

snapmaker

ABS User Guide



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Snapmaker ABS 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 ABS offers high impact resistance and reliable load-bearing performance for engineering applications. Outperforming PLA and PETG, it absorbs more energy, minimizing the risk of cracking or snapping. It resists embrittlement, deformation, and performance degradation under continuous loads and repeated use. It delivers reliable, heat-resistant performance required for challenging applications.



2 Specifications

Subjects	Data
Diameter	1.75 ± 0.03 mm
Net Filament Weight	1 kg
Length	328 m
Spool Material	Cardboard Spool
Spool Size	Diameter: 200 mm; Height: 66 mm

Recommended Printing Settings

Subjects	Data
Drying Settings Before Printing	70°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	240–280°C
Bed Type	Textured PEI Plate, Smooth PEI Plate
Bed Surface Preparation	Glue
Bed Temperature	90–100°C
Cooling Fan	OFF
Printing Speed	50–200 mm/s
Retraction Length	0.2–0.6 mm
Retraction Speed	20–30 mm/s
Chamber Temperature	60–70°C
Max Overhang Angle	65°
Max Bridging Length	≤ 30 mm

Physical Properties

Subjects	Testing Methods	Data
Density	ISO 1183, GB/T 1033	1.04 g/cm ³ at 23°C
Melt Index	220°C, 2.16 kg	9-14 g/10 min
Melting Temperature	DSC, 10°C/min	N/A
Glass Transition Temperature	DSC, 10°C/min	101°C
Decomposition Temperature	TGA, 20°C/min	> 380°C
Crystallization Temperature	DSC, 10°C/min	N/A
Vicat Softening Temperature	ISO 306, GB/T 1633	104°C
Heat Deflection Temperature	ISO 75, 1.8 MPa	98°C
Heat Deflection Temperature	ISO 75, 0.45 MPa	100°C
Saturated Water Absorption Rate	23°C, 75% RH	0.35%

Mechanical Properties

Subjects	Testing Methods	Data
Young's Modulus (X-Y)	ISO 527, GB/T 1040	2246.6 ± 58.2 MPa
Young's Modulus (Z)	ISO 527, GB/T 1040	2080.9 ± 92.7 MPa
Tensile Strength (X-Y)	ISO 527, GB/T 1040	33.4 ± 0.6 MPa
Tensile Strength (Z)	ISO 527, GB/T 1040	29.7 ± 0.3 MPa
Breaking Elongation Rate (X-Y)	ISO 527, GB/T 1040	17.9 ± 1.3%
Breaking Elongation Rate (Z)	ISO 527, GB/T 1040	3.1 ± 0.3%
Bending Modulus (X-Y)	ISO 178, GB/T 9341	2127.2 ± 29.9 MPa
Bending Modulus (Z)	ISO 178, GB/T 9341	N/A
Bending Strength (X-Y)	ISO 178, GB/T 9341	56.2 ± 0.3 MPa
Bending Strength (Z)	ISO 178, GB/T 9341	N/A
Impact Strength (X-Y)	ISO 179, GB/T 1043	18.0 ± 0.9 kJ/m ² (Notched)
Impact Strength (Z)	ISO 179, GB/T 1043	N/A

Other Physical and Chemical Properties

Subjects	Data
Odor	Noticeable odor (distinct plastic smell during molten printing)
Composition	Acrylonitrile Butadiene Styrene (ABS) copolymer
Skin Hazards	Stable under normal conditions (contact with molten material causes skin burns)
Chemical Stability	Stable under normal conditions (not UV-resistant; prone to aging and yellowing under long-term light exposure)
Solubility	Insoluble in Water (readily soluble in acetone, ethyl acetate, and chlorinated hydrocarbons)
Resistance to Acid	Good
Resistance to Alkali	Good
Resistance to Organic Solvent	Non-Resistant
Resistance to Oil and Grease	Good
Flammability	Flammable (sustains combustion with a yellow flame)
Combustion Products	Water, Carbon Oxides, Hydrogen Cyanide, Styrene Monomer, Butadiene Monomer, Heavy Black Smoke and Soot
Odor of Combustion Products	Strong pungent odor of burnt rubber and plastic

Specimen Printing Conditions

Subjects	Data
Nozzle Temperature	260°C
Bed Temperature	90°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.

