

BambuLab Basic PET CF Black

Material Engineering Report
MaterialID MAT0166

3DPiceland Engineering Platform
3DPiceland Labs

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RELIABILITY - Bug Fixes and Workflow Reliability
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Public-data contract: This static report contains only allowlisted material identity, public links, canonical MSRP and existing Verified Material Summary / governed score outputs. It excludes raw specimen rows and non-public operational data.

TEST COVERAGE

Complete

ENGINEERING AXES

6/6

PUBLIC MSRP

\$126.40 USD/kg

Material identity

MaterialID	MAT0166
Material	BambuLab Basic PET CF Black
Manufacturer	BambuLab
Product line	Basic
Base material	PET
Category	Engineering
Variant / finish	—
Reinforcement	CF
Color	Black

Governed engineering profile

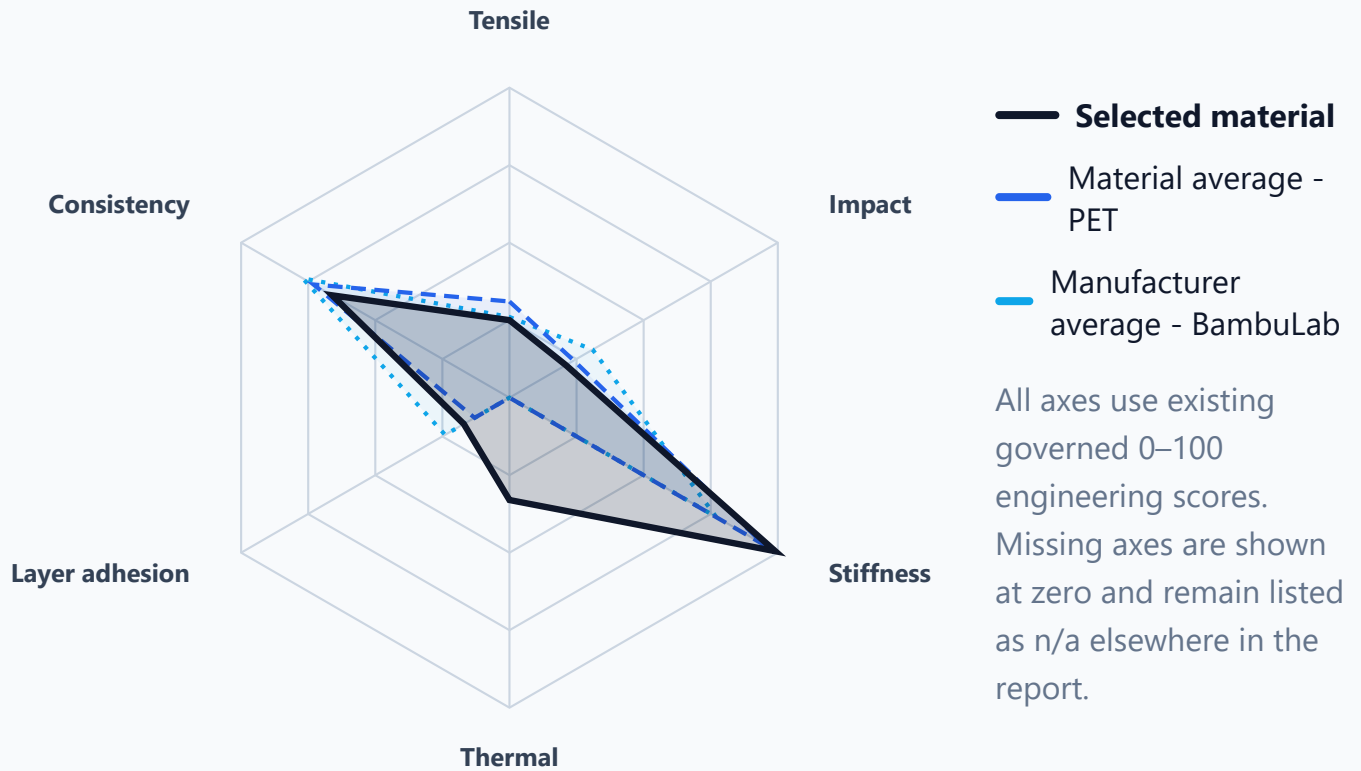
Overall	46/100
Tensile	25/100

Impact	21/100
Stiffness	99/100
Consistency	66/100
Layer adhesion	17/100
Thermal	33/100
Best available axis	stiffness

Engineering score profile



Engineering radar



Fixture thermal result

66 °C · score 33/100 · method 3dp-thermal-deflection-fixture-v1
Nearby BlueDOT probe-indicated fixture temperature from a non-standard comparative 3DPIceland method; not ASTM D648, ISO 75, specimen temperature, certified HDT or a manufacturer limit.

