eSUN eABS+HS-P175B1KG-US

eSUN High Speed ABS+ 3D Printer Filament User Manual

Model: eABS+HS-P175B1KG-US

Introduction

This manual provides essential information for the proper use and handling of eSUN High Speed ABS+ 3D Printer Filament. eSUN High Speed ABS+ is an advanced version of standard ABS, engineered for superior performance in high-speed 3D printing applications. It offers enhanced strength, toughness, and impact resistance, with significantly improved resistance to cracking and warping compared to traditional ABS filaments.
This filament is designed to maintain print quality and structural integrity even at high printing speeds, making it ideal for modern high-speed 3D printers. Its low shrinkage rate and reduced odor contribute to a more user-friendly printing experience.

Product Overview

Image: A 1KG spool of eSUN High Speed ABS+ 1.75mm filament in black, showcasing the product packaging and filament winding.

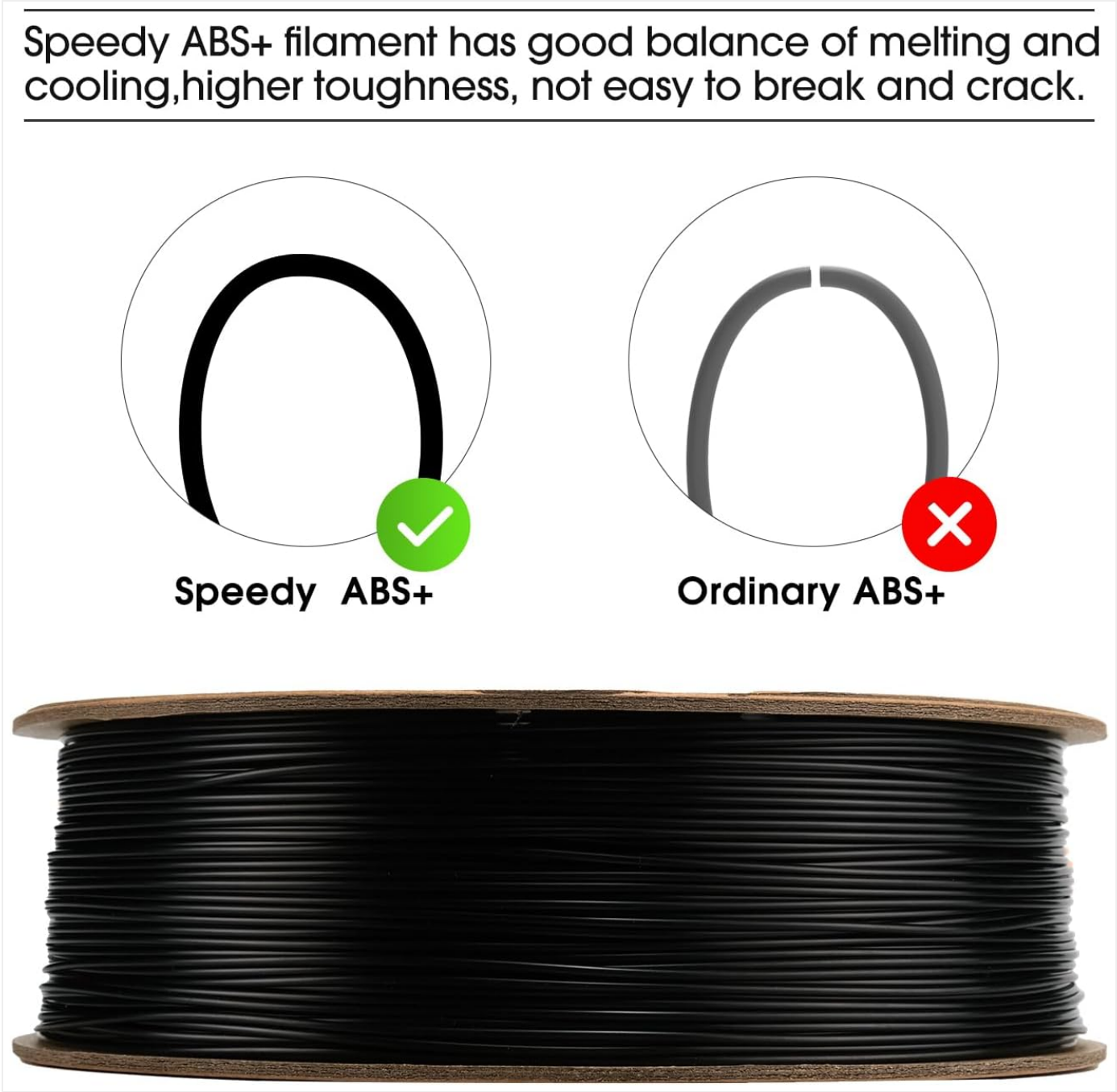

Image: A visual comparison illustrating the improved toughness and resistance to cracking of Speedy ABS+ filament compared to ordinary ABS+.

eSUN High Speed ABS+ filament is characterized by its excellent balance of melting and cooling properties, leading to higher toughness and reduced susceptibility to breaking and cracking during printing. This makes it a reliable choice for demanding applications.

Specifications

Parameter	Value
Material Type	Acrylonitrile Butadiene Styrene (ABS+)
Filament Diameter	1.75 mm
Net Weight	1 KG (2.2 LBS)
Printing Temperature	230-270°C

Parameter	Value
Bed Temperature	80-110°C
Printing Speed	50-300 mm/s
Density	1.04 g/cm³
Elongation at Break	3.9%
