

BambuLab Standard Black Walnut PLA Wood Brown

Material Engineering Report
MaterialID MAT0175

3DPiceland Engineering Platform
3DPiceland Labs
Generated with 3DPiceland Engineering Platform v60.0.6
WORKFLOW-RELIABILITY - Bug Fixes and Workflow
Reliability
Generated 2026-08-25 19:02:26

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
\$43.92 USD/kg

Material identity

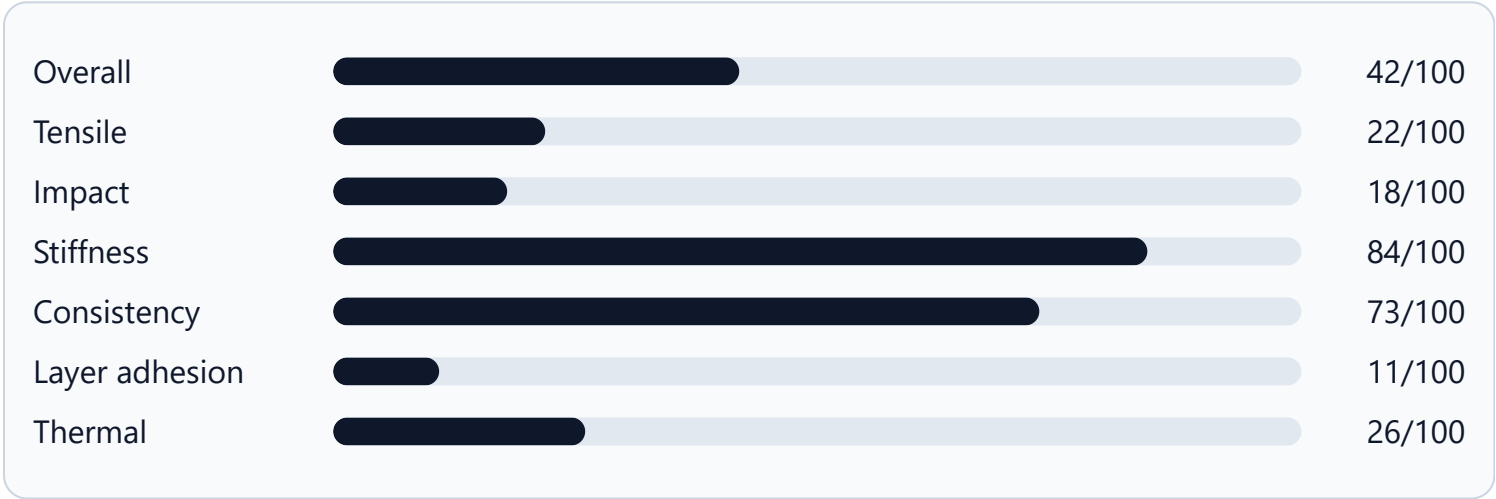
MaterialID	MAT0175
Material	BambuLab Standard Black Walnut PLA Wood Brown
Manufacturer	BambuLab
Product line	Standard
Base material	PLA
Category	Standard
Variant / finish	—
Reinforcement	Wood
Color	Brown

Governed engineering profile

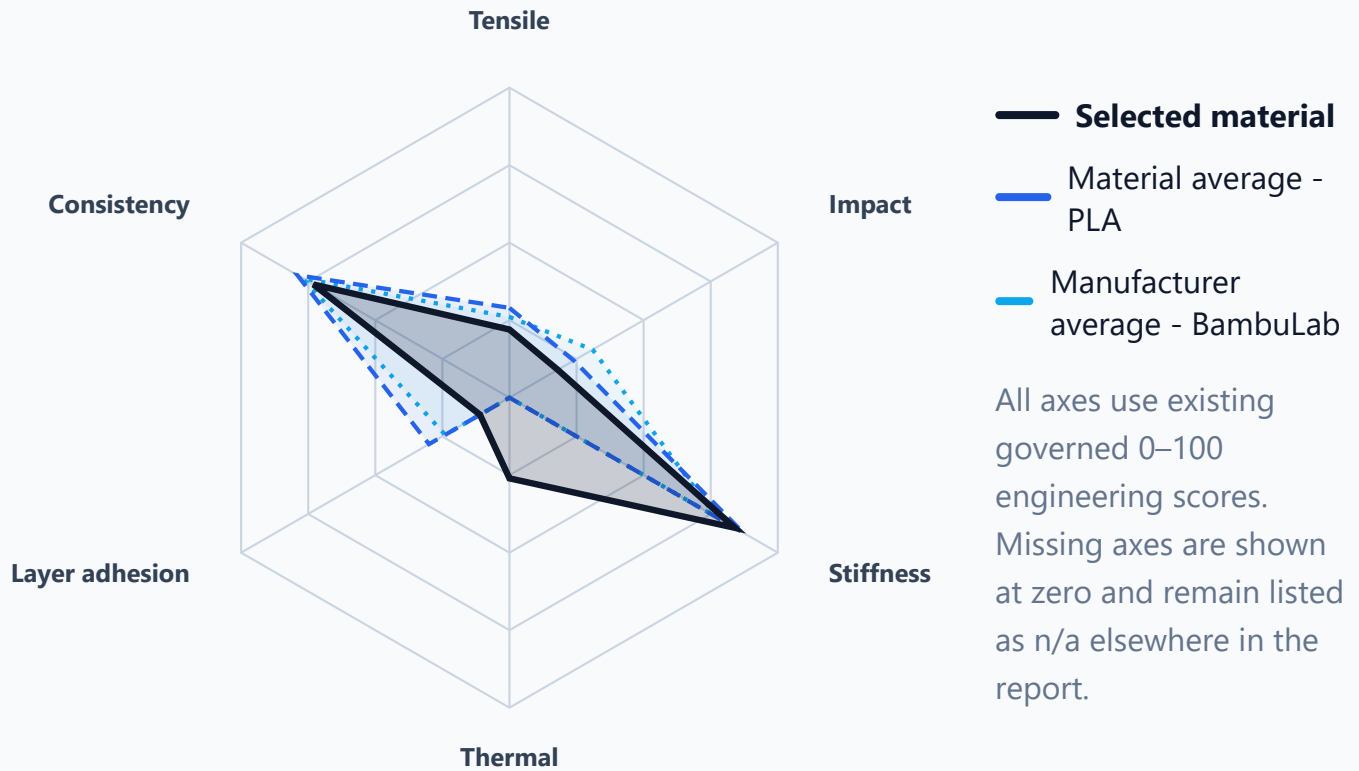
Overall	42/100
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Tensile	22/100
Impact	18/100
Stiffness	84/100
Consistency	73/100
Layer adhesion	11/100
Thermal	26/100
Best available axis	stiffness

