

# Product technical instructions

Product brand: Piocreat\_PETG-1211

Material No.: D3305050006

Technical Data Sheet (Ver.1.0, last updated: Apr, 2023)

PETG-1211 is a glass fiber reinforced (10% mass percent) PETG pellets featured with outstanding printability and cost efficiency, designed for Middle Area Additive Manufacturing (MAAM) technology.

## Physical Properties

Property	Testing Method	Typical Value
Density (g/cm <sup>3</sup> at 21.5 °C)	ASTM D792 (ISO 1183, GB/T 1033)	1.30
Melt index (g/10 min)	230 °C, 2.16 kg	20-24
Glass transition temperature (°C)	DSC, 10 °C/min	70
Vicat Softening temperature (°C)	ASTM D1525 (ISO 306 GB/T 1633)	80
Heat Deflection Temperature (°C)	ISO 75 1.8MPa	63
	0.45MPa	69

## Mechanical Properties<sup>1</sup>

Property	Testing Method	Typical Value
Young's modulus (MPa)	ASTM D638 (ISO 527, GB/T 1040)	3257 ± 16
Tensile strength (MPa)	ASTM D638 (ISO527, GB/T1040)	68.1 ± 0.6
Elongation at break (%)	ASTM D638 (ISO527, GB/T1040)	3.0 ± 0.04
Bending modulus (MPa)	ASTM D790 (ISO 178, GB/T 9341)	3932 ± 9
Bending strength (MPa)	ASTM D790 (ISO 178, GB/T 9341)	107.2 ± 0.4
Charpy Impact strength (kJ/m <sup>2</sup> )	ASTM D256 (ISO 179, GB/T1043)	3.6 ± 0.3

1. Tested with injection molding specimens

## Mechanical Properties<sup>1</sup>

Property	Testing Method	Typical Value
Young's modulus (MPa) (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	3288 ± 85

Tensile strength (MPa) (X-Y)	ASTM D638 (ISO527, GB/T1040)	68.1± 0.8
Elongation at break (%) (X-Y)	ASTM D638 (ISO527, GB/T1040)	3.5 ± 0.42
Bending modulus (MPa) (X-Y)	ASTM D790 (ISO 178, GB/T 9341)	3332 ± 69
Bending strength (MPa) (X-Y)	ASTM D790 (ISO 178, GB/T 9341)	93.2 ± 2.7
Charpy Impact strength (kJ/m <sup>2</sup> ) (X-Y)	ASTM D256 (ISO 179, GB/T1043)	4.5 ± 0.3
Young's modulus (MPa) (Z)	ASTM D638 (ISO 527, GB/T1040)	2551 ± 87
Tensile strength (MPa) (Z)	ASTM D638 (ISO527, GB/T1040)	43.4± 0.3
Elongation at break (%) (Z)	ASTM D638 (ISO527, GB/T1040)	2.6 ± 0.17
Bending modulus (MPa) (Z)	ASTM D790 (ISO 178, GB/T 9341)	2292 ± 141
Bending strength (MPa) (Z)	ASTM D790 (ISO 178, GB/T 9341)	60.6 ± 3.4
Charpy Impact strength (kJ/m <sup>2</sup> ) (Z)	ASTM D256 (ISO 179, GB/T1043)	6.6 ± 0.8

1. Tested with the specimens printed under the following conditions:

Nozzle temperature = 230 °C, printing speed = 5kg/h, Nozzle diameter: 5.0 mm, Shell width = 10 mm, Layer height = 2mm, Layer time = 90s, Room temperature = 10°C ,100% solid specimens.

### Recommended Printing Conditions

Parameter	Recommended Setting
Drying temperature (°C)	50 -55
Drying Time (h)	4 -8
Maximum moisture content (%)	0.5
Barrel- zone 1 temperature (°C)	170 -200
Barrel- zone 2 temperature (°C)	220 -240
Barrel- zone 3 temperature (°C)	220 -240
Nozzle temperature (°C)	220 -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

## Shenzhen Piocreat 3D Technology Co.,Ltd.

- 📍 19F, JinXiuHongDu Building, Meilong Blvd, Longhua Dist, Shenzhen, China 518131
- ☎ Tel: +86 0755-2103-9743 / +86 199 2521 7796
- ✉ Technical support: after@piocreat3d.com
- 🌐 www.piocreat3d.com

## Disclaimer

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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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