Tensile Strength	28 MPa
IZOD Impact Strength	20 kJ/m²
Flexural Strength	46 MPa
Flexural Modulus	1477 MPa
Melt Flow Index	6 (220°C/10kg)
Heat Distortion Temperature	89°C (0.45MPa)
Manufacturer Part Number	eABS+HS-P175B1KG-US

Table: Detailed technical specifications for eSUN High Speed ABS+ filament, including material properties and recommended printing parameters.

Setup and Preparation

1. Unpacking and Storage

Upon receiving your eSUN High Speed ABS+ filament, inspect the packaging for any damage. The filament comes on an environmentally friendly cardboard spool, designed to be lightweight and recyclable. Store the filament in a cool, dry place, ideally in its original sealed packaging with desiccant to prevent moisture absorption, which can negatively impact print quality.

Image: Illustrates the environmentally friendly cardboard spool packaging of eSUN filament, highlighting its lightweight and recyclable nature.

2. Drying Filament (Recommended)

Although eSUN filament is packaged to minimize moisture, it is highly recommended to dry ABS+ filament before use, especially if it has been exposed to humid environments or stored for an extended period. Typical drying temperatures for ABS+ are around 60-80°C for 4-6 hours in a filament dryer or a convection oven.

3. Printer Compatibility

eSUN High Speed ABS+ is compatible with a wide range of high-speed FDM 3D printers. This includes, but is not limited to, models such as Bambu Lab X1/X1C/P1P, Voron 2.4, Prusa, Creality K1/K1 Max/Ender 3/Ender 7, and Raise 3D Pro 3. Ensure your printer is capable of reaching and maintaining the recommended printing temperatures for ABS+.

