FDM Printing Filament Selection Guide

How to choose FDM 3D Printing Filament? Players who are new to the field of 3D Printing, in the face of a wide variety of filaments, may not know how to choose. Today, we have prepared a Purchasing Guide to FDM Filament meticulously to help make your 3D Printing journey even smoother.

Beginners - PLA

For those new to 3D printing, PLA is the best choice. This material is easy to print with, high-quality, environmentally friendly, and non-toxic. It has low moisture absorption and comes in a wide range of colors, making it a great option for beginners.

PLA offers good fluidity and a low shrinkage rate, so it’s less likely to warp or crack during rapid melting and cooling. This greatly improves printing success and results in models with sharp details, smooth surfaces, and good dimensional stability. Additionally, PLA is highly adaptable and works well with all types of FDM printers. There’s no need to seal the printer box while printing, making it an ideal choice for entry-level users.

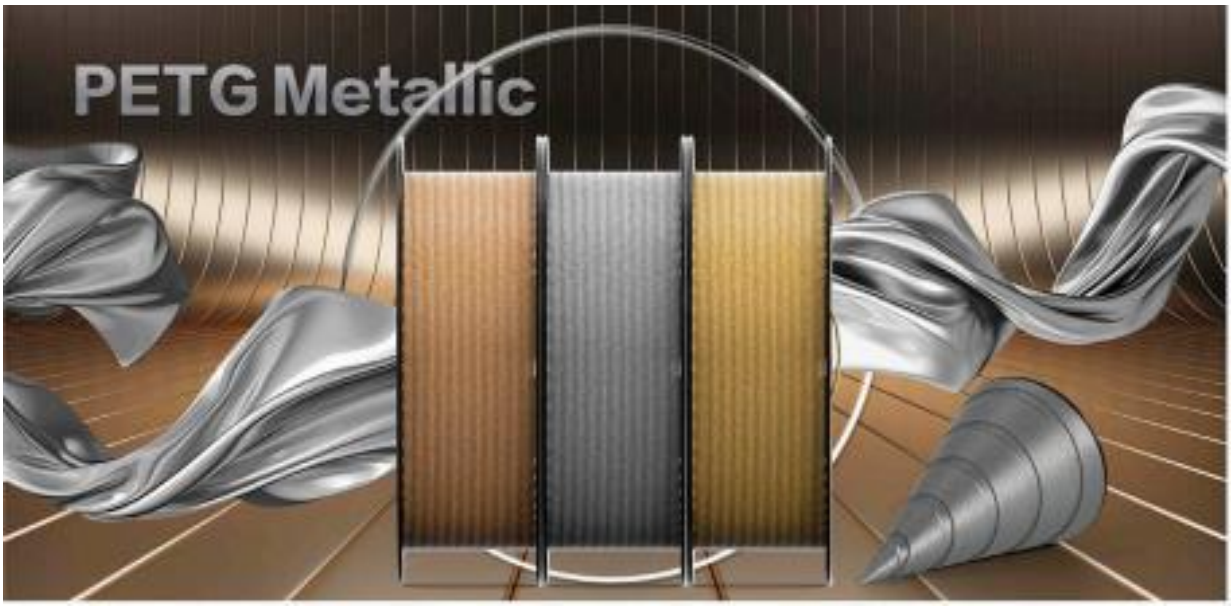
PLA Recommended Applications:

- Indoor display of models & dolls, General household items
- Crafts, industrial design samples, architectural models
- Educational tools, 3D printed prototypes, art installations
- Decorative items, consumer product mockups, low-impact functional parts

High Performance - PETG

Ideal Material for Cost-Effective, High-Performance Printing

Best choice for Performance/Cost: PETG combines the ease of use of PLA with the mechanical properties of ABS, offering excellent toughness, resistance to acids and alkalis, and weather resistance — all at a lower price. However, PETG is highly moisture-absorbent, and its printing quality can be significantly affected if it becomes damp. Additionally, PETG tends to produce strings during printing. Properly storing PETG and carefully adjusting your printing settings can help you achieve the best results.



Applications:

- Prototypes for household items, display models
- Food-contact grade products, parts requiring durability and stability
- PETG-CF5 variant offers enhanced rigidity and strength due to carbon fiber reinforcement





