

All CF materials require a hardened steel nozzle. Brass nozzles wear within hours. CF adds stiffness, NOT toughness — CF parts are more brittle under impact than unreinforced equivalents.

Material	Base Polymer	CF %	HDT	Key Strength	Primary Application
CF MATERIAL VARIANTS 5 items					
PA6-CF	Nylon 6	10–20%	~160°C	Highest stiffness	Structural brackets, UAV frames, tooling jigs
PA12-CF	Nylon 12	10%	~120°C	Stiffness + impact	Aerospace, motorsport, dimensional stability
ASA-CF	ASA	10%	~100°C	UV stable + rigid	Outdoor structural parts and installations
PET-CF	PETG	10%	~80°C	Chemical resistant	Lab components, accessible CF printing
PPA-CF	Polyphthalamide	15%	200°C+	Extreme heat + stiff	Under-bonnet, high-temp industrial tooling
WHAT CF DOES AND DOES NOT DO 5 items					
Increases stiffness (flexural modulus)				Primary benefit	PA6-CF is ~5× stiffer than unreinforced Nylon
Increases heat resistance				Significant	CF stabilises polymer matrix at temperature
Reduces creep under sustained load				Significant	Critical for structural brackets and fixtures
Does NOT increase toughness				Common misconception	CF parts crack under impact — plan accordingly
Does NOT improve surface finish				Inherent trade-off	Matte, slightly rough texture is characteristic