PolyCore™ PETG-1113

Technical Data Sheet (Ver. 1.1, last updated: Feb, 2025)

PolyCore™ PETG-1113 is a glass fiber reinforced (30% mass percent) PETG pellets featured with good cost effectiveness, good adhesion to gelcoat, excellent mechanical properties and outstanding printability and dimensional stability. It is suitable for interior decoration and low temperature mold such as vacuum forming molds and construction templates.

Basic Properties

Property	Testing Method	Typical Value
Density (g/cm^3 at 21.5 °C)	ASTM D792 (ISO 1183, GB/T 1033)	1.42
Melt Index (g/10 min)	230 °C, 2.16 kg	1.8 - 3.9
Glass Transition Temperature (°C)	DSC, 10 °C/min	78
Vicat Softening Temperature (°C)	ASTM D1525 (ISO 306 GB/T 1633)	99
Heat Deflection Temperature (°C)	ISO 75 1.8MPa 0.45MPa	74 78

Mechanical Properties[1]

Property	Testing Method	Typical Value
Young's modulus (MPa)	ASTM D638 (ISO 527, GB/T 1040)	9018 ± 340
Tensile strength (MPa)	ASTM D638 (ISO527, GB/T 1040)	94.7 ± 0.3
Elongation at break (%)	ASTM D638 (ISO527, GB/T 1040)	2.8 ± 0.2
Bending modulus (MPa)	ASTM D790 (ISO 178, GB/T 9341)	7227 ± 145
Bending strength (MPa)	ASTM D790 (ISO 178, GB/T 9341)	135.2 ± 1.9
Charpy Impact strength (kJ/m^2)-notched	ASTM D256 (ISO 179, GB/T 1043)	11.7 ± 0.5

1. Tested with injection molding specimens

Mechanical Properties[1]

Property	Testing Method	Typical Value
Young's modulus (MPa) (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	8186 ± 157
Tensile strength (MPa) (X-Y)	ASTM D638	100.3 ± 0.9

	(ISO527, GB/T 1040)	
Elongation at break (%) (X-Y)	ASTM D638 (ISO527, GB/T 1040)	2.2 ± 0.2
Bending modulus (MPa) (X-Y)	ASTM D790 (ISO 178, GB/T 9341)	7709 ± 340
Bending strength (MPa) (X-Y)	ASTM D790 (ISO 178, GB/T 9341)	140.8 ± 1.7
Charpy Impact strength (kJ/m^2) (X-Y)-notched	ASTM D256 (ISO 179, GB/T 1043)	23.3 ± 1.8
Young's modulus (MPa) (Z)	ASTM D638 (ISO 527, GB/T 1040)	2145 ± 67
Tensile strength (MPa) (Z)	ASTM D638 (ISO527, GB/T 1040)	28.5 ± 0.3
Elongation at break (%) (Z)	ASTM D638 (ISO527, GB/T 1040)	2.0 ± 0.3
Bending modulus (MPa) (Z)	ASTM D790 (ISO 178, GB/T 9341)	2162 ± 53
Bending strength (MPa) (Z)	ASTM D790 (ISO 178, GB/T 9341)	45.2 ± 0.5
Charpy Impact strength (kJ/m^2) (Z)	ASTM D256 (ISO 179, GB/T 1043)	8.9 ± 0.4

1. Tested with the specimens printed under following conditions:
Nozzle temperature: Zone1= 200 °C, Zone2= 238 °C, Zone3=238 °C,Zone4=228 °C,
Nozzle diameter=8mm, Layer width = 10mm, Layer height = 3mm, Layer time = 60s,
Room temperature = 15°C ,100% solid specimens.

Recommended Printing Conditions

Parameter	Recommended Setting
Drying temperature (°C)	60 - 65
Drying Time (h)	8 - 12
Maximum moisture content (%)	0.54
Barrel – zone 1 temperature (°C)	170 - 200
Barrel – zone 2 temperature (°C)	220 - 240
Barrel – zone 3 temperature (°C)	220 - 240
Nozzle temperature (°C)	210 - 230
Bed temperature (°C)	Room temperature - 70
Other Comments	
● It is recommended to stop feeding and continue extruding until the extruder is fully empty, if the printing stops in a short term, such as 10-30 min.	

- It is recommended to stop feeding and continue extruding until the extruder is fully empty, then use polyethylene (PE) to clean the extruder, if the printing stop in a long term, such as several hours. It is helpful to avoid the carbonization of material and keep extruder working in a good condition

Recommended Printing Parameters

	Tr = 40℃ Width=22mm Height=3mm	Tr = 40℃ Width=16mm Height=3mm	Tr = 40℃ Width=5mm Height=2mm	Tr = 25℃ Width=22mm Height=3mm	Tr = 25℃ Width=16mm Height=3mm	Tr = 25℃ Width=5mm Height=2mm	Tr = 10℃ Width=22mm Height=3mm	Tr = 10℃ Width=16mm Height=3mm	Tr = 10℃ Width=5mm Height=2mm
Thermal index	Layer Time (s)	Layer Time (s)	Layer Time (s)	Layer Time (s)	Layer Time (s)	Layer Time (s)	Layer Time (s)	Layer Time (s)	Layer Time (s)
0.43	120	98	44	95	79	36	78	68	24
0.57	146	121	57	111	92	40	94	77	29
0.76	183	158	74	134	115	52	110	89	40
1.00	255	214	98	166	142	68	128	108	49
0.76	356	299	133	225	191	88	158	133	64
0.57	497	416	184	314	262	118	209	178	83
0.43	695	610	262	440	369	160	290	217	110
0.33	1000	870	370	612	520	222	411	339	151

1：Definition of each concept
- Layer time: the time spent for depositing one layer of the printed part.
- Thermal index: A metric describing the quality of printing process. A value of 1 represents the optimal process, and deviations from 1 indicate suboptimal printing conditions
- Width: the cross-sectional dimension of the printed layer, perpendicular to the direction of the print nozzle's movement.
- Height: the vertical dimension of the printed object, or the layer thickness during pellet printing.
- Tr: room temperature when starting pellet printing.

2：Above data is inferred based on a melt temperature of 228 °C at nozzle exit and a 1m*1m*1m square frame model.

3：The simulation condition is based on a closed room without additional air disturbances, and assumes some environment temperature increasement.

4：Above data is inferred based on the thermal history simulation software, Dragon, by Helio Additive. It should be used for reference only. For a more detailed analysis, please contact Polymaker.

We recommend using the layer times within the green-highlighted range (i.e., where the thermal index approaches 1) for printing. Different printing parameters correspond to different optimal layer time ranges.

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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