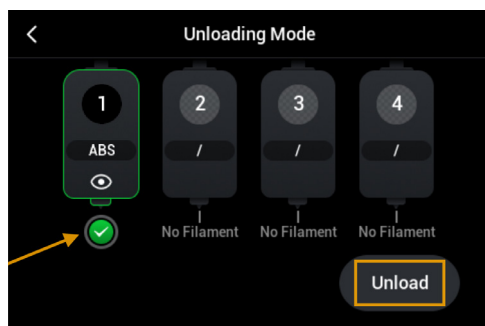
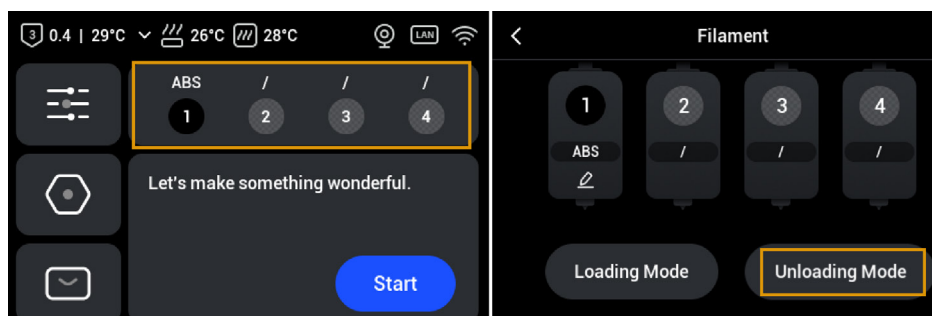
3 Usage Procedure



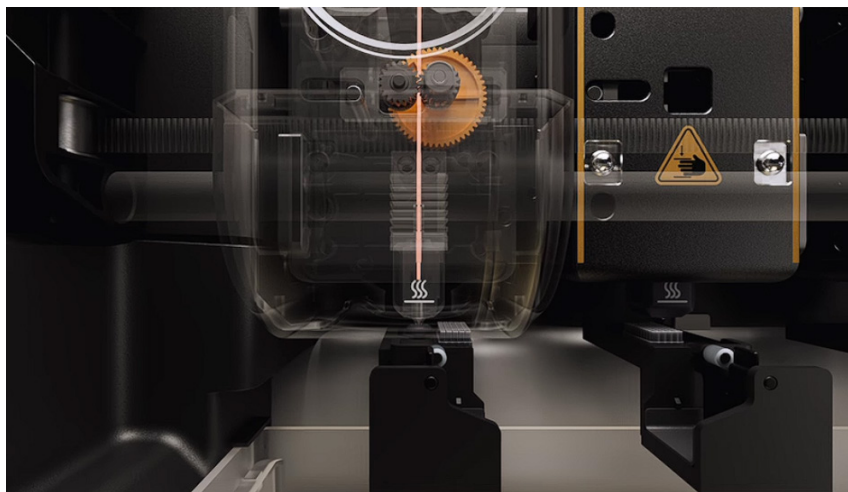
This section demonstrates the usage procedure using the Snapmaker U1 model.

Filament Unloading

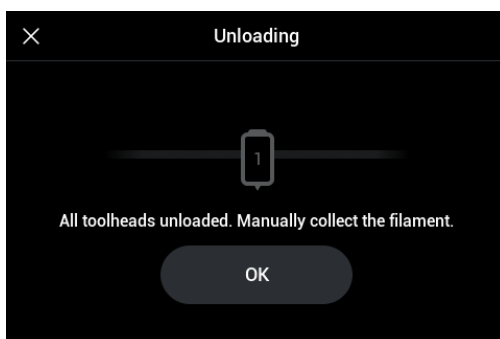
1. On the touchscreen main interface, navigate to the Filament page. Tap **Unloading Mode**. Select all toolheads requiring unloading, then tap **Unload**.



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 withdrawn. 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.



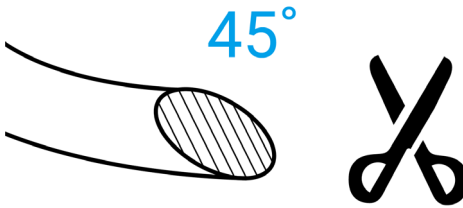
7. Repeat the steps above until all intended filaments have been successfully retrieved.

Automatic Loading



For rigid filament, the default mode Automatic Loading is recommended. For flexible filament, 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.

