Panchroma

BY polymaker

Technical Data Sheet

Panchroma™ CoPE

www.polymaker.com

V5.4

Panchroma™ CoPE

Panchroma™ CoPE is a co-polyester-based 3D printing material that combines unmatched performance with exceptional value. With its ability to reach high printing speeds without sacrificing precision or detail, it unlocks new possibilities for creators.

PHYSICAL PROPERTIES

Property	Testing Method	Typical Value
Density	ISO1183, GB/T1033	1.296g/cm^3 at 23°C
Melt index	210°C, 2.16kg	25.944 g/10min

THERMAL PROPERTIES

Property	Testing Method	Typical Value
Glass transition temperature	DSC, 10°C/min	58.2 °C
Melting temperature	DSC, 10°C/min	N/A
Vicat softening temperature	ISO 306, GB/T 1633	65.5 °C

MECHANICAL PROPERTIES

Property	Testing Method	Classic printing speed Value	High printing speed Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	2514.6±71.1 MPa	2345.5±35.5 Mpa
Young's modulus (Z)		2190.4±50.5 MPa	2219.2±65.2 Mpa
Tensile strength (X-Y)	ISO 527, GB/T 1040	51.6±0.3 MPa	45.6±0.5 Mpa
Tensile strength (Z)		36.1±1.2 MPa	30.1±2.0 Mpa
Elongation at break (X-Y)	ISO 527, GB/T 1040	10.5±3.8 Mpa	4.8±0.8 %
Elongation at break (Z)		2.2±0.2 %	1.6±0.17 %
Bending modulus (X-Y)	ISO 178, GB/T 9341	2370.9 Mpa	2199.0±35.0 Mpa
Bending modulus (Z)		N/A	N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	75.5±0.9 Mpa	70.1±0.9 Mpa
Bending strength (Z)		N/A	N/A
Notched Charpy impact strength (X-Y)	ISO 179, GB/T 1043	2.9±0.1 kJ/㎡	2.8±0.1 kJ/㎡
Notched Charpy impact strength (Z)		N/A	N/A

*Classic Printing Speed: Based on 0.4 mm nozzle and 0.2mm layer thickness. Classic printing speed = 50mm/s, printing temperature = 210 °C
*High Printing Speed: Based on 0.4 mm nozzle and 0.2mm layer thickness. Classic printing speed = 300mm/s, printing temperature = 230 °C

RECOMMENDED PRINTING CONDITIONS

Parameter	
Nozzle temperature	200 – 230 (℃)
Build plate temperature	25 - 60 (˚C)
Cooling fan	ON
Printing speed	Up to 400 (mm/s)
Drying setting	55˚C for 6h

* Based on 0.4 mm nozzle. Printing conditions may vary with different nozzle diameters.

MAX VOLUMETRIC SPEED

Printing Temp	Max Volumetric Speed	Max Printing Speed
200 ℃	16 mm³/s	200 mm/s
210 ℃	20 mm³/s	250 mm/s
220 ℃	24 mm³/s	300 mm/s
230 ℃	32 mm³/s	400 mm/s

* Based on 0.4 mm nozzle and 0.2mm layer height. Results may vary with different settings.

SURFACE GLOSSINESS

Printing Temp	210℃	220℃	230℃
100 mm/s	23.6 GU	21.9 GU	22.2 GU
200 mm/s	23.9 GU	25.5 GU	22.3 GU
300 mm/s	23.5 GU	26.7 GU	30.2 GU
400 mm/s	15 GU	21.9 GU	29 GU

* Based on 0.4 mm nozzle. Results may vary with different settings.
* Use a gloss meter for testing at an angle of 85°.

FAQ and Printing Tips

Question: Can I print the Panchroma™ CoPE with PLA materials?
Answer: We do not recommend printing the Panchroma™ CoPE in combination with other Panchroma™ color ranges or PLA materials. This is because the Panchroma™ CoPE is Copolyester-based and does not bond well with PLA, which can lead to issues such as layer delamination and printing failures. For optimal results, it's best to use the regular color range independently.