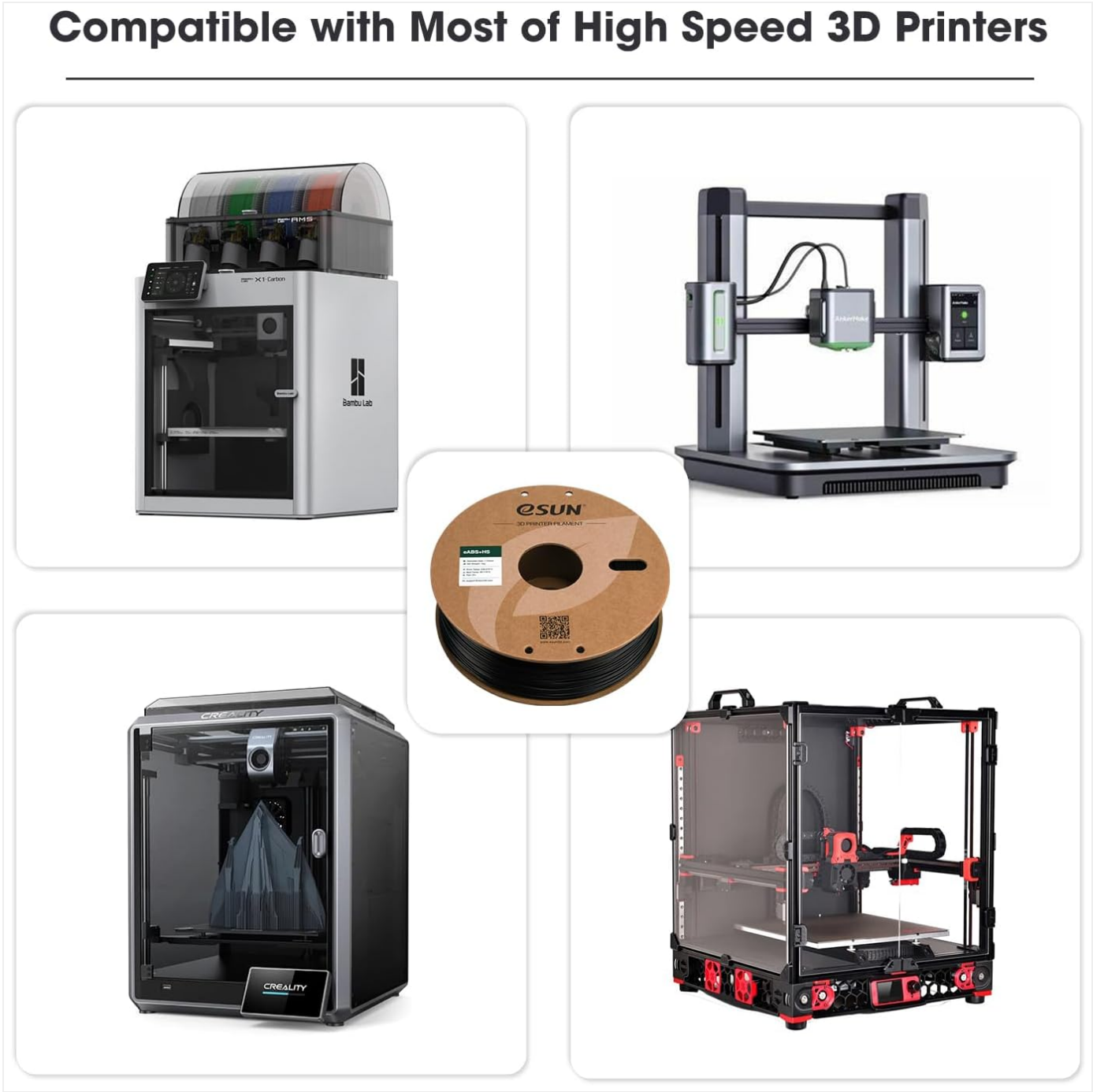

Image: A collage showing several popular high-speed 3D printer models, indicating their compatibility with eSUN High Speed ABS+ filament.

4. Bambu Lab AMS Users

For users with Bambu Lab AMS systems, eSUN provides an STL file for a 1kg paper/cardboard spool adapter. This adapter can be 3D printed and installed to ensure smooth feeding and printing within the AMS. The STL file can be found on the official eSUN website under the model download section (search for "eSUN Paper Spool Adaptor" or "eSUN paper spool solution for Bambu Lab AMS").
Link to eSUN's official website for adapter STL file:https://www.esun3d.com/zldownload_catalog/model-download/

Operating Instructions

1. Recommended Print Settings

- **Nozzle Temperature:** 230-270°C. Start with 245°C and adjust based on your printer and specific model requirements.