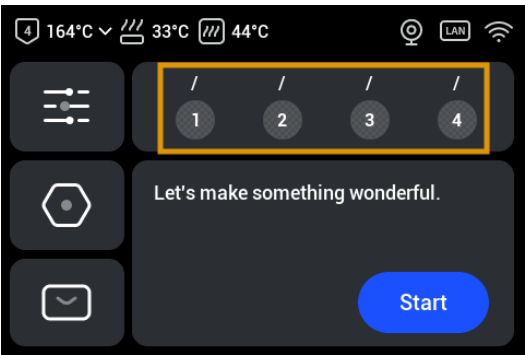


3. Insert the filament into the feeder until the white indicator light turns on.

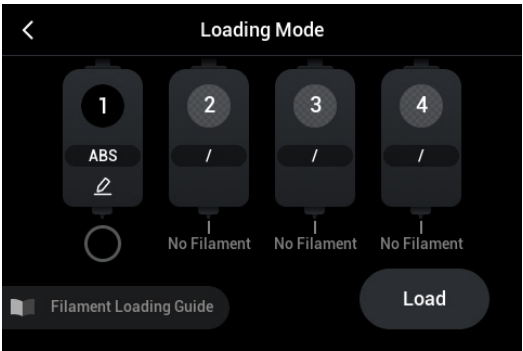


If the feeder's white light is blinking, feeding is still in progress.
If the white light remains steady, pre-loading is complete.

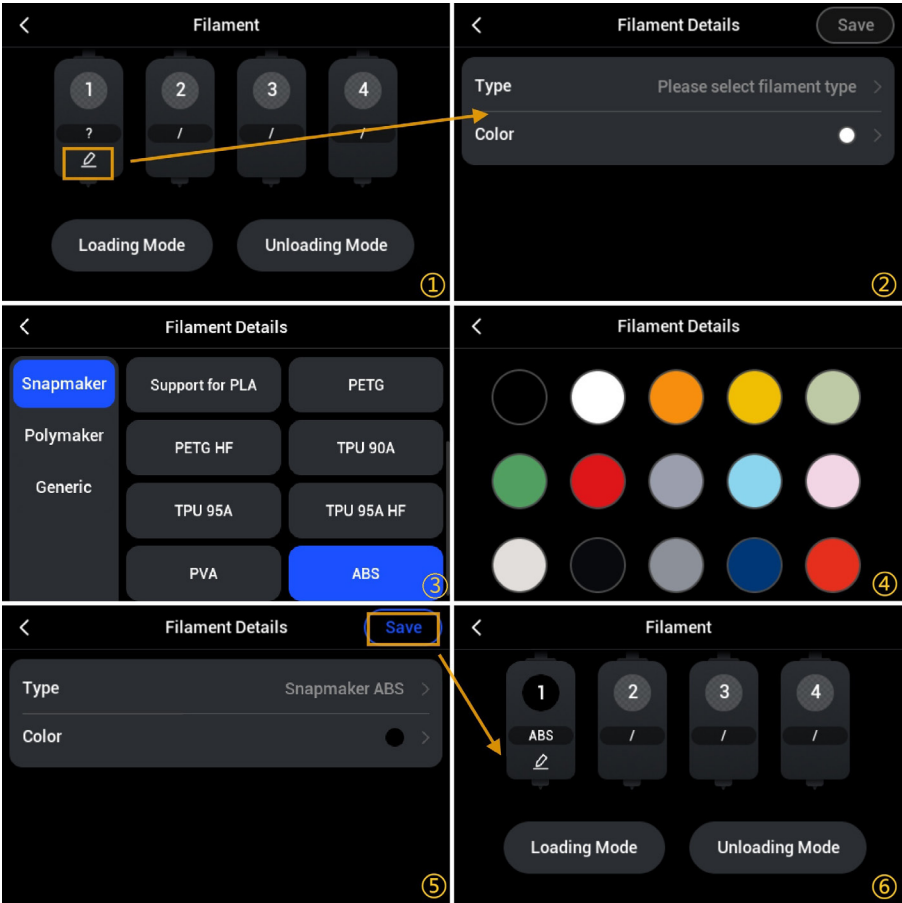
4. On the touchscreen main interface, navigate to the Filament page to edit filament information.



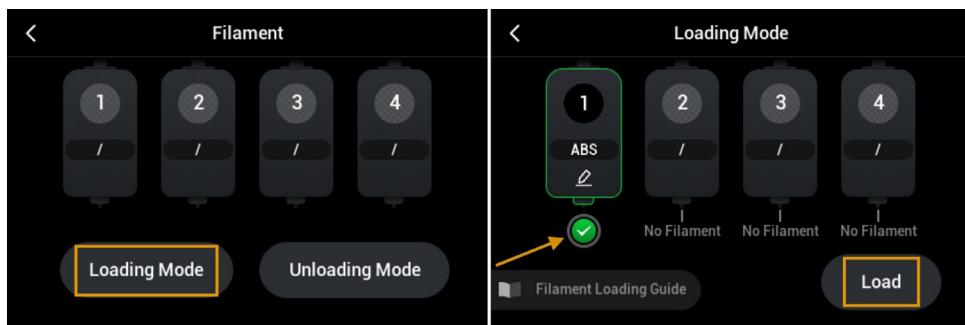
Using RFID-equipped Snapmaker official filament, the device will automatically recognize the filament information; no manual editing is needed.



