PolyCoreTM PETG-1113 Marble
Technical Data Sheet (Ver. 1.0, compiled on May, 2025)

PolyCoreTM PETG-1113 Marble is a visually enhanced variant of the PolyCoreTM PETG-1113 - a PETG granulate reinforced with 30% glass fiber, created by physically blending it with marble-effect masterbatch. The printed parts feature a matte white surface with organically dispersed black speckles of varying sizes, simulating a stylized marble texture. After milling, the texture becomes more three-dimensional, and the surface quality is further enhanced. This product is suitable for aesthetically demanding applications such as indoor decoration, artistic modeling, and high-end custom furniture.

Basic Properties

|  |  |  |
| --- | --- | --- |
| **Property** | **Testing Method** | **Typical Value** |
| Density (g/cm3 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 | 7478 |

Mechanical Properties1

|  |  |  |
| --- | --- | --- |
| **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/m2)-notched | ASTM D256(ISO 179, GB/T 1043) | 11.7 ± 0.5 |

1. Tested with injection molding specimens

Mechanical Properties1

|  |  |  |
| --- | --- | --- |
| **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 (ISO527, GB/T 1040) | 100.3 ± 0.9 |
| 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/m2) (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/m2) (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
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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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