

Bedrock 3D Standard Black PET CF Black

Material Engineering Report
MaterialID MAT0251

3DPiceland Engineering Platform
3DPiceland Labs

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IMPACT-METHODOLOGY - Izod and Charpy Methodology
Generated 2026-10-04 18:07:33

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

\$97.31 USD/kg

Material identity

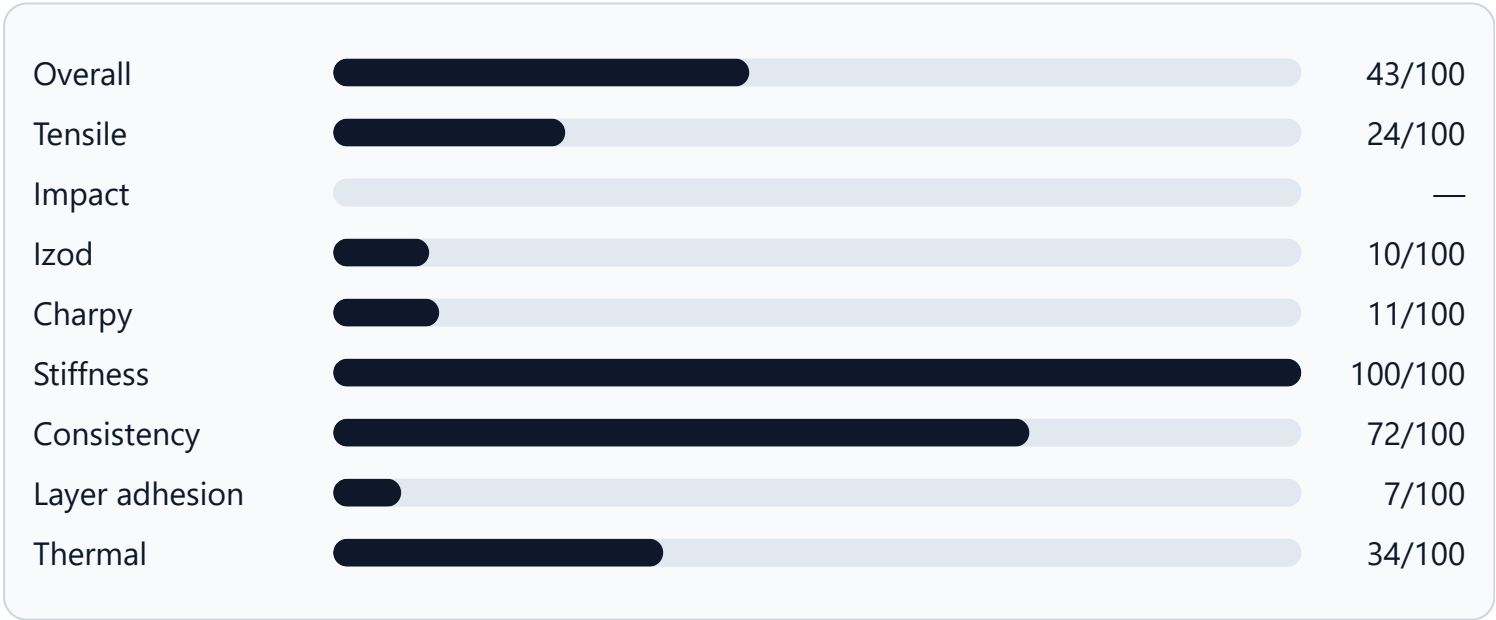
MaterialID	MAT0251
Material	Bedrock 3D Standard Black PET CF Black
Manufacturer	Bedrock 3D
Product line	Standard
Base material	PET
Category	Engineering
Variant / finish	—
Reinforcement	CF

Color	Black
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Governed engineering profile

Overall	43/100
Tensile	24/100
Impact	—
Izod	10/100
Charpy	11/100
Stiffness	100/100
Consistency	72/100
Layer adhesion	7/100
Thermal	34/100
Best available axis	stiffness

