

3D Fuel PCTG PCTG Pro CF Black

Material Engineering Report
MaterialID MAT0039

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

\$54.95 USD/kg

Material identity

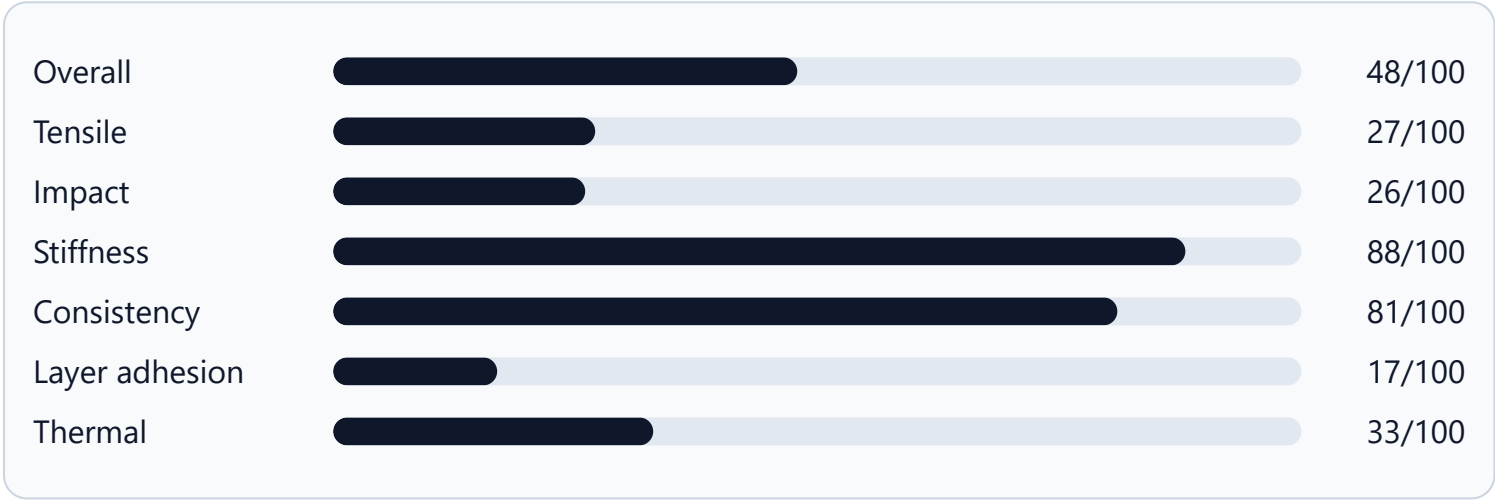
MaterialID	MAT0039
Material	3D Fuel PCTG PCTG Pro CF Black
Manufacturer	3D Fuel
Product line	PCTG
Base material	PCTG
Category	Standard
Variant / finish	Pro
Reinforcement	CF
Color	Black