Material and manufacturer context

Metric	Selected material	Material average	Manufacturer average
Overall	46/100	47/100	47/100
Tensile	25/100	31/100	26/100
Impact	21/100	24/100	31/100
Stiffness	99/100	95/100	77/100
Consistency	66/100	73/100	77/100
Layer adhesion	17/100	13/100	24/100
Thermal	33/100	—	—

Verified measurement results

Existing Verified Material Summary outputs. The public renderer does not read raw specimen rows or recalculate these values.

Measurement	Average	Std. deviation	CV	Samples	Confidence
Tensile upright	5.845 MPa	3.547 MPa	60.7%	10	10/10
Tensile flat	34.438 MPa	5.842 MPa	17%	10	10/10
Impact upright	78.027 kJ/m ²	37.778 kJ/m ²	48.4%	10	10/10
Impact flat	341.532 kJ/m ²	32.355 kJ/m ²	9.5%	10	10/10
Stiffness modulus	2976.004 MPa	—	—	—	—
Stiffness deflection	1.823 mm	—	—	—	—

Measurement provenance

Canonical per-module measured dates from SQLite, shown in unambiguous ISO format. Missing dates are not inferred.

Module	Measured date
Tensile	Not recorded
Impact	Not recorded
Stiffness	Not recorded
Thermal	Not recorded

Engineering interpretation

Summary: BambuLab Basic PET CF Black has a specialized or limited engineering profile. It is below its material-family average by 1,5 points and below its manufacturer average by 1,3 points. Its strongest measured axis is Stiffness, while the weakest axis is Layer Adhesion.

Data-driven review: BambuLab Basic PET CF Black is best understood as a repeatable material for cosmetic, concept and low-load prototype work. Compared with the current verified dataset, it ranks better than 44% overall, is roughly aligned with the material-family average, and is roughly aligned with the manufacturer average. Its strongest engineering signal is Stiffness, while Layer Adhesion is the main limitation to consider before using it for demanding applications.

BEST FEATURE

Stiffness

MAIN LIMITATION

Layer Adhesion

DATASET POSITION

Better than 44%
132 / 234

Strengths

- Stiffness: 99/100. Stiffness is a relative advantage in this comparison group.

Limitations

- Tensile: 25/100. Avoid using this as the primary choice for tensile-loaded parts.
- Impact: 21/100. Avoid high impact or shock-loaded components without additional validation.
- Layer adhesion: 17/100. Z-axis performance should be treated with caution.

Engineering trade-offs

- Good repeatability does not compensate for low tensile capability in load-bearing designs.
- Stiffness is useful for shape stability, but impact tolerance is a separate limitation.
- The report should be read as a suitability warning rather than a general-purpose recommendation.

Recommended applications

- Rigid brackets, fixtures and shape-stable prototypes
- Cosmetic parts, concept models or low-load prototypes
- Avoid high tensile load applications
- Avoid high impact components

Metric rankings and percentiles

Metric	Score	Rank	Percentile
Overall	46/100	132 / 234	Better than 44%
Tensile	25/100	151 / 226	Better than 34%
Impact	21/100	125 / 226	Better than 45%
Stiffness	99/100	38 / 223	Better than 83%
Consistency	66/100	219 / 231	Better than 6%
Layer adhesion	17/100	152 / 226	Better than 33%
Thermal	33/100	71 / 209	Better than 67%

Decision guidance

- Use this material mainly for low-load, visual or experimental parts.
- Review the listed alternatives if the application needs stronger overall performance.
- Do not choose it as a tensile-strength benchmark material.
- Avoid selecting it for impact-focused testing or shock-loaded designs.

Better alternatives

MaterialID	Material	Manufacturer	Overall	Tensile	Impact
MAT0195	Siraya Tech Fiberheart Black PET CF Black	Siraya Tech	51/100	35/100	27/100

Peer context

Highest-scoring same-base-material peers from the current governed dataset. This context is descriptive and is not recalculated by the public renderer.

MaterialID	Material	Manufacturer	Overall	Tensile	Impact
MAT0195	Siraya Tech Fiberheart Black PET CF Black	Siraya Tech	51/100	35/100	27/100
MAT0206	Siraya Tech Fiberheart Brown PET GF Brown	Siraya Tech	45/100	32/100	24/100

Public links

Methodology and limitations

Results are comparative 3DPIceland measurements from home-built test equipment. Thermal is a nearby BlueDOT probe-indicated fixture temperature, not ASTM D648, ISO 75 or specimen temperature. Missing evidence remains n/a. Scores and test results are not recalculated by this publishing layer and do not replace certified manufacturer datasheets or accredited laboratory testing.

- [Testing methodology](#)
- [Engineering methodology whitepaper](#)