

Bedrock 3D

Standard Black PLA

Black

Material Engineering Report
MaterialID MAT0249

3DPiceland Engineering Platform
3DPiceland Labs

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IMPACT-METHODOLOGY - Izod and Charpy Methodology
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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.

RIGID TEST COVERAGE

Complete; 5/5 score families; Izod/Charpy 2/2 measured, 2/2 scored; Overall eligible; policy engineering-score-v70-1

ENGINEERING AXES

7/8

PUBLIC MSRP

\$22.96 USD/kg

Material identity

MaterialID	MAT0249
Material	Bedrock 3D Standard Black PLA Black
Manufacturer	Bedrock 3D
Product line	Standard
Base material	PLA
Category	Standard
Variant / finish	—
Reinforcement	—

Color	Black
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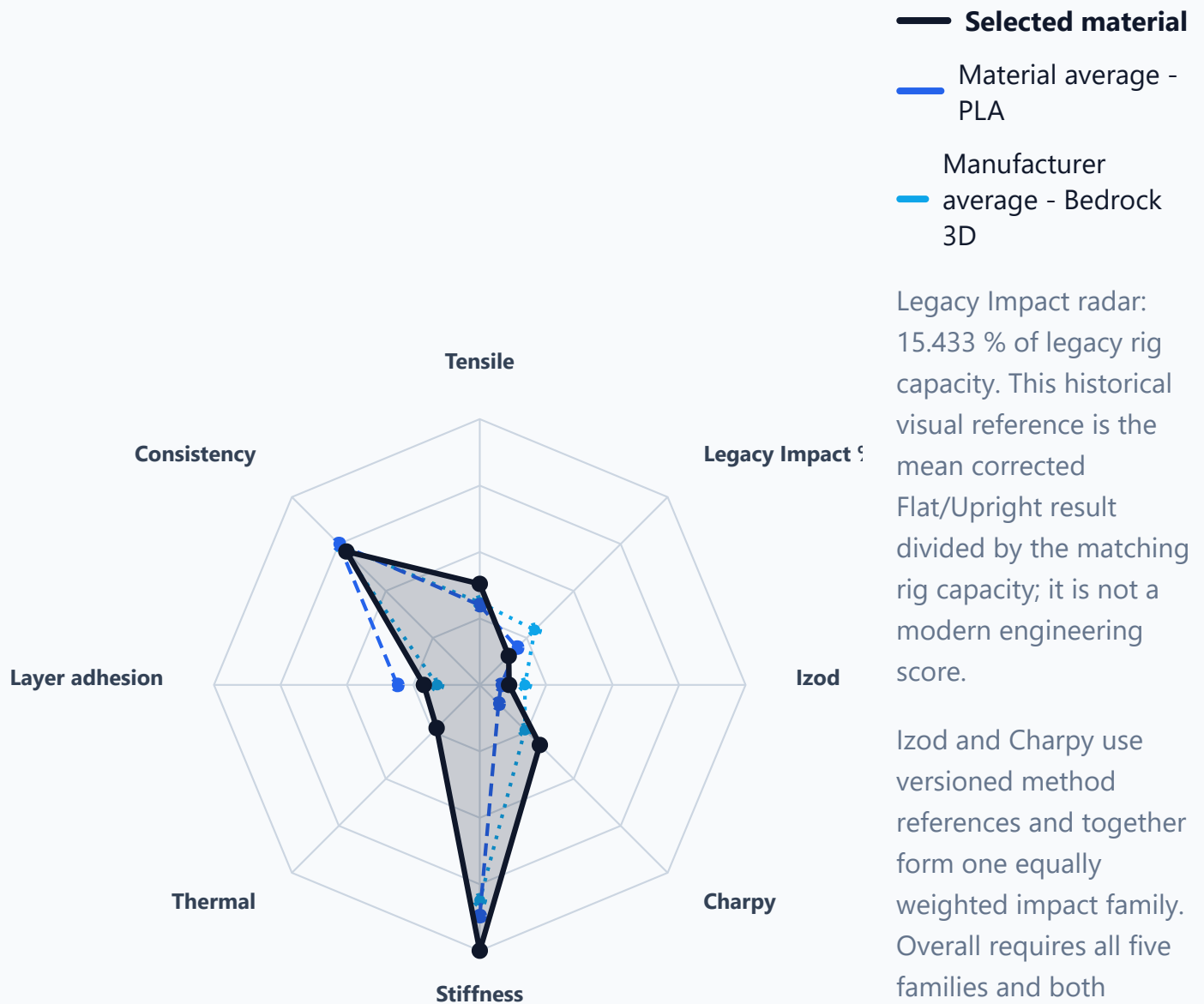
Governed engineering profile

Overall	50/100
Tensile	38/100
Impact	—
Izod	11/100
Charpy	32/100
Stiffness	100/100
Consistency	71/100
Layer adhesion	21/100
Thermal	23/100
Best available axis	stiffness

Engineering score profile



Engineering radar



Legacy Impact radar: 15.433 % of legacy rig capacity. This historical visual reference is the mean corrected Flat/Upright result divided by the matching rig capacity; it is not a modern engineering score.

Izod and Charpy use versioned method references and together form one equally weighted impact family. Overall requires all five families and both calibrated methods; incomplete profiles are not ranked. Legacy Impact and thermal are outside Overall. Missing axes have gaps with no marker or filled polygon; measured zero retains a centre marker.

