

Sunlu Standard Black PLA High Speed Black

Material Engineering Report
MaterialID MAT0187

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

\$18.28 USD/kg

Material identity

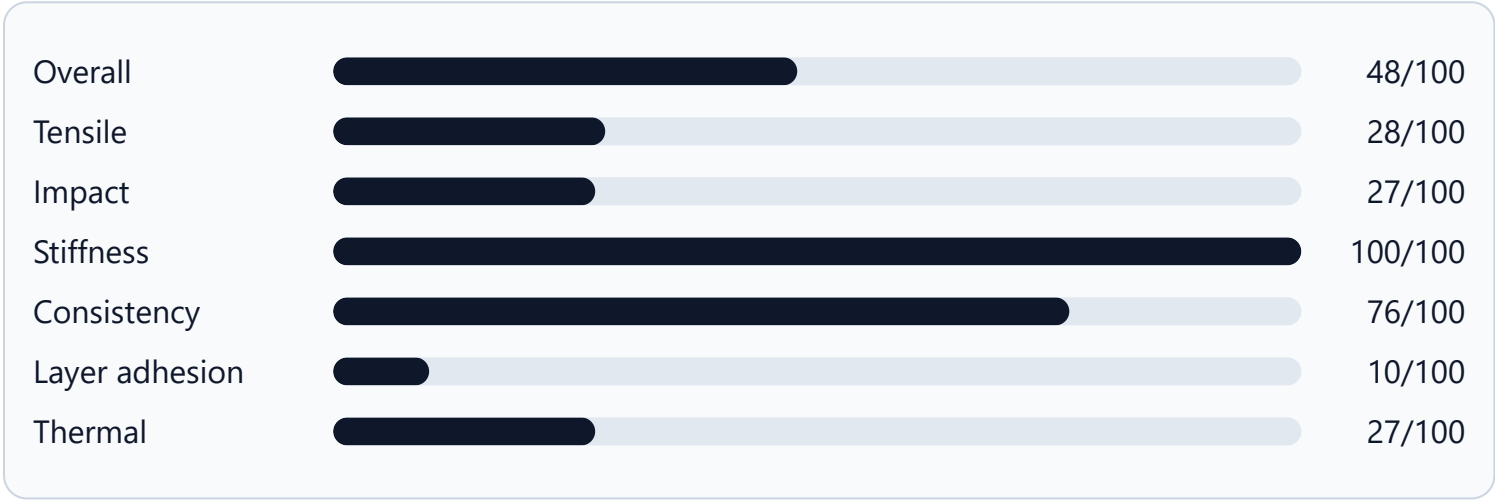
MaterialID	MAT0187
Material	Sunlu Standard Black PLA High Speed Black
Manufacturer	Sunlu
Product line	Standard
Base material	PLA
Category	Standard
Variant / finish	High Speed
Reinforcement	—
Color	Black

