

Essentium PCTG

TECHNICAL DATA SHEET

ESSENTIUM PCTG

Essentium PCTG is a member of the copolyester family, chemically similar to PETG. Our PCTG is an easy-to-use material with incredible surface finish and excellent impact resistance. This robust material can be printed in open air and over a large temperature range. Compared to PETG, our PCTG has a similar strength and stiffness, while offering superior impact strength and chemical resistance.

MECHANICAL PROPERTIES

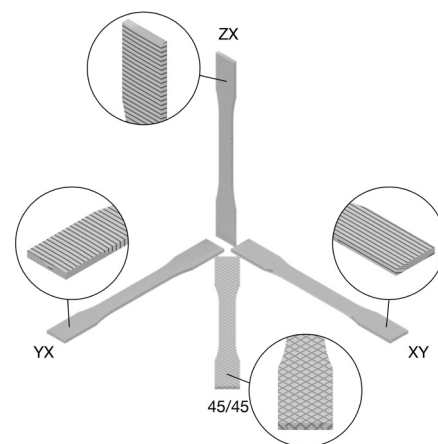
Metric	Test Method	Print Orientation			
		XY	45/45	YX	ZX
Ultimate Tensile Strength, MPa	ISO 527-2	44.0 (0.2)	40.4 (1.1)	43.5 (0.7)	45.0 (1.6)
Tensile Modulus, GPa	ISO 527-2	1.81 (0.03)	1.71 (0.04)	1.72 (0.02)	1.86 (0.09)
Strain at Break, %	ISO 527-2	130 (1)	2.6 (1.6)	4.9 (0.5)	3.9 (0.4)
Flexural Strength, MPa	ISO 178	72.7 (0.9)	70.1 (0.7)	63.1 (2.5)	71.5 (1.1)
Flexural Modulus, GPa	ISO 178	1.78 (0.01)	1.69 (0.02)	1.57 (0.04)	1.72 (0.02)
Notched Izod Impact Strength, kJ/m ²	ISO 180/A	7.5 (0.5)	5.4 (1.2)	6.1 (1.4)	4.7 (0.8)

Standard deviations listed in parentheses

MATERIAL PROPERTIES

Property	Method	Value
Specific Gravity ¹ , g/cm ³	ASTM D792	1.23
Glass Transition Temperature, °C	ASTM D3418	76
Melting Point, °C	ASTM D3418	202
HDT B @ 0.45 MPa ¹ , °C	ISO 75	76
HDT A @ 1.8 MPa ¹ , °C	ISO 75	64

¹ Values taken from resin manufacturer TDS



Version 1.0
Revision Date: 04/27/20

MATERIAL HANDLING AND DRYING

Essentium PCTG is a hygroscopic thermoplastic and will absorb moisture from humid air. Keep the material in the vacuum sealed packaging until you are ready to print with it. PCTG filament should always be fed to the printer in a dry container and stored in a dry cabinet. If the material does absorb more than 600ppm moisture, it should be dried in a low dew point (< -40°C) oven or vacuum oven at 65 – 70°C for 4 – 8 hours. Avoid touching filament with bare fingers or introducing oils to the filament prior to printing.

RECOMMENDED HSE PRINT SETTINGS

0.4mm Hozzle

Extrusion Width, mm	0.35 – 0.5	Hozzle Temperature, °C	235 – 390
Layer Height, mm	0.15 – 0.25	Bed Temperature, °C	70 – 80
Print Speed, mm/s	50 – 500	IR Temperature, °C	20 – 40
Infill, %	15 – 75	Fan Speed, %	0 – 40

0.8mm Hozzle

Extrusion Width, mm	0.7 – 0.9	Hozzle Temperature, °C	280 – 360
Layer Height, mm	0.3 – 0.35	Bed Temperature, °C	70 – 80
Print Speed, mm/s	20 – 220	IR Temperature, °C	20 – 40
Infill, %	15 – 75	Fan Speed, %	0 – 40

RECOMMENDED FDM PRINT SETTINGS

Nozzle Temperature, °C	250 – 270	Fan Speed, %	25 – 50
Bed Temperature, °C	70 – 80	Bed Material	G-10/FR4 or Glass
Print Speed, mm/s	40 – 80	Bed Adhesion Method	Dimafix® or Magigoo® HT
First Layer Speed, mm/s	20 – 40	Infill Density, %	<75

KEY FEATURES:

- Good general purpose material
- Excellent toughness
- Good solvent resistance
- High optical clarity
- Easy-to-print

APPLICATIONS INCLUDE:

- Jigs and fixtures
- Orthotics and prosthetic check sockets
- Prototypes
- Consumer goods
- Part trays

Version 1.0
Revision Date: 04/27/20