

Technical Data Sheet

Matte PLA

www.polymaker.com

V5.0

Matte PLA

Matte PLA is the cost-effective PLA material for end use products which will be used in real world conditions: weather resistance, chemical resistance and the filament has already passed the food safety tests.

PHYSICAL PROPERTIES

Property	Testing Method	Typical Value
Density	ISO1183, GB/T1033	1.33g/cm ³ at 23°C
Melt index	210°C, 2.16kg	16 g/10min
Light transmission	N/A	N/A
Flame retardancy	N/A	N/A

CHEMICAL RESISTANCE DATA

Property	Testing Method
Vinegar food grade (pH=4)	RESISTANT
Vinegar concentrate (pH=4)	RESISTANT
Household cleaners (sterilizer) (pH=4)	RESISTANT
75% alcohol (pH=6)	RESISTANT
Fertilizer nutrient solution (pH=6)	RESISTANT
Water (pH=7)	RESISTANT
Household cleaners (stain remover) (pH=11)	RESISTANT

*Reference standard: ISO 175:2010

Immersion temperature: 23±2°C. Immersion period: 7 days. Test the mechanical properties before and after immersion. Resistance to the chemical: The mechanical properties* must maintain over 70% after 7 days immersion

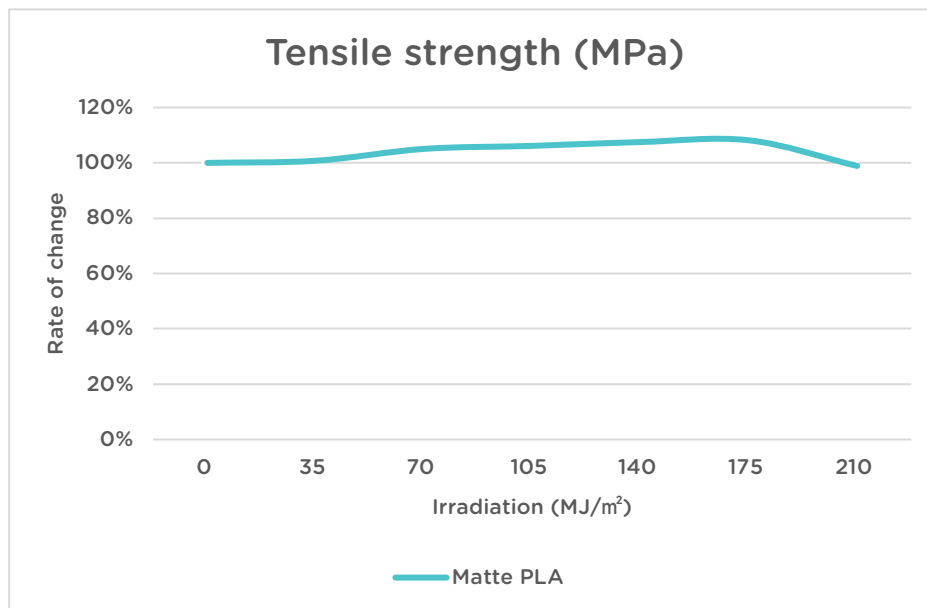
THERMAL PROPERTIES

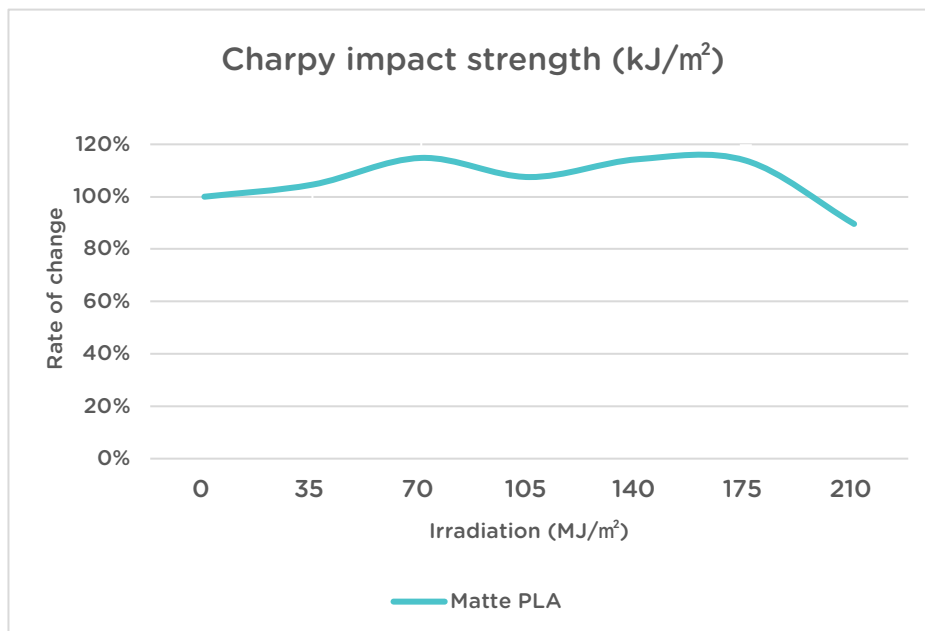
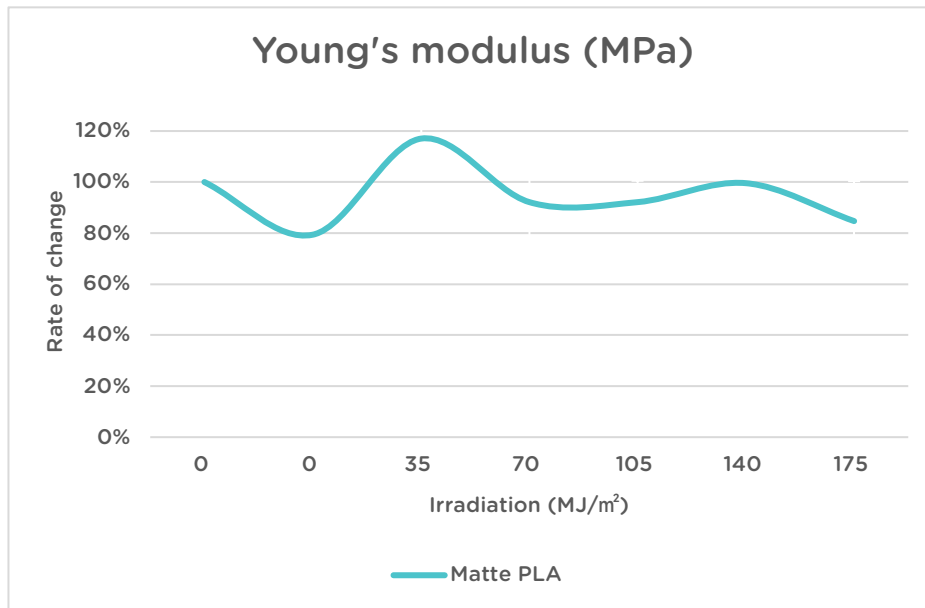
Property	Testing Method	Typical Value
