



Filazoo Filament

Technical Data Sheet V1.0



PLA+

Modified Polylactic Acid — enhanced-toughness, easy-printing filament

DOCUMENT NO.	REVISION	ISSUE DATE	DIAMETER	NET WEIGHT
FZ-TDS-PLAPLUS-001	V1.0	28/08/26	1.75 mm	1 kg

1 Description

Filazoo PLA+ is a toughened polylactic acid filament that keeps PLA's famously easy printing — low warping, no enclosure, no heated chamber — while adding meaningfully higher tensile and flexural strength than standard PLA. It suits users who want PLA's convenience with more durability for parts that see light mechanical use. With a melting point of approximately 220 °C and a glass transition of approximately 65 °C, it remains best suited to indoor, room-temperature applications rather than sustained heat exposure.

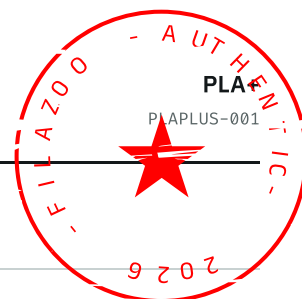
Typical applications — display models and prototypes, low-stress functional parts, enclosures and brackets for indoor use, and general-purpose printing where ease of use and surface finish matter more than heat resistance.

Processing summary — PLA+ prints without a heated chamber or enclosure and cools quickly with standard part-cooling fans. It is the most forgiving material in the range for bed adhesion and bridging; keep it dry to avoid brittleness and popping during extrusion.

2 Product Specification

Table 1 — Filament and packaging specification

PARAMETER	UNIT	VALUE
Filament diameter	mm	1.75
Diameter tolerance	mm	± 0.02
Net filament weight	kg	1
Spool material	—	ABS (heat resistance 70 °C)
Spool dimensions (ø × H)	mm	ø 200 × 67 mm
Colour range	—	Extensive standard colour range



3 Recommended Printing Parameters

Table 2 — Recommended starting parameters

PARAMETER	UNIT	VALUE
Drying before printing	°C / h	45 – 55 °C for 4 – 6 h
Printing and storage humidity	—	Dry storage; sealed with desiccant
Nozzle size	mm	≥ 0.4
Nozzle type	—	Brass or hardened steel
Nozzle temperature	°C	200 – 220
Build plate type	—	Glass, PEI or textured PEI
Bed surface preparation	—	Clean; glue stick optional
Bed temperature	°C	60 – 70
Part cooling fan	—	High (80 – 100 %)
Printing speed	mm/s	40 – 150
Enclosed chamber	—	Not required
Chamber temperature	°C	25 – 45
Retraction length / speed	mm / mm·s ⁻¹	0.6 – 1.0 mm / 20 – 40 mm·s ⁻¹
Max overhang angle	°	~ 55
Max bridging length	mm	~ 30

Values are starting points; PLA+ is heat-soft above roughly 55–60 °C — avoid hot enclosed spaces such as car interiors.

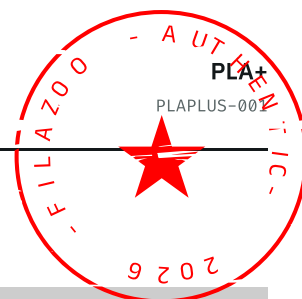
4 Material Properties

Values are typical results measured on standard printed specimens and are intended for design reference and comparison. They are not guaranteed minima.

4.1 Physical and thermal properties

Table 3 — Physical and thermal properties

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE
Density	ISO 1183	g/cm ³	~ 1.24
Melt flow rate (MFR)	210 °C, 2.16 kg	g/10 min	~ 3.5 ± 0.5
Melting temperature	DSC	°C	~ 220
Glass transition temperature	DSC	°C	~ 65
Vicat softening temperature	ISO 306	°C	~ 75
Heat deflection temperature	ISO 75, 0.45 MPa	°C	~ 55
Heat deflection temperature	ISO 75, 1.8 MPa	°C	~ 50
Saturated water absorption	25 °C, 55 % RH	%	~ 0.5