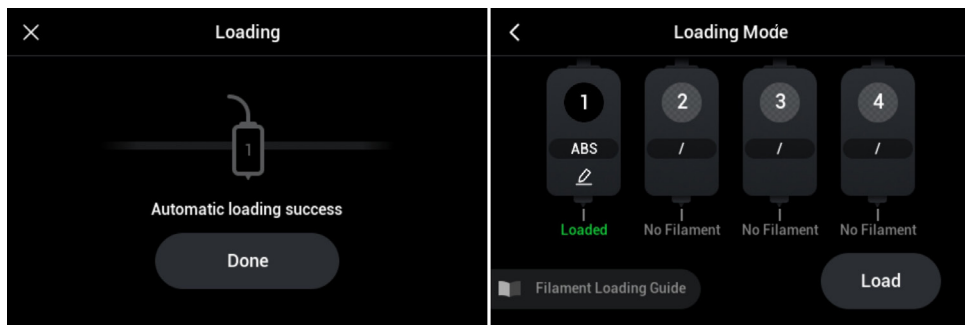
For third-party filament or Snapmaker filament without RFID, manual editing is required. Tap the icon below the corresponding filament, select filament type and color, and tap **Save**.



5. On the Filament page, tap **Loading Mode**, select the corresponding filament, tap **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 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

- **Pre-Drying:** ABS filament has low moisture sensitivity and generally does not require drying. However, pre-drying is recommended for optimal print results. The recommended setting is 70°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

- **Enclosed Printing Required:** This filament is sensitive to temperature fluctuations and may warp during printing. It can also produce a noticeable odor when melted, so enclosed printing is required throughout the process. For U1 printers, we recommend using the official top cover to help stabilize chamber temperature and support air filtration, addressing both issues in one setup. For better air quality, operate the printer in a well-ventilated area during printing.

- **Resolving Poor Layer Adhesion:** If layer bonding is insufficient, try increasing the nozzle temperature, reducing print speed, and turning off the cooling fan.

- **Resolving First-Layer Warping:** If first-layer warping occurs, apply glue to the build plate to improve print success. Avoid printing large models. Adding a brim can also help reduce the risk of warping.

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: ABS is not UV-resistant and is prone to aging under prolonged light exposure. Store ABS filament and printed parts in a dry, cool, well-ventilated area, away from direct sunlight, high temperature, and high humidity (recommended ambient temperature: 10–30°C, humidity $\leq$ 20%). As it is flammable, keep away from open flames and heat sources (e.g., heaters, ovens). Keep away from substances such as acetone, ethyl acetate, chlorinated hydrocarbons, and other organic solvents.

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. Printing speed too fast.	1. Dry the filament. 2. Decrease nozzle temperature by 5–10°C. 3. 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. Check if the bed temperature is set correctly. 2. Clean bed with ethyl alcohol; apply dedicated bed adhesive if needed. 3. Maintain stable ambient temperature, avoid drafts, enclose the printer with top cover. 4. Adjust print parameters, turn off cooling fan.
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 is used.	1. Increase nozzle temperature. 2. Reduce printing speed. 3. Turn off cooling fan.

6 Safety Precautions

1. High-Temperature Protection: During printing, the nozzle, heated bed, and molten filament reach extremely high temperatures. Do not touch the nozzle, heated bed, freshly printed hot models or molten filament to prevent burns. ABS requires high printing and bed temperatures, and the heated components take longer to cool down. After printing, always wait for the nozzle and heated bed to cool completely before handling. Children must be supervised by an adult at all times.

2. Environmental Safety: During printing, ABS filament emits noticeable odors, ultrafine particles, and volatile substances when heated. It is mandatory to use an enclosure for the printer and operate the device in a well-ventilated area or with an air purification system. Users with a history of respiratory illness or sensitive constitutions should take additional personal protection measures.

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. Filament Usage: Do not use damaged, deteriorated, or expired filament, as this may clog the nozzle, damage the printer, and compromise print quality. When cutting filament, use sharp cutters to ensure a clean, even cut.

5. Disposal: ABS is a thermoplastic material that can be recycled and reprocessed through professional channels; casual disposal is not recommended. As its combustion products contain pungent odors and heavy black smoke, do not incinerate it privately.

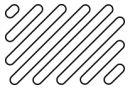
7 Additional Notes

1. This document is the user guide for Snapmaker ABS 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