

3D Fuel PCTG Toolbox

Red PCTG Pro GF Red

Material Engineering Report
MaterialID MAT0040

3DPiceland Engineering Platform
3DPiceland Labs
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WORKFLOW-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

\$59.95 USD/kg

Material identity

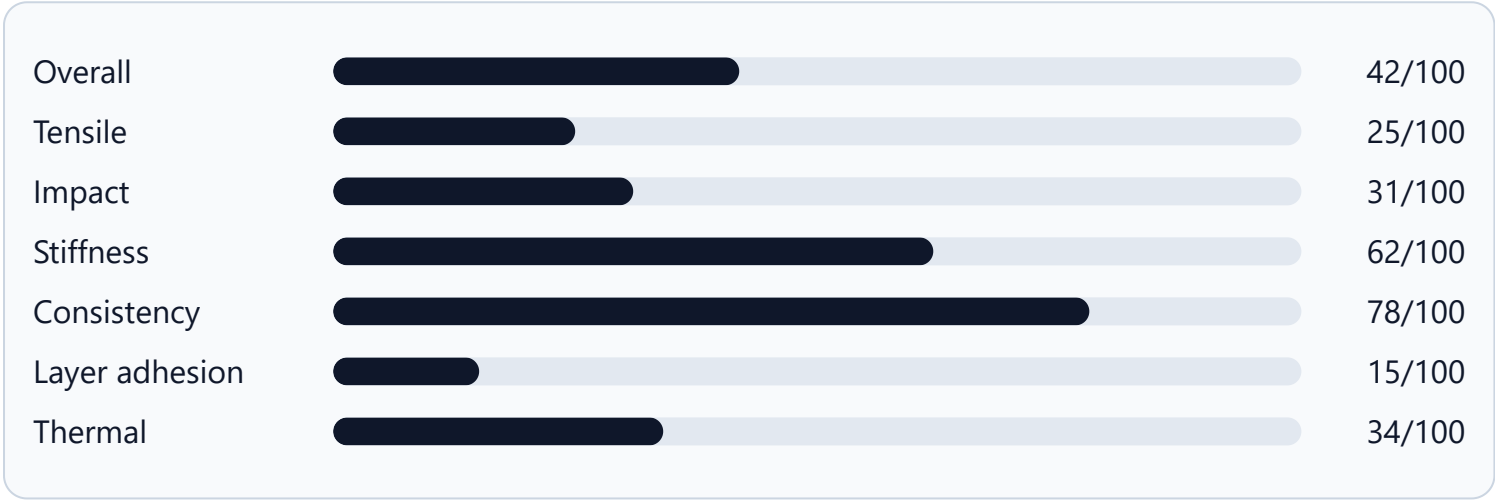
MaterialID	MAT0040
Material	3D Fuel PCTG Toolbox Red PCTG Pro GF Red
Manufacturer	3D Fuel
Product line	PCTG
Base material	PCTG
Category	Standard
Variant / finish	Pro
Reinforcement	GF
Color	Red

