

### PC Technical Data Sheet (TDS)

PC is a type of high molecular polymer containing carbonate groups in the molecular chain. PC is an excellent high temperature 3D printing material, which contain excellent mechanical property and heat resistance ( $T_g$ : 147 °C). IEMAI 3D's PC can use for printing functional prototypes and parts, which has excellent details and surface quality and make it the ideal choice for a wide range of engineering applications

IEMAI 3D high performance PC filament is based on FFF/FDM technology, with a diameter of 1.75 mm, 240-270 °C printing temperature and 80-120 °C hotbed temperature, having excellent inter-layer adhesion, which greatly improve the strength, durability, and shock resistance of the prototype.

It also has good wear resistance, good self-lubrication, high toughness, good melt fluidity, precise printing accuracy, smooth appearance, extremely low shrinkage, and natural gloss.

Physical Properties	Methods	Value
Density	ISO 1183, GB/T1033	1.19 g/cm <sup>3</sup> at 21°C
Melt Index	260°C, 1.2Kg	6-8 g/10 min
Light Transmission	N/A	NA
Flame Retardancy V2	UL94	V2

Chemical Resistant Data	
Effect of weak acids	Slight Resistant
Effect of strong acids	Not Resistant
Effect of weak alkalis	Slight Resistant
Effect of strong alkalis	Not Resistant
Effect of organic solvent	Not Resistant
Effect of oils and grease	No data available
Effect of Sunlight	No data available

Mechanical Properties	Methods	Value
Glass transition	DSC, 10°C/min	113°C
Melting Temperature	DSC, 10°C/min	N/A
Crystallization Temperature	DSC, 10°C/min	N/A
Decomposition Temperature	TGA, 20°C/min	>360°C
Vicat softening Temperature	ISO 306 GB/T 1633	116.9°C
Heat deflection Temperature	ISO 75 108 MPa	99.3°C

Heat deflection Temperature	ISO 75 0.45MPa	114.1°C
Thermal conductivity	N/A	N/A
Heat shrinkage rate	N/A	N/A

Property	Testing Method	Typical Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	2048±66MPa
Young's modulus (Z)		1845± 35 MPA
Tensile Strength (X-Y)	ISO 527, GB/T 1040	59.7± 1.8 MPA
Tensile Strength (Z)		29.1± 4.1 MPA
Elongation at break (X-Y)	ISO 527, GB/T 1040	12.24 ± 1.44 %
Elongation at break (Z)		1.84 ± 0.14 %
Bending modulus (X-Y)	ISO 178, GB/T 9341	2044 ±58 MPA
Bending modulus (Z)		N/A
Bending Strength (X-Y)	ISO 178, GB/T 9341	94.1± 0.9 MPA
Bending Strength (Z)		N/A
Charpy impact strength (X-Y)	ISO 178, GB/T 9341	25.1±1.9kJ/m <sup>2</sup>
Charpy impact strength (Z)		N/A

Print Recommendation	
Nozzle Temperature	240 -270 °C
Bed Temperature	80 -120 °C
Print Speed	30-70 mm/s
Chamber Temperature	60-80 °C
Cooling Fan	0-50%