Glass transition temperature	DSC, 10°C/min	60.1 °C
Melting temperature	DSC, 10°C/min	163.6 °C
Decomposition temperature	TGA, 20°C/min	N/A
Vicat softening temperature	ISO 306, GB/T 1633	67.7 °C
Heat deflection temperature	ISO 75 1.8MPa	55°C
Heat deflection temperature	ISO 75 0.45MPa	60.8°C
Thermal conductivity	N/A	N/A
Heat shrinkage rate	N/A	N/A

MECHANICAL PROPERTIES

Property	Testing Method	Typical Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	1973 ± 64 MPa
Young's modulus (Z)		1665 ± 54 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	23.5 ± 0.5 MPa
Tensile strength (Z)		12.9 ± 0.7 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	29.8 ± 2.4 %
Elongation at break (Z)		0.8 ± 0.1 %
Bending modulus (X-Y)	ISO 178, GB/T 9341	2259 ± 75 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	41.4 ± 1.1 MPa
Bending strength (Z)		N/A
Charpy impact strength (X-Y)	ISO 179, GB/T 1043	6.9 ± 0.5 kJ/m ²
Charpy impact strength (Z)		N/A

WEATHER RESISTENCE





* The fluorescent UV light exposure follows the standard ISO 4892.3
 The type of UV light is UVA-340. The irradiance is 0.76W/m² at 340 nm. The cycle is 102 min for UV only and 18 min for water spray. The black panel temperature is 63± 3 °C