- **Heated Bed Temperature:** 80-110°C. A heated bed is crucial for ABS+ to prevent warping.
- **Printing Speed:** 50-300 mm/s. This filament is optimized for high-speed printing.
- **Enclosure:** An enclosed print chamber is highly recommended to maintain a stable temperature and minimize warping, especially for larger prints.
- **Adhesion:** Use a suitable build plate adhesive (e.g., ABS slurry, glue stick, PEI sheet) to ensure strong first layer adhesion.
- **Cooling Fan:** Minimal to no cooling fan is generally recommended for ABS+ to promote strong layer adhesion and prevent warping. If cooling is necessary for overhangs, use it sparingly.

2. High-Speed Printing Performance

eSUN High Speed ABS+ is engineered to perform exceptionally well at elevated printing speeds. It maintains excellent layer adhesion, minimal stringing, and reduces the likelihood of bubbles and cracking, even when printing complex geometries rapidly. This results in precise prints with an outstanding surface finish.

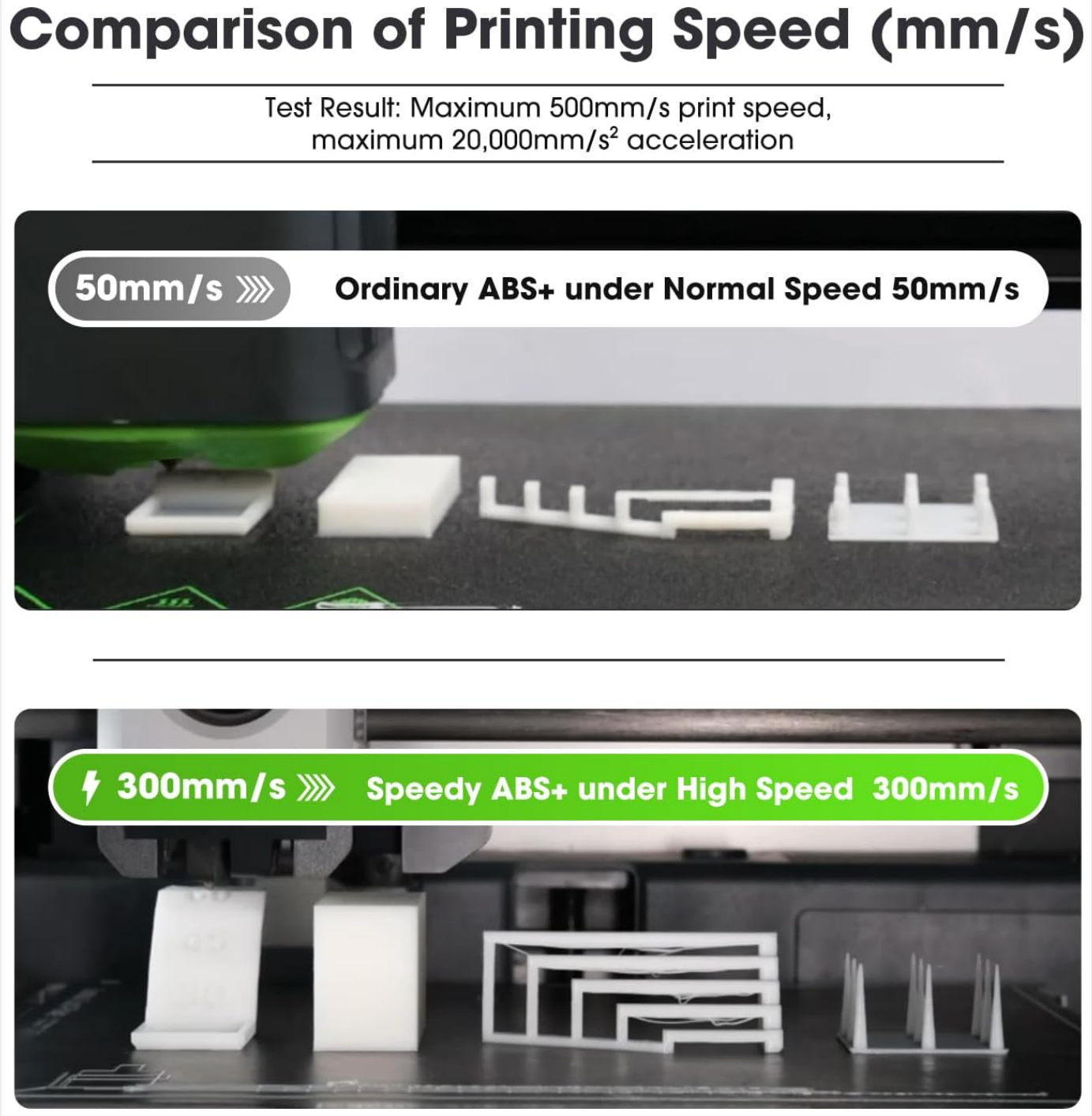

Image: Demonstrates the difference in print quality and speed between ordinary ABS+ at 50mm/s and Speedy ABS+ at 300mm/s,

highlighting the filament's ability to maintain detail at high speeds.

3. Post-Processing (Acetone Polishing)

One of the advantages of ABS+ is its compatibility with acetone vapor smoothing. This process can dissolve the surface layer of the printed model, resulting in a smooth, glossy finish that hides layer lines. Always perform acetone polishing in a well-ventilated area and take appropriate safety precautions.

Image: A visual representation showing a 3D printed bear model before and after acetone polishing, demonstrating the smoothing effect on the surface.

Maintenance and Care

1. Filament Storage

Proper storage is key to maintaining filament quality. After opening, store the filament in an airtight container or bag with desiccant packets to protect it from moisture. High Speed ABS+ is less prone to moisture absorption than some other filaments, but proper storage will extend its shelf life and ensure consistent print quality.

2. Nozzle and Extruder Care

While eSUN High Speed ABS+ is designed for smooth feeding and minimal clogging, regular maintenance of your printer's nozzle and extruder is recommended. Periodically check for any filament residue or blockages to ensure uninterrupted printing.