Fixture thermal result

46 °C · score 23/100 · 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	50/100	—	—
Tensile	38/100	30/100	31/100
Impact	—	—	—
Izod	11/100	8/100	17/100
Charpy	32/100	10/100	24/100
Stiffness	100/100	87/100	81/100
Consistency	71/100	75/100	74/100
Layer adhesion	21/100	31/100	16/100
Thermal	23/100	—	—

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	10.613 MPa	4.361 MPa	41.1%	10	10/10
Tensile flat	49.572 MPa	6.07 MPa	12.2%	10	10/10
Impact upright	4.895 kJ/m ²	0.758 kJ/m ²	15.5%	10	10/10
Impact flat	12.69 kJ/m ²	1.366 kJ/m ²	10.8%	10	10/10
Izod	8.999 kJ/m ²	3.793 kJ/m ²	42.1%	10	10/10
Charpy	25.357 kJ/m ²	4.877 kJ/m ²	19.2%	9	9/10
Stiffness modulus	3181.245 MPa	—	—	—	—
Stiffness deflection	1.706 mm	—	—	—	—

Measurement provenance

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

Module	Measured date
Tensile	2026-09-06
Impact	2026-09-11
Izod	2026-09-29
Charpy	2026-09-29
Stiffness	2026-09-06
Thermal	2026-09-07

Engineering interpretation

Summary: Bedrock 3D Standard Black PLA Black has a specialized or limited engineering profile. It is without enough material-family average context and without enough manufacturer average context. Its strongest measured axis is Stiffness, while the weakest axis is Izod.

Data-driven review: Bedrock 3D Standard Black PLA 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 85% overall, is missing enough context for the material-family average, and is missing enough context for the manufacturer average. Its strongest engineering signal is Stiffness, while Izod is the main limitation to consider before using it for demanding applications.

BEST FEATURE

Stiffness

MAIN LIMITATION

Izod

DATASET POSITION

Better than 85%
13 / 80

Strengths

- Consistency: 71/100. Repeatability is one of the stronger signals in this material profile.
- Izod/Charpy impact family: 21/100. The two-method impact score is competitive against the material-family context.
- Tensile: 38/100. Tensile behavior is competitive against the material-family context.
- Stiffness: 100/100. Stiffness is a relative advantage in this comparison group.

Limitations

- Tensile: 38/100. Avoid using this as the primary choice for tensile-loaded parts.
- Izod/Charpy impact family: 21/100. Validate impact or shock-loaded components against their application requirements.
- Layer adhesion: 21/100. 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.

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 impact components

Metric rankings and percentiles

Metric	Score	Rank	Percentile
Overall	50/100	13 / 80	Better than 85%
Tensile	38/100	27 / 243	Better than 89%
Impact	—	—	—
Izod	11/100	25 / 83	Better than 71%
Charpy	32/100	7 / 82	Better than 93%
Stiffness	100/100	1 / 240	Better than 100%

Metric	Score	Rank	Percentile
Consistency	71/100	169 / 243	Better than 31%
Layer adhesion	21/100	142 / 243	Better than 42%
Thermal	23/100	224 / 226	Better than 1%

Decision guidance

- Use this material for moderate requirements after checking the weakest axis.
- Review the listed alternatives if the application needs stronger overall performance.
- Validate impact-focused or shock-loaded designs against the measured Izod/Charpy results.

Better alternatives

MaterialID	Material	Manufacturer	Overall	Tensile	Impact	Izod	Charpy
MAT0265	Coex 3D Standard Scarlet Red PLA Red	Coex 3D	58/100	39/100	—		
MAT0118	Prusa3D Prusament Azure Blue PLA Blue	Prusa3D	55/100	36/100	—		

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	Izod	Charpy
MAT0265	Coex 3D Standard Scarlet Red PLA Red	Coex 3D	58/100	39/100	—	n/a	n/a
MAT0118	Prusa3D Prusament Azure Blue PLA Blue	Prusa3D	55/100	36/100	—	n/a	n/a
MAT0112	Prusa3D Prusament Galaxy Black PLA Black	Prusa3D	52/100	38/100	—	n/a	n/a
MAT0143	Prusa3D Prusament Corn Pigment PLA Recycled Brown	Prusa3D	52/100	30/100	—	n/a	n/a

MaterialID	Material	Manufacturer	Overall	Tensile	Impact	Izod	Charpy
MAT0203	Prusa3D Prusament Prusa Orange PLA Orange	Prusa3D	52/100	42/100	—	n/a	n/a
MAT0264	Coex 3D Prime Scarlet Red PLA Red	Coex 3D	52/100	34/100	—	n/a	n/a
MAT0205	Prusa3D Prusament Marble Gray PLA Marble Gray	Prusa3D	51/100	37/100	—	n/a	n/a
MAT0204	Prusa3D Prusament Jet Black PLA Black	Prusa3D	51/100	40/100	—	n/a	n/a

Public links

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

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](#)

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Izod and Charpy Impact Strength

Izod Impact Strength · 2026-09-29
Instrument readings in kJ/m²
Mean 8.999 kJ/m²; Std. Dev 3.793 kJ/m²; CV 42.147%; Samples 10; Confidence 10
No break 0; invalid 0; excluded 0.
Comparative measurements; standard conformity unverified.

Charpy Impact Strength · 2026-09-29
Instrument readings in kJ/m²
Mean 25.357 kJ/m²; Std. Dev 4.877 kJ/m²; CV 19.234%; Samples 9; Confidence 9
No break 0; invalid 0; excluded 0.
Comparative measurements; standard conformity unverified.