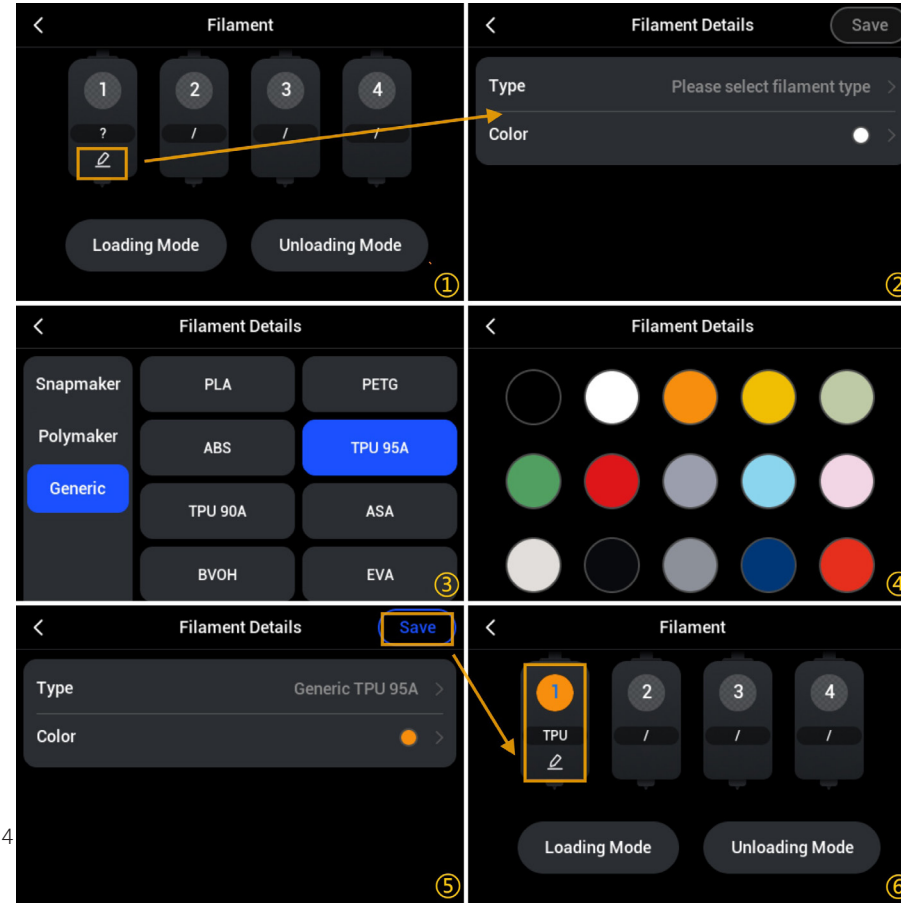
4. On the touchscreen main interface, navigate to the Filament page to edit filament information.



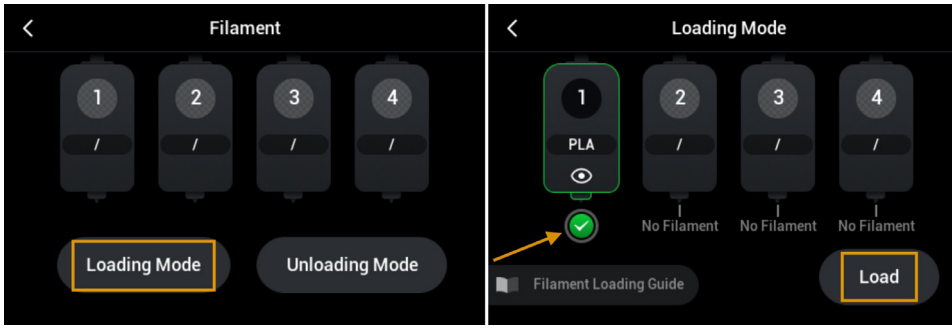
If using RFID-equipped Snapmaker official filament, the device will automatically recognize the filament information; no manual editing is needed.



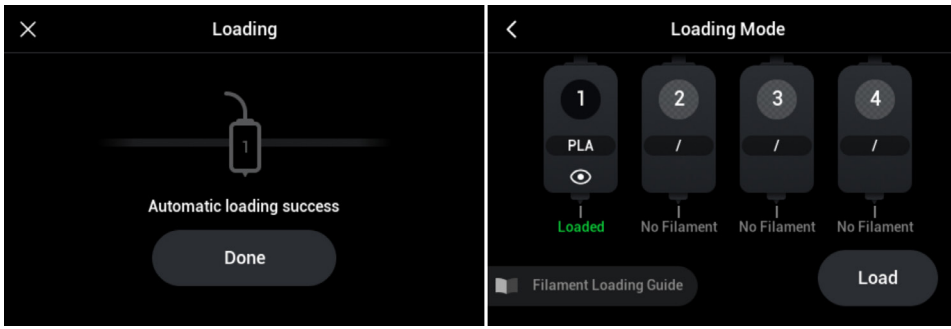
For third-party filament or Snapmaker filament without RFID, manual editing is required. Tap the icon below the corresponding filament > Select filament type and color > **Save**.



5. On the Filament page, tap **Loading Mode** > Select the corresponding filament > **Load**.



6. The printer will automatically perform the following steps: extract the toolhead, feed filament into the nozzle, heat the nozzle, extrude filament, and cleanse old material from the toolhead. Upon completion, tap **Done** on the screen.



The filament status is now updated to **Loaded**.

Test Print and Final Print

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

2. Final Print: Import the model file into 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

- **Pre-Dry**: For best results, it is recommended to dry the filament at 55°C for 6 hours before use.
- **Re-Dry**: After prolonged air exposure, recommend re-drying the filament before starting a print.
- **Storage**: It's best to keep the filament in a sealed container with desiccant to prevent moisture buildup.

2. Getting the Best Shine

The glossiness of Silk PLA depends on temperature and speed. For a shinier finish, print slower or use a higher temperature.

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 desiccant (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 clog 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 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.

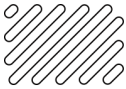
7 Additional Notes

1. This document is the user guide for Snapmaker Silk 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.



MAKE
SOMETHING
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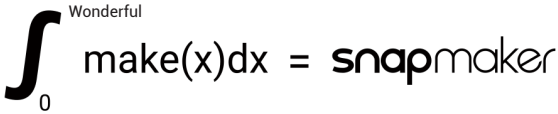

"The world is but a canvas to our imagination."
— Henry David Thoreau

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