

Requirement	Recommended Material	Notes
BY PERFORMANCE REQUIREMENT 9 items		
Visual model, no stress	PLA	Cheapest, best out-of-printer surface finish.
Functional indoor part	PETG	Better impact resistance than PLA. Easy to print.
Heat resistance above 80°C	PA12 or PC	PPA-CF for applications above 160°C.
Sustained structural load	PA6-CF or PA12-CF	CF reinforcement eliminates creep under load.
Outdoor UV exposure	ASA or ASA-CF	UV stable. No colour shift or embrittlement.
Impact resistance	PC or PA12	CF materials are brittle — avoid for impact.
Flexibility and elasticity	TPU 95A	Use AMS-compatible TPU for multi-material.
Chemical resistance	PET-CF or PETG	PET-CF adds stiffness over standard PETG.
Extreme heat above 160°C	PPA-CF	Paper spool required for drying.
BY APPLICATION 5 items		
Prototype or display model	PLA	Fast, accurate, excellent surface finish.
Functional bracket or enclosure	PETG	Good impact resistance. No enclosure needed.
Engineering structural part	PA6-CF	Stiffest FDM material per unit weight.
Outdoor installation	ASA	UV stable. No ABS discolouring over time.
Replacement part near heat	PC or PA12	Check HDT vs application temperature.