Engineering score profile



Engineering radar

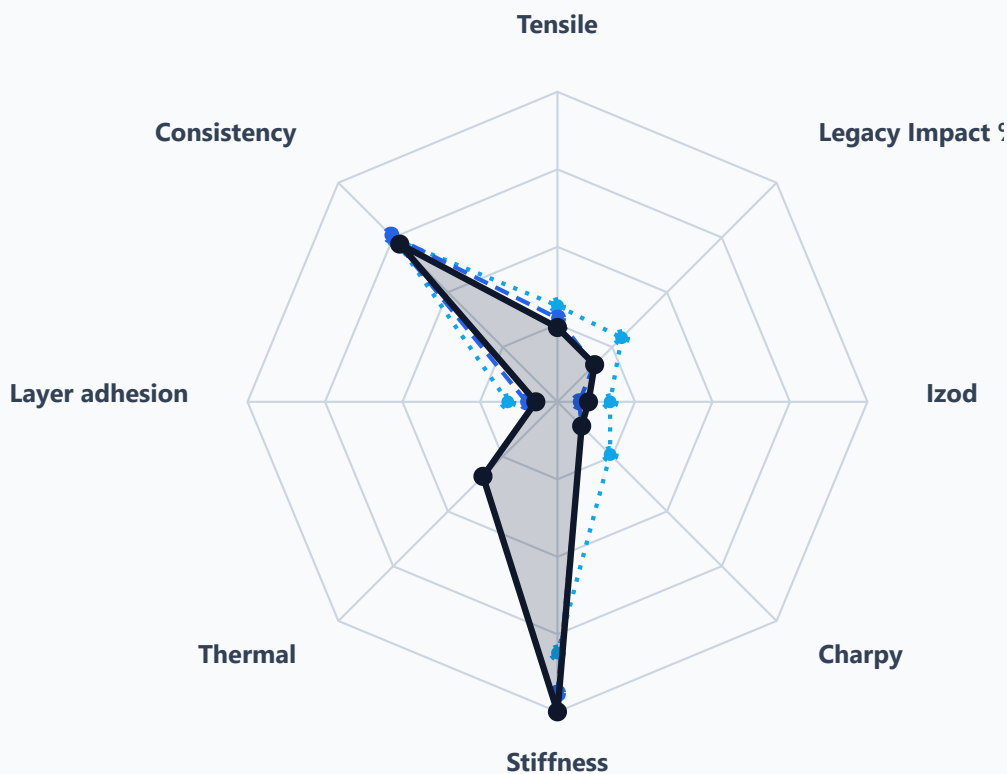
— Selected material

— Material average - PET

— Manufacturer average - Bedrock 3D

Legacy Impact radar: 16.984 % 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

67 °C · score 34/100 · 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	43/100	43/100	—
Tensile	24/100	27/100	31/100
Impact	—	—	—
Izod	10/100	7/100	17/100
Charpy	11/100	11/100	24/100
Stiffness	100/100	94/100	81/100
Consistency	72/100	76/100	74/100
Layer adhesion	7/100	10/100	16/100
Thermal	34/100	—	—

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	2.439 MPa	1.135 MPa	46.5%	7	7/10
Tensile flat	36.253 MPa	9.882 MPa	27.3%	10	10/10
Impact upright	6.208 kJ/m ²	1.564 kJ/m ²	25.2%	10	10/10
Impact flat	13.145 kJ/m ²	1.77 kJ/m ²	13.5%	10	10/10
Izod	7.8 kJ/m ²	1.24 kJ/m ²	15.9%	10	10/10
Charpy	8.932 kJ/m ²	1.51 kJ/m ²	16.9%	9	9/10
Stiffness modulus	4612.806 MPa	—	—	—	—
Stiffness deflection	1.176 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	2026-09-28
Stiffness	2026-09-06
Thermal	2026-09-07

Engineering interpretation

Summary: Bedrock 3D Standard Black PET CF Black has a specialized or limited engineering profile. It is below its material-family average by 0,8 points and without enough manufacturer average context. Its strongest measured axis is Stiffness, while the weakest axis is Layer Adhesion.

Data-driven review: Bedrock 3D Standard Black 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 49% overall, is roughly aligned with the material-family average, and is missing enough context for 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 49%
42 / 80

Strengths

- Consistency: 72/100. 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: 24/100. Avoid using this as the primary choice for tensile-loaded parts.
- Izod/Charpy impact family: 10/100. Validate impact or shock-loaded components against their application requirements.
- Layer adhesion: 7/100. 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	43/100	42 / 80	Better than 49%
Tensile	24/100	168 / 243	Better than 31%
Impact	—	—	—
Izod	10/100	30 / 83	Better than 65%
Charpy	11/100	28 / 82	Better than 67%
Stiffness	100/100	1 / 240	Better than 100%

Metric	Score	Rank	Percentile
Consistency	72/100	165 / 243	Better than 33%
Layer adhesion	7/100	238 / 243	Better than 2%
Thermal	34/100	75 / 226	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.
- Validate impact-focused or shock-loaded designs against the measured Izod/Charpy results.

Better alternatives

MaterialID	Material	Manufacturer	Overall	Tensile	Impact	Izod	Charpy
MAT0195	Siraya Tech Fiberheart Black PET CF Black	Siraya Tech	50/100	35/100	—		

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
MAT0195	Siraya Tech Fiberheart Black PET CF Black	Siraya Tech	50/100	35/100	—	n/a	n/a
MAT0166	BambuLab Basic PET CF Black	BambuLab	45/100	25/100	—	n/a	n/a
MAT0206	Siraya Tech Fiberheart Brown PET GF Brown	Siraya Tech	42/100	32/100	—	n/a	n/a
MAT0252	Bedrock 3D Standard Natural PET Natural	Bedrock 3D	37/100	20/100	—	n/a	n/a

Public links

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](#)

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Izod and Charpy Impact Strength

Charpy Impact Strength · 2026-09-28

Instrument readings in kJ/m^2

Mean 8.932 kJ/m^2 ; Std. Dev 1.51 kJ/m^2 ; CV 16.904%; Samples 9; Confidence 9

No break 0; invalid 0; excluded 0.

Comparative measurements; standard conformity unverified.

Izod Impact Strength · 2026-09-29

Instrument readings in kJ/m^2

Mean 7.8 kJ/m^2 ; Std. Dev 1.24 kJ/m^2 ; CV 15.892%; Samples 10; Confidence 10

No break 0; invalid 0; excluded 0.

Comparative measurements; standard conformity unverified.