

IDENTIFICATION OF THE MATERIAL

Trade name	PET
Chemical name	MonoPET Polyethylene Terephthalate
Chemical family	Compound of polylactic acid
Use	3D printing
Brand	3dcolors

GUIDELINE FOR PRINT SETTINGS - Settings are based on a 0.4 mm nozzle

Nozzle temperature	220 ± 10 °C
Bed temperature	Approx. 75 °C
Bed modifications	Tape or glue below 60 °C
Active cooling fan	Yes; 100%
Layer height	0.08 - 0.2 mm
Layer thickness	0.4 - 0.8 mm
Print speed	40 ≥ 80 mm/s

MATERIAL PROPERTIES

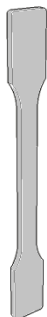
		Test Method
Melt temperature	Not applicable	ASTM D3418
Glass transition temperature	62 °C	ASTM D3418
Density	1.34 g/cm ³	ASTM D1505
Odor	Odorless	/
Solubility	Insoluble in water	/

Think it, make it!

MECHANICAL PROPERTIES - TENSILE TEST - ISO 527

All test specimens were printed using an Ultimaker 2 +under the following conditions:

printing temperature: 210 °C
heated bed temperature: 60 °C
print speed: 40 mm/s
number of shells: 2
infill under 45%



Printed vertical (Z axis)



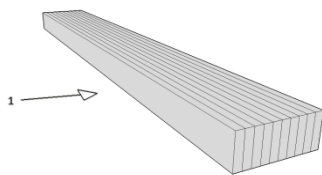
Printed horizontal (X/Y axis)

Infill	50%	100%	50%	100%
Tensile strenght (Mpa)	11.1 ± 2.2	22.8 ± 4.9	27.7 ± 1.4	40.9 ± 1.9
Force at break (Mpa)	11.0 ± 2.0	22.7 ± 4.9	27.3 ± 1.8	39.9 ± 1.5
Elongation at max force (%)	1.0 ± 0.3	1.3 ± 0.4	3.0 ± 0.1	3.0 ± 0.2
Elongation at break (%)	1.0 ± 0.3	1.3 ± 0.4	3.3 ± 0.4	3.1 ± 0.3
Relative tensile strenght (MPa/g)	1.2 ± 0.3	1.8 ± 0.4	2.9 ± 0.1	3.3 ± 0.2
Emodulus (MPa)	1328 ± 43	2140 ± 65	1470 ± 58	2264 ± 97

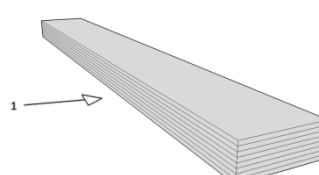
MECHANICAL PROPERTIES - IMPACT TEST - ISO 179

All test specimens were printed using an Ultimaker 2 +under the following conditions:

printing temperature: 210 °C
heated bed temperature: 60 °C
print speed: 40 mm/s
number of shells: 2
infill under 45%



Charpy (en)



Charpy (ep)

Impact direction →

Infill	100%	100%
Tensile strenght (Mpa)	5.2 ± 0.6	12.4 ± 1.4
Force at break (Mpa)	199.3 ± 23.7	472.6 ± 54.1

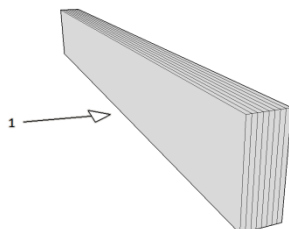
Think it, make it

MECHANICAL PROPERTIES - FLEXURAL TEST - ISO 178

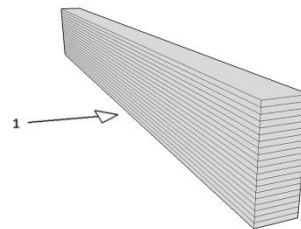
All test specimens were printed using an Ultimaker 2 + under the following conditions:

printing temperature: 210 °C
 heated bed temperature: 60 °C
 print speed: 40 mm/s
 number of shells: 2
 infill under 45%

bending direction →



normal



parallel

Infill	100%	100%
Flexural modulus (Mpa)	2280.8 ± 87.4	2089.3 ± 77.5
Maximum force (Mpa)	76.7 ± 2.2	93.0 ± 1.5
Deformation (%)	4.1 ± 0.1	4.5 ± 0.1

FILAMENT SPECIFICATIONS AND TOLERANCE

Diameter 1.75	1.75 ± 0.05 mm
Max. roundness deviation 1.75	0.05 mm
Net weight on reel	750 g ± 2%

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LIST OF COLORS AND CERTIFICATIONS*

Colour	Code	RAL	10/2011 ¹	FDA ²	2011/65 ³	EN 71-3 ⁴
Black	0302	9005	Yes	Yes	Yes	Yes
White	0303	9010	Yes	Yes	Yes	Yes
Natural Tr.	0301	N/A	Yes	No	Yes	Yes
Yellow	0306	1003	Yes	Yes	Yes	Yes
Green	0307	6018	Yes	Yes	Yes	Yes

* This overview is generated using information obtained from the raw material suppliers.

Certifications/approvals	Description
¹ Regulation EU No 10/2011	Union Guidelines on Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food (Europe)
² FDA	FDA: Food and Drug administration approval (U.S.A.)
³ Directive 2011/65/EU	The restriction of the use of certain hazardous substances in electrical and electronic equipment (Europe)
⁴ Directive 2009/48/EC; EN 71-3	Safety of toys – Part 3: Migration of certain elements (Europe)

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