Engineering score profile



Engineering radar



Fixture thermal result

52 °C · score 26/100 · 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	42/100	50/100	47/100
Tensile	22/100	29/100	26/100
Impact	18/100	24/100	31/100
Stiffness	84/100	87/100	77/100
Consistency	73/100	79/100	77/100
Layer adhesion	11/100	30/100	24/100
Thermal	26/100	—	—

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	3.538 MPa	1.777 MPa	50.2%	8	8/10
Tensile flat	31.746 MPa	4.37 MPa	13.8%	10	10/10
Impact upright	122.092 kJ/m ²	29.529 kJ/m ²	24.2%	10	10/10
Impact flat	242.878 kJ/m ²	43.096 kJ/m ²	17.7%	10	10/10
Stiffness modulus	2510.37 MPa	—	—	—	—
Stiffness deflection	2.162 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 Standard Black Walnut PLA Wood Brown has a specialized or limited engineering profile. It is below its material-family average by 8,5 points and below its manufacturer average by 5,4 points. Its strongest measured axis is Stiffness, while the weakest axis is Layer Adhesion.

Data-driven review: BambuLab Standard Black Walnut PLA Wood Brown 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 20% overall, is below the material-family average by 8,5 points, and is below the manufacturer average by 5,4 points. 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 20%
189 / 234

Strengths

- Consistency: 73/100. Repeatability is one of the stronger signals in this material profile.
- Stiffness: 84/100. Stiffness is a relative advantage in this comparison group.

Limitations

- Tensile: 22/100. Avoid using this as the primary choice for tensile-loaded parts.
- Impact: 18/100. Avoid high impact or shock-loaded components without additional validation.
- Layer adhesion: 11/100. 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
- Repeatable print jobs and production-style batches
- 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	42/100	189 / 234	Better than 20%
Tensile	22/100	163 / 226	Better than 28%
Impact	18/100	154 / 226	Better than 32%
Stiffness	84/100	103 / 223	Better than 54%
Consistency	73/100	178 / 231	Better than 23%
Layer adhesion	11/100	193 / 226	Better than 15%
Thermal	26/100	155 / 209	Better than 26%

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
MAT0069	ProtoPasta HTPLA Blood of My Enemies PLA Red	ProtoPasta	100/100	—	—
MAT0079	Polymaker PolyLight PLA Pro Black	Polymaker	65/100	35/100	52/100
MAT0109	Polymaker PolyMax PLA Black	Polymaker	64/100	32/100	62/100

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
MAT0069	ProtoPasta HTPLA Blood of My Enemies PLA Red	ProtoPasta	100/100	—	—

MaterialID	Material	Manufacturer	Overall	Tensile	Impact
MAT0079	Polymaker PolyLight PLA Pro Black	Polymaker	65/100	35/100	52/100
MAT0109	Polymaker PolyMax PLA Black	Polymaker	64/100	32/100	62/100
MAT0080	Polymaker PolySonic PLA Pro Blue	Polymaker	64/100	30/100	58/100
MAT0076	BambuLab Tough+ PLA Tough+ Black	BambuLab	63/100	26/100	59/100
MAT0108	Polymaker PolyLight PLA Black	Polymaker	61/100	33/100	14/100
MAT0074	Winkle Matte PLA Matte Red	Winkle	60/100	34/100	—
MAT0122	Add:North Enhanced PLA Clear	Add:North	59/100	40/100	10/100

Public links

[Manufacturer website](#) [Download PDF](#)

Methodology and limitations

Results are comparative 3DPrinted 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](#)