Material Technical Datasheet Table

Name	Picture	Description	Specifications			Typical Field of Use
			Yield Tensile Strength	Glass Transition Temperature	Texture	
ABS (Acrylonitrile Butadiene Styrene)		A strong, durable plastic commonly used in 3D printing. It is resistant to heat and mechanical stress, making it suitable for functional parts.	36-45Mpa	99-108°C	Matte, smooth, slightly rough	Automative parts, Tool Handles, Toys
PLA (Polylactic Acid)		One of the most popular material for beginners due to its ease of use. It is biodegradable and made from renewable resources like corn starch. It has lower heat resistance and less durability compared to ABS.	45-60Mpa	54-63°C	Smooth, glossy, slightly matte finish	Prototypes, Home Decorations, Educational Models
PETG (Polyethylene Terephthalate Glycol)		A variation of PET, this filament offers a balance between strength, flexibility, and ease of printing. It has good durability and is resistant to impact and moisture.	40-55Mpa	75-84°C	Smooth, glossy, and slightly flexible	Water Bottles, Mechanical Parts, Electronics Housings
TPU (Thermoplastic Polyurethane)		A flexible filament that offers elasticity, making it great for printing objects that need to bend, such as phone cases and rubber-like parts.	25-50Mpa Depending on the hardness	50-160°C Depending on the hardness	Flexible, rubber-like texture	Phone Cases, Shoe Soles, Wearable Devices
PA (Polyamide/Nylon)		Known for its toughness, flexibility, and durability, PA is a strong filament suitable for mechanical parts, gears, and functional prototypes. However, it tends to absorb moisture from the air, requiring proper storage.	50-75Mpa Depending on the material	40-60°C Depending on the material	Smooth, slightly matte texture	Gears, Hinges, Functional Prototypes
ASA (Acrylonitrile Styrene Acrylate)		Similar to ABS but more resistant to UV radiation and weather, making it ideal for outdoor applications.	32-40Mpa	100-104°C	Smooth, matte surface finish	Outdoor Furnitures, Automotive Parts, Signage
PC (Polycarbonate)		One of the strongest and most heat-resistant filaments available. It is used for highly durable parts, though it can be more difficult to print with due to high printing temperatures.	55-75Mpa	142-147°C	Smooth, glossy, and clear surface	Protective Gear, Light Housings, Panels
PLA-CF (PLA with Carbon Fiber)		PLA filament reinforced with carbon fibers for added strength and stiffness while maintaining ease of printing. It is ideal for strong, lightweight parts.	50-70Mpa	60-65°C	Matte, rough, textured surface	Drones, Tool Jigs
PA-CF (Nylon with Carbon Fiber)		A nylon-based filament mixed with carbon fibers to increase strength, stiffness, and dimensional stability while maintaining the flexibility of nylon.	80-100Mpa	70-80°C	Matte, rough, textured surface	Industrial Tooling, Bicycle Components, Functional Prototypes
PET-CF (PET with Carbon Fiber)		PET filament reinforced with carbon fibers for enhanced strength and stiffness, making it suitable for mechanical parts requiring high durability.	50-70Mpa	75-85°C	Matte, rough, and textured surface	Mechanical Arms, Brackets, Fixtures

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