Governed engineering profile

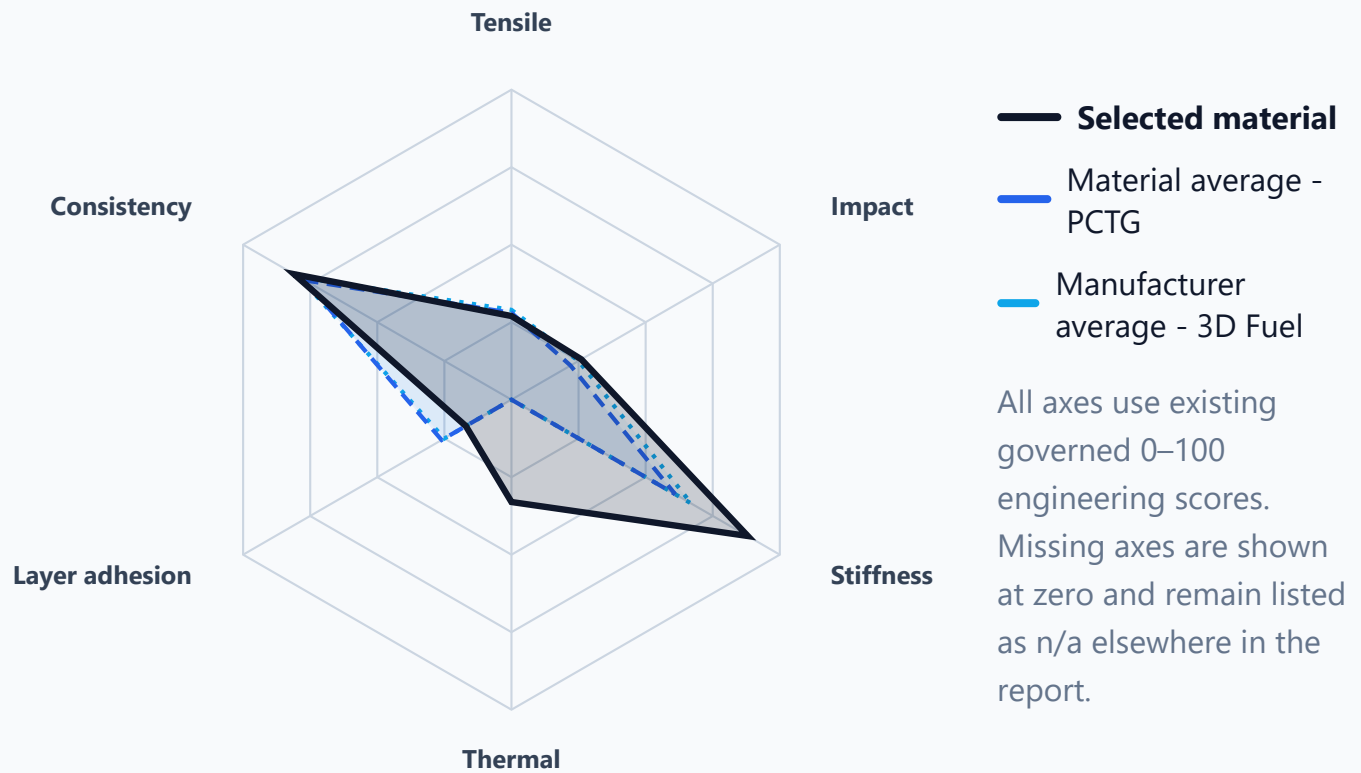
Overall	48/100
Tensile	27/100

Impact	26/100
Stiffness	88/100
Consistency	81/100
Layer adhesion	17/100
Thermal	33/100
Best available axis	stiffness

Engineering score profile



Engineering radar



Fixture thermal result

65 °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	48/100	43/100	45/100
Tensile	27/100	28/100	29/100
Impact	26/100	22/100	25/100
Stiffness	88/100	61/100	67/100
Consistency	81/100	77/100	79/100
Layer adhesion	17/100	26/100	25/100
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	6.494 MPa	2.888 MPa	44.5%	9	9/10
Tensile flat	37.437 MPa	6.628 MPa	17.7%	10	10/10
Impact upright	100.775 kJ/m ²	8.004 kJ/m ²	7.9%	10	10/10
Impact flat	413.906 kJ/m ²	19.624 kJ/m ²	4.7%	10	10/10
Stiffness modulus	2635.889 MPa	—	—	—	—
Stiffness deflection	2.059 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: 3D Fuel PCTG PCTG Pro CF Black has a specialized or limited engineering profile. It is above its material-family average by 5,1 points and above its manufacturer average by 3,1 points. Its strongest measured axis is Stiffness, while the weakest axis is Layer Adhesion.

Data-driven review: 3D Fuel PCTG PCTG Pro 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 56% overall, is above the material-family average by 5,1 points, and is above the manufacturer average by 3,1 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 56%
105 / 234

Strengths

- Consistency: 81/100. Repeatability is one of the stronger signals in this material profile.
- Stiffness: 88/100. Stiffness is a relative advantage in this comparison group.

Limitations

- Tensile: 27/100. Avoid using this as the primary choice for tensile-loaded parts.
- Impact: 26/100. 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
- 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	105 / 234	Better than 56%
Tensile	27/100	122 / 226	Better than 46%
Impact	26/100	85 / 226	Better than 63%
Stiffness	88/100	83 / 223	Better than 63%
Consistency	81/100	68 / 231	Better than 71%
Layer adhesion	17/100	151 / 226	Better than 34%
Thermal	33/100	73 / 209	Better than 66%

Decision guidance

- Use this material mainly for low-load, visual or experimental parts.
- 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
No stronger same-base-material alternatives were identified in the current governed dataset.					

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
MAT0041	3D Fuel PCTG Cobalt Blue PCTG Pro Blue	3D Fuel	44/100	34/100	17/100
MAT0227	Spectrum Smart Sky Blue PCTG Blue	Spectrum	43/100	34/100	23/100
MAT0040	3D Fuel PCTG Toolbox Red PCTG Pro GF Red	3D Fuel	42/100	25/100	31/100
MAT0238	Yasin Standard Green PCTG Green	Yasin	37/100	22/100	12/100

Public links

[Manufacturer website](#) [Video review](#) [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](#)