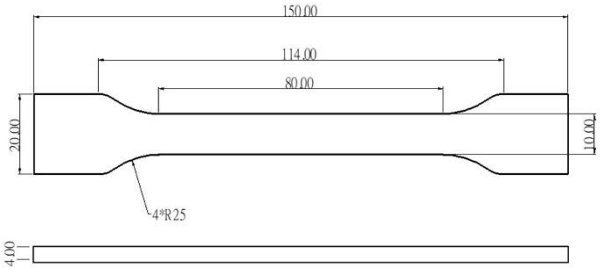
Question: What printer bed or build plate is recommended for the Panchroma™ CoPE?
Answer: The Panchroma™ CoPE is versatile and suitable for use on various types of printer beds. For optimal results, follow these recommendations:

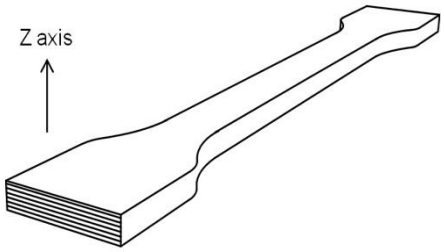
- Post-Print Removal: Allow the print to cool down completely before removing it from the printer bed to ensure easy detachment.
- Adhesion Caution: Avoid using glue, as it can significantly increase bed adhesion and make print removal difficult. Ensure the printer bed is clean before starting the printing process.
- Bed Temperature Settings: A bed temperature of 40-50℃ typically provides adequate adhesion. If stronger adhesion is needed, you may increase the temperature but avoid exceeding 60℃ to prevent excessive sticking.
- Not recommended to be printed on textured PEI as this material has an extra high bed adhesion properties and can damage the bed. We recommend using Magigoo Original or Vision Miner Adhesive to help with print release if using a textured PEI plate.

By following these guidelines, you can achieve effective bed adhesion while maintaining ease of print removal.

TENSILE TESTING SPECIMEN

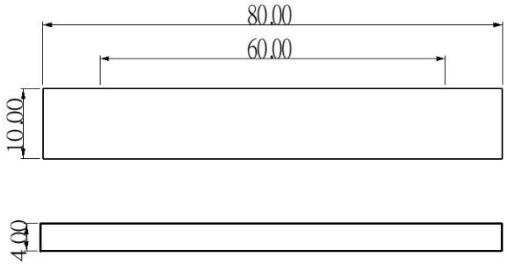
ISO 527, GB/T 1040

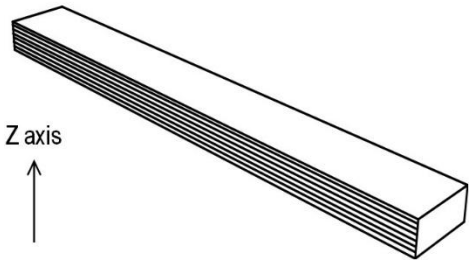




FLEXURAL TESTING SPECIMEN

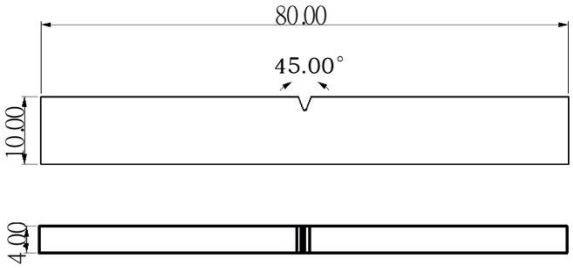
ISO 178, GB/T 9341

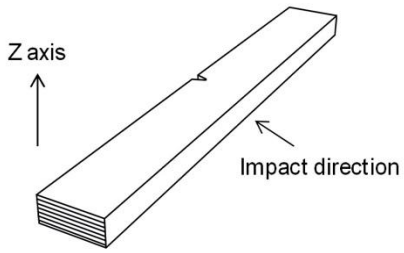




IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043





HOW TO MAKE SPECIMENS

Printing temperature	230 °C
Bed temperature	50 °C
Shell	2
Top & bottom layer	3
Infill	100 %
Environmental temperature	Ambient temperature
Cooling fan	ON

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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