Troubleshooting Common Issues

Issue	Possible Cause	Solution
Warping / Poor Bed Adhesion	Insufficient bed temperature, no enclosure, dirty print surface, incorrect Z-offset.	Increase bed temperature (80-110°C), use an enclosure, clean print surface, apply adhesive, calibrate Z-offset.
Layer Separation / Weak Layers	Low nozzle temperature, excessive cooling, drafts.	Increase nozzle temperature (230-270°C), reduce or disable cooling fan, ensure stable ambient temperature.
Clogging / Under-extrusion	Filament moisture, low nozzle temperature, partial nozzle clog.	Dry filament, increase nozzle temperature, perform cold pull or clean nozzle.
Stringing / Oozing	Incorrect retraction settings, too high nozzle temperature.	Optimize retraction distance and speed, slightly reduce nozzle temperature.

Issue	Possible Cause	Solution
Filament Tangle on Spool	Improper handling, filament end not secured.	Always secure the filament end in the spool holes when not in use. Ensure proper winding during manufacturing (eSUN spools are designed to be tangle-free).

Table: Common 3D printing issues encountered with ABS+ filament, their potential causes, and recommended solutions.

Safety Information

When printing with ABS+ filament, it is important to be aware of potential fumes. While eSUN High Speed ABS+ has a lower odor compared to ordinary ABS, proper ventilation is still crucial. Always print in a well-ventilated area or use an enclosure with an air filtration system to minimize exposure to volatile organic compounds (VOCs) and ultrafine particles (UFPs).
Avoid direct contact with molten plastic from the nozzle. Keep the filament and 3D printer out of reach of children and pets.

Warranty and Support

eSUN stands behind the quality of its products. For any manufacturing defects or issues related to the filament, please contact eSUN customer support. While specific warranty details may vary by region or retailer, eSUN is committed to providing high-quality materials.
For technical assistance, product inquiries, or support, please visit the official eSUN website or contact their support team:

Official Website: https://www.esun3d.com/

Support Email: support@esun3d.com

eSUN Amazon Store: Visit the eSUN Store on Amazon