Visual Effects

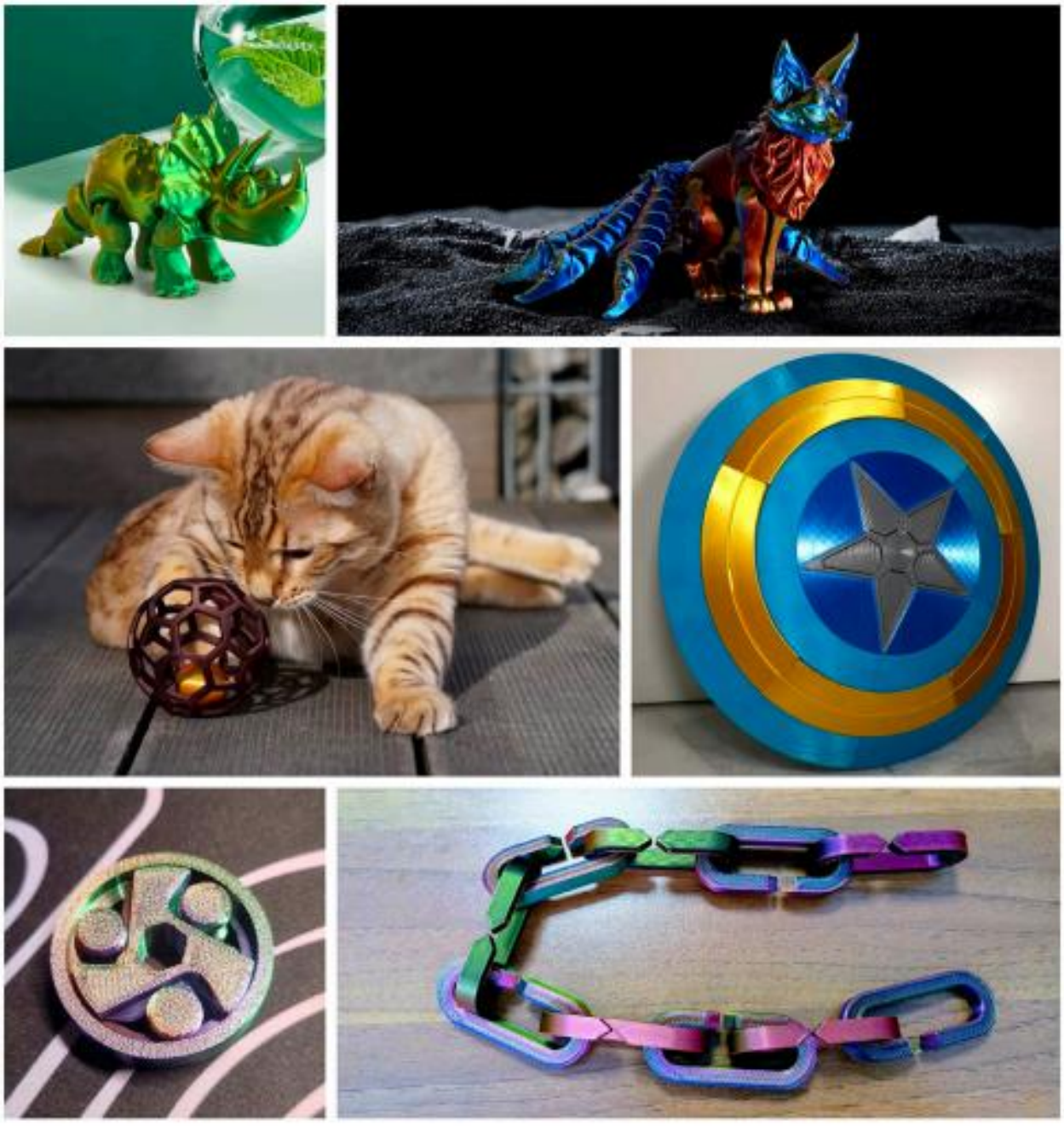
Let creativity shine through stunning visual effects and intricate decorative finishes that transform any space into a masterpiece.

Best choice for Beginners: Various aesthetic filaments derived from basic PLA materials, such as PLA+ Silk, PLA+ Rainbow, PLA+ Multi-color Silk, and PLA Matte, offer users more options for enhancing the visual appeal of their models. These materials maintain the excellent properties of PLA while adding diverse appearances.

- **PLA+ Silk**: Models printed with this filament have a smooth, silk-like surface in vibrant colors.
- **PLA+ Silk Dual/Multi-color**: Produces models with two or three different colors, featuring a smooth, reflective appearance that resembles silk.
- **PLA+ Silk Rainbow**: Printed parts have both a silk-like luster and a rainbow gradient, giving them a colorful, eye-catching appearance.
- **PLA Matte**: The matte finish hides printing layer lines, improving the overall quality and appearance of the printed parts.

Applications:

- Art sculptures, decorations, creative toys



Industrial-Grade Durability

Best choice for industrial use: A classic choice for FDM printing, ABS is known for its high strength, toughness, excellent heat resistance, and good surface finish, making it ideal for automotive, electronics, and other industrial fields. However, ABS has a high shrinkage rate and is prone to warping and cracking, so it's important to seal the printer box during printing. Additionally, ABS may release some harmful gases during the printing process, so ensuring proper ventilation in the printing area is crucial for safety.

Applications:

- Functional prototypes
- Automotive parts
- Electronic product shells

Advanced Filaments

Exploring the unknown, Challenging the limits

Best choice for specific needs:

- **TPU**: Offers excellent flexibility and a rubber-like texture, making it resistant to impact and wear.
- **ASA**: Known for high weather resistance and UV resistance, making it well-suited for outdoor parts.
- **PA-CF Carbon Fiber**: Contains 15-30% carbon fiber, significantly improving mechanical properties.
- **PETG-CF Carbon Fiber**: Adds 5-15% short carbon fibers to enhance rigidity.
- **PLA-CF Carbon Fiber**: Adds 5-10% carbon fiber, improving biodegradability and reducing visible layer lines.
- **PPS-CF Carbon Fiber**: Premium mechanical properties, high fire resistance, dimensional stability, and chemical resistance.

Applications:

- Professional Research & Development
- High-tech product prototyping, Automotive industry
- Aerospace parts, Special applications requiring high temperature or outdoor use

Let's Talk

Want to know more? Great! So do we. Fill in your details, and we'll get back to you soon.

Or send us an email:

info@3d-filament-tm.com