4.2 Mechanical properties

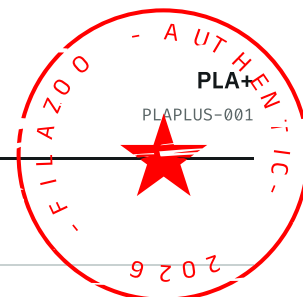
Table 4 — Mechanical properties

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE
Young's modulus (X–Y)	ISO 527 / GB/T 1040	MPa	~ 2500 ± 200
Young's modulus (Z)	ISO 527 / GB/T 1040	MPa	~ 2000 ± 180
Tensile strength (X–Y)	ISO 527 / GB/T 1040	MPa	~ 60 ± 5
Tensile strength (Z)	ISO 527 / GB/T 1040	MPa	~ 50 ± 4
Elongation at break (X–Y)	ISO 527 / GB/T 1040	%	~ 8
Elongation at break (Z)	ISO 527 / GB/T 1040	%	~ 4
Flexural modulus	ISO 178 / GB/T 9341	MPa	~ 2500 ± 150
Flexural strength	ISO 178 / GB/T 9341	MPa	~ 80 ± 6
Impact strength, notched	ISO 179 / GB/T 1043	kJ/m ²	~ 3.5
Impact strength, unnotched	ISO 179 / GB/T 1043	kJ/m ²	~ 12

4.3 Chemical and physical characteristics

Table 5 — General characteristics of PLA+

PARAMETER	VALUE
Composition	Modified polylactic acid (PLA+)
Odour	Mild, faintly sweet odour when printing
Skin hazard	No hazard in solid filament form
Chemical stability	Stable under normal storage and handling
Solubility	Insoluble in water; biodegradable under industrial composting
UV and weathering resistance	Poor – degrades and discolours with prolonged outdoor exposure
Acid resistance	Limited resistance
Alkali resistance	Limited resistance
Organic solvent resistance	Softened or dissolved by some solvents
Oil and grease resistance	Limited resistance
Flammability	Flammable
Combustion products	Carbon oxides



5 Test Conditions

5.1 Specimen printing conditions

Table 6 — Conditions used to produce test specimens

PARAMETER	UNIT	VALUE
Nozzle temperature	°C	210
Bed temperature	°C	65
Printing speed	mm/s	80
Infill density	%	100
Layer height	mm	0.2
Specimen conditioning / annealing	°C / h	23 °C / 50 % RH for 24 h (ISO 291)

5.2 Specimen geometry

Test specimens follow the geometry defined by the referenced standards. All dimensions in millimetres.

Figure 1 — Tensile specimen

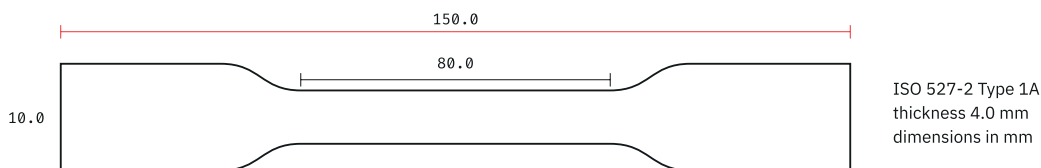


Figure 2 — Flexural specimen

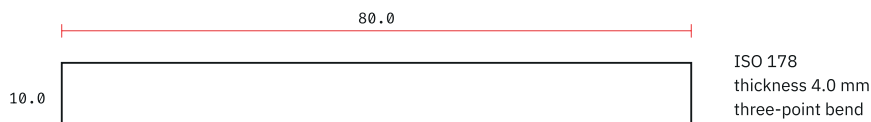
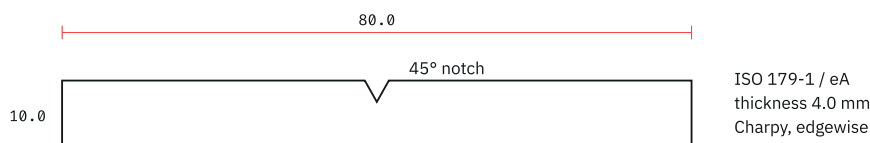


Figure 3 — Impact specimen



6 Disclaimer

The performance values in this document are typical values obtained from standard printed specimens. They are provided for design reference and comparison only and do not constitute a specification or a warranty of performance. Actual printed part performance depends on many further factors, including the printer, hotend and nozzle, slicer settings, part geometry, wall count and infill, build orientation, and ambient conditions.

Users are responsible for the legality, safety and suitability of anything they print. Filazoo accepts no responsibility for the use of its materials in any particular application, or for any damage arising in the course of using them.