Governed engineering profile

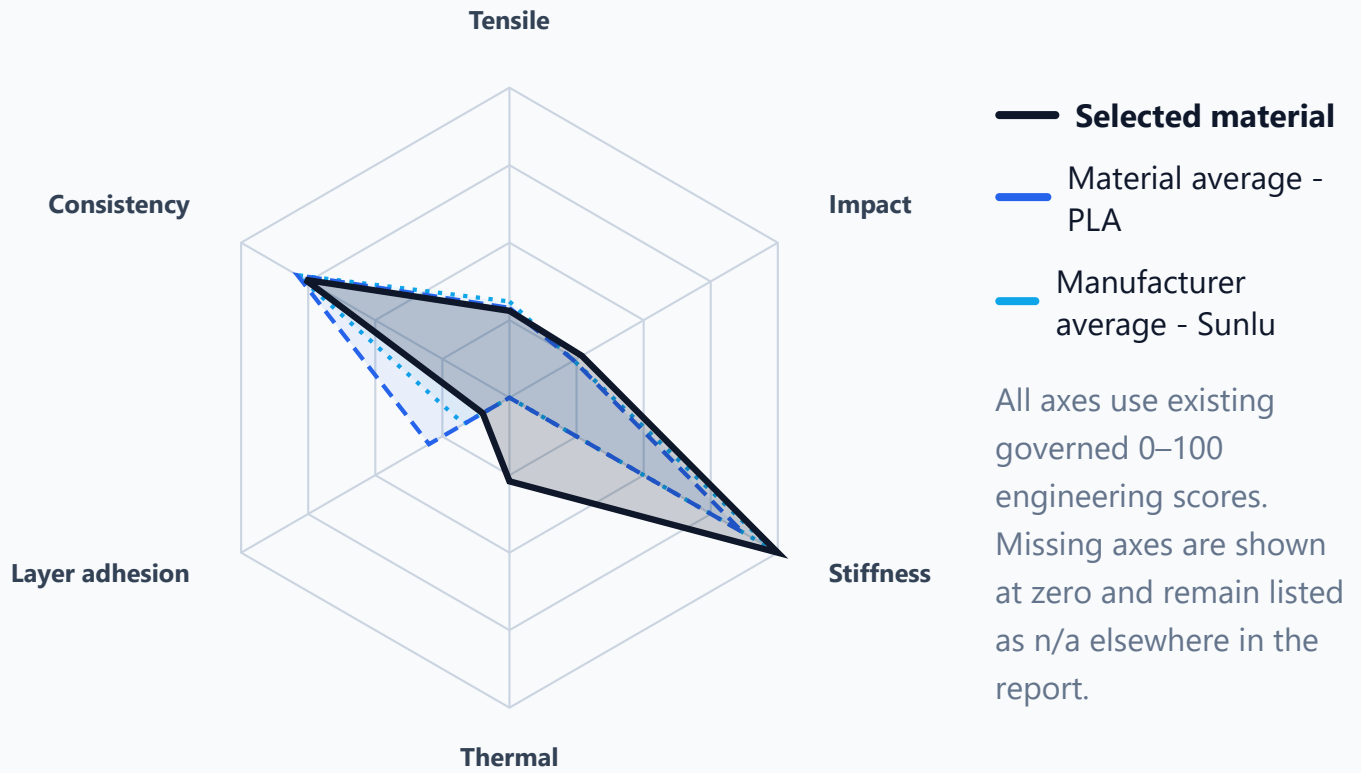
Overall	48/100
Tensile	28/100

Impact	27/100
Stiffness	100/100
Consistency	76/100
Layer adhesion	10/100
Thermal	27/100
Best available axis	stiffness

Engineering score profile



Engineering radar



Fixture thermal result

54 °C · score 27/100 · 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	48/100	50/100	50/100
Tensile	28/100	29/100	31/100
Impact	27/100	24/100	24/100
Stiffness	100/100	87/100	98/100
Consistency	76/100	79/100	79/100
Layer adhesion	10/100	30/100	17/100
Thermal	27/100	—	—

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	4.199 MPa	2.635 MPa	62.8%	10	10/10
Tensile flat	41.359 MPa	5.283 MPa	12.8%	10	10/10
Impact upright	170.754 kJ/m ²	21.706 kJ/m ²	12.7%	10	10/10
Impact flat	363.733 kJ/m ²	32.671 kJ/m ²	9%	10	10/10
Stiffness modulus	3127.326 MPa	—	—	—	—
Stiffness deflection	1.735 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: Sunlu Standard Black PLA High Speed Black has a specialized or limited engineering profile. It is below its material-family average by 1,9 points and below its manufacturer average by 1,6 points. Its strongest measured axis is Stiffness, while the weakest axis is Layer Adhesion.

Data-driven review: Sunlu Standard Black PLA High Speed 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 57% 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 57%
102 / 234

Strengths

- Consistency: 76/100. Repeatability is one of the stronger signals in this material profile.
- Stiffness: 100/100. Stiffness is a relative advantage in this comparison group.

Limitations

- Tensile: 28/100. Avoid using this as the primary choice for tensile-loaded parts.
- Impact: 27/100. Avoid high impact or shock-loaded components without additional validation.
- Layer adhesion: 10/100. 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	48/100	102 / 234	Better than 57%
Tensile	28/100	115 / 226	Better than 50%
Impact	27/100	82 / 226	Better than 64%
Stiffness	100/100	1 / 223	Better than 100%
Consistency	76/100	155 / 231	Better than 33%
Layer adhesion	10/100	205 / 226	Better than 10%
Thermal	27/100	119 / 209	Better than 44%

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 3DPlceland 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](#)