

3D Printing Filament Materials

There are many different types of 3D printing materials on the market each with their own properties and level of flexibility. As part of being an FDA cleared 3D printing software solution, Adaptiiv has verified and validated both rigid and flexible filaments. This document reviews what you need to know when deciding what type of filament to print. Not all filament is created equal and below is an outline of things to consider before making this decision.

Some things to consider:

- What is the required bolus thickness?
- How large will the bolus be?
- Will a flexible bolus benefit the patient?
- What is the level of accuracy required?
- What area of the body will the bolus be used for?



Filament Types

Fused Deposition Modeling (FDM) filament comes in a variety of types, colours and properties. Adaptiiv has validated two types of filaments: **Polylactic Acid (PLA)** and **Thermoplastic Polyurethane (TPU)**.

Polylactic Acid (PLA)

Standard Polylactic Acid, or PLA, is among the most popular 3D printing materials in the world because it is easy to print and strong. Standard PLA is a hard plastic that quickly cools enabling it to provide more detail than other plastics. It is derived from starches (sugar, tapioca) and prints quickly and accurately.

Adaptiiv has validated Standard PLA by 3D Fuel.



Key Features
Spatial fidelity accuracy
Easy and fast to print
Reproducible
Inexpensive
Validated through Adaptiiv QMS processes to ensure reliable, high quality prints

Thermoplastic Polyurethane (TPU)

Cheetah™ flexible filament is an elastic thermoplastic which makes it ideal for printing objects that need to be flexible yet strong and durable. The result is a filament that is printable across all types of desktop 3D printers at ABS and PLA speeds, many times twice the speed of other flexible materials on the market.

Adaptiiv has validated Cheetah™ TPU filament by NinjaTek.



Key Features
Flexible yet able to withstand wear and tear
Prints at speeds greater than 60mm/s
Industry leading toughness and durability to ensure longevity in printed parts
Chemical resistance to many materials
Smooth to touch
Validated through Adaptiiv QMS processes to ensure reliable, high quality prints