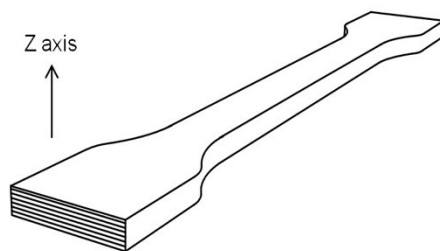
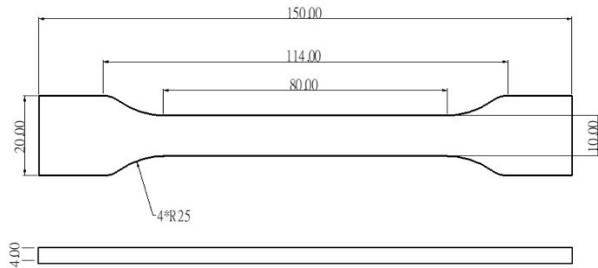
RECOMMENDED PRINTING CONDITIONS

Parameter	
Nozzle temperature	200 – 230 (°C)
Build surface treatment	Glue, Magigoo
Build plate temperature	25 - 60 (°C)
Cooling fan	ON
Printing speed	60-150 (mm/s)
Raft separation distance	0.2 (mm)
Retraction distance	1 (mm)
Retraction speed	20 (mm/s)
Environmental temperature	Room temperature - 60 (°C)
Threshold overhang angle	60 (°)
Recommended support material	PolySupport™ and PolyDissolve™ S1

* Based on 0.4 mm nozzle and Simplify 3D v.4.0. Printing conditions may vary with different nozzle diameters

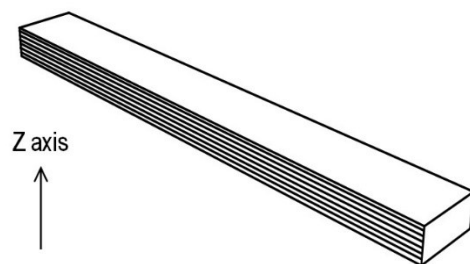
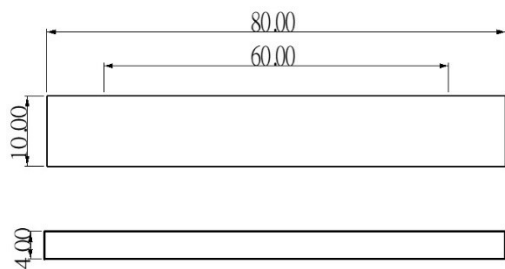
TENSILE TESTING SPECIMEN

ISO 527, GB/T 1040



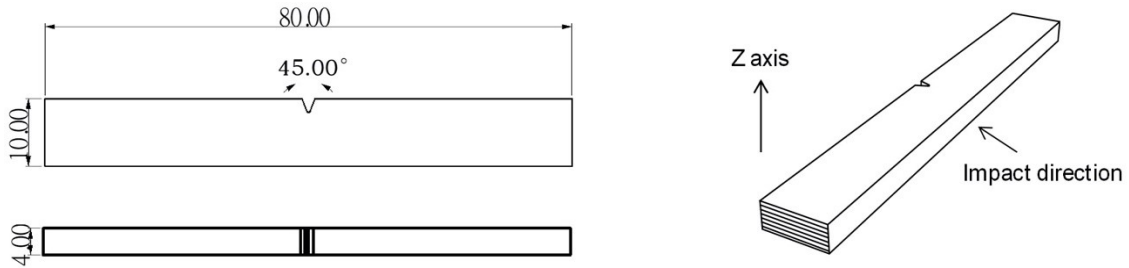
FLEXURAL TESTING SPECIMEN

ISO 178, GB/T 9341



IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043



HOW TO MAKE SPECIMENS

Printing temperature	230 °C
Bed temperature	60 °C
Shell	2
Top & bottom layer	4
Infill	100%
Environmental temperature	25 °C
Cooling fan	ON

*All specimens were conditioned at room temperature for 24h prior to testing

DISCLAIMER:

The typical values presented in this data sheet are intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. Actual values may vary significantly with printing conditions. End- use performance of printed parts depends not only on materials, but also on part design, environmental conditions, printing conditions, etc. Product specifications are subject to change without notice.

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