Governed engineering profile

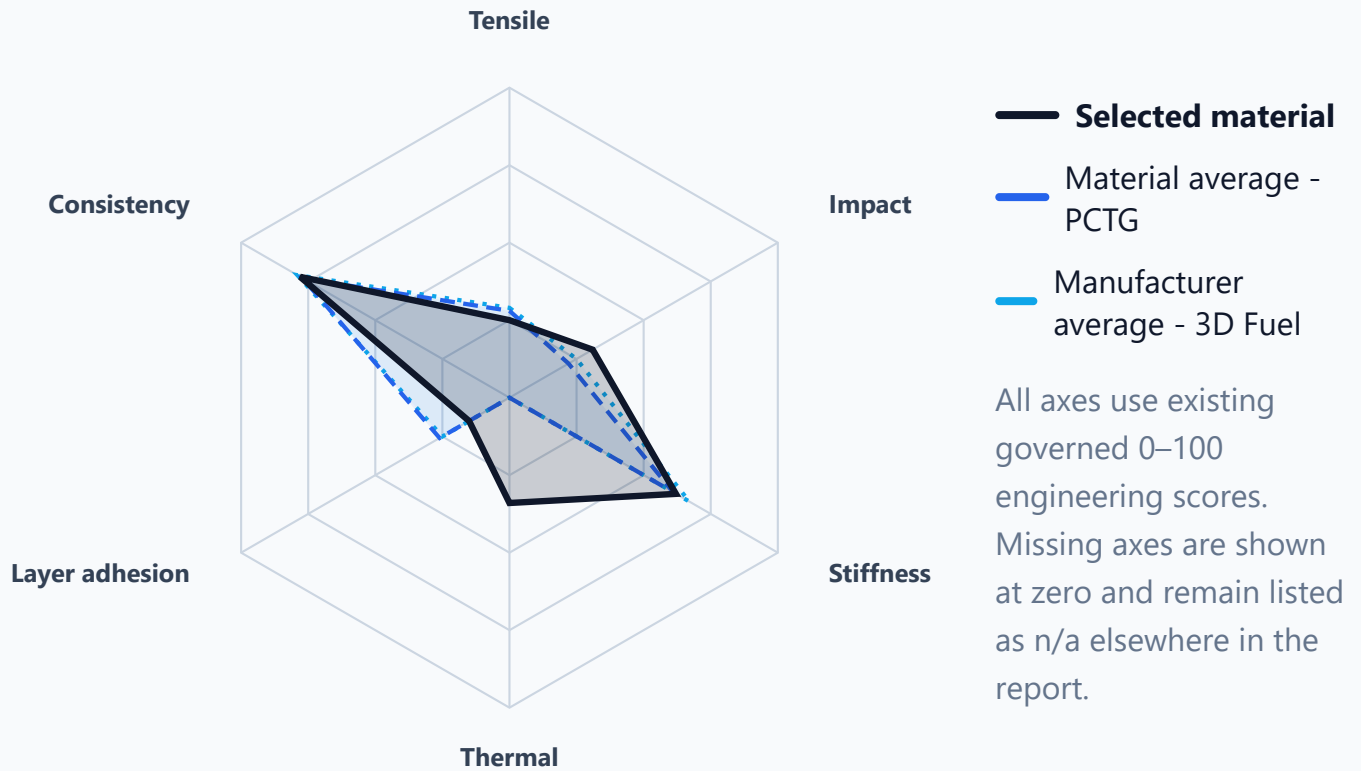
Overall	42/100
Tensile	25/100

Impact	31/100
Stiffness	62/100
Consistency	78/100
Layer adhesion	15/100
Thermal	34/100
Best available axis	consistency

Engineering score profile



Engineering radar



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	42/100	43/100	45/100
Tensile	25/100	28/100	29/100
Impact	31/100	22/100	25/100
Stiffness	62/100	61/100	67/100
Consistency	78/100	77/100	79/100
Layer adhesion	15/100	26/100	25/100
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	5.287 MPa	2.29 MPa	43.3%	8	8/10
Tensile flat	35.407 MPa	3.999 MPa	11.3%	10	10/10
Impact upright	102.492 kJ/m ²	17.821 kJ/m ²	17.4%	10	10/10
Impact flat	508.692 kJ/m ²	66.143 kJ/m ²	13%	10	10/10
Stiffness modulus	1845.122 MPa	—	—	—	—
Stiffness deflection	2.941 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 Toolbox Red PCTG Pro GF Red has a specialized or limited engineering profile. It is below its material-family average by 0,7 points and below its manufacturer average by 2,7 points. Its strongest measured axis is Consistency, while the weakest axis is Layer Adhesion.

Data-driven review: 3D Fuel PCTG Toolbox Red PCTG Pro GF Red 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 23% overall, is roughly aligned with the material-family average, and is roughly aligned with the manufacturer average. Its strongest engineering signal is Consistency, while Layer Adhesion is the main limitation to consider before using it for demanding applications.

BEST FEATURE

Consistency

MAIN LIMITATION

Layer Adhesion

DATASET POSITION

Better than 23%
182 / 234

Strengths

- Consistency: 78/100. Repeatability is one of the stronger signals in this material profile.
- Impact: 31/100. Impact behavior is competitive against the material-family context.

Limitations

- Tensile: 25/100. Avoid using this as the primary choice for tensile-loaded parts.
- Impact: 31/100. Avoid high impact or shock-loaded components without additional validation.
- Layer adhesion: 15/100. Z-axis performance should be treated with caution.

Engineering trade-offs

- Good repeatability does not compensate for low tensile capability in load-bearing designs.
- The report should be read as a suitability warning rather than a general-purpose recommendation.

Recommended applications

- 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	182 / 234	Better than 23%

Metric	Score	Rank	Percentile
Tensile	25/100	147 / 226	Better than 35%
Impact	31/100	62 / 226	Better than 73%
Stiffness	62/100	181 / 223	Better than 19%
Consistency	78/100	114 / 231	Better than 51%
Layer adhesion	15/100	170 / 226	Better than 25%
Thermal	34/100	69 / 209	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.
- Avoid selecting it for impact-focused testing or shock-loaded designs.

Better alternatives

MaterialID	Material	Manufacturer	Overall	Tensile	Impact
MAT0039	3D Fuel PCTG PCTG Pro CF Black	3D Fuel	48/100	27/100	26/100

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
MAT0039	3D Fuel PCTG PCTG Pro CF Black	3D Fuel	48/100	27/100	26/100
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
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](#)