AMERICAN FILAMENT

www.AmericanFilament.us

sales@americanfilament.us

Phone: (256) 489-1155

PCTG Filament Technical Data Sheet

General Information

Our PCTG is made with a PET-based copolyester specifically designed for professional grade 3D printing applications where easy processing and high toughness are critical. This material features a unique self-bonding ability providing very high layer-to-layer adhesion; possesses a high melt strength ensuring an even flow during the 3D printing process; is more chemically resistant & stable than PETG, ABS, or ASA (making it suitable for a wide variety of applications); boasts unmatched impact strength & toughness; has lower moisture absorption than PETG (making it more shelf stable); and can be printed reliably without an enclosure.

Unlike PETG, the finish of PCTG can vary between matte and glossy depending upon the temperature and speed settings you choose.

Using increased nozzle temperatures with decreased fan speeds can increase layer adhesion resulting in stronger parts, but higher temperatures may cause increased stringing and poor bridging/overhangs.

Specifications

This table contains PCTG characteristics and analysis methods. Some properties are subject to limits; others are presented with their typical values. Small variations of the typical values do not affect the application performance of the polymer.

All properties are measured under laboratory conditions by the analytical method shown. Limits in these specifications are applicable only to data obtained by the referenced test methods. Different methods or conditions of analysis may give rise to different values. Property Values are provided by the material manufacturer.

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Typical Properties:

PROPERTIES	TEST METHODS	UNITS	VALUES
Physical Properties			
Specific Density	ASTM D792	g/cm3	1.27
Water Absorption	ASTM D 570	%	0.15
Humidity absorption	ISO 62/method 4	%	0.17
Mechanical Properties			
Hardness (Shore D)	ASTM D2240		76
Tensile Stress at yield	ISO 527 -1/- 2	MPa	50
Tensile strain at yield		%	4.2
Tensile strain at break		%	84
Tensile Modulus	ISO 527 -1/- 2	MPa	2175
Flexural Modulus	ISO 178	MPa	1822
Flexural Strength		MPa	61
Izod Impact Resistance			
Notched	ISO 178/A		
23ºC		kJ/m2	5.2
0ºC		kJ/m2	5.2
-30ºC		kJ/m2	5.2
Unnotched	ISO 180/U		
23ºC		kJ/m2	Not Break
0ºC		kJ/m2	Not Break
-30ºC		kJ/m2	Not Break
Thermal Properties			
Glass Transition Temperature	ASTM D3418	ºC	80 - 85
Vicat Softening Temperature	ISO 306/A50	ºC	79
Heat Deflection Temperature	ISO 75-1/-2		
0.45 MPa		ºC	71
1.80 MPa		ºC	61
3D Printing Settings [1]			
Nozzle Temperature		ºC	240 - 270
Print Bed Temperature		ºC	70 - 100
Print Speed		mm/s	60 - 300

[1] Starting points only. May need to be optimized depending on your FDM printer