

MatterHackers NylonX PA12 CF Black

Material Engineering Report
MaterialID MAT0019

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

\$126.00 USD/kg

Material identity

MaterialID	MAT0019
Material	MatterHackers NylonX PA12 CF Black
Manufacturer	MatterHackers
Product line	NylonX
Base material	PA12
Category	Engineering
Variant / finish	—
Reinforcement	CF
Color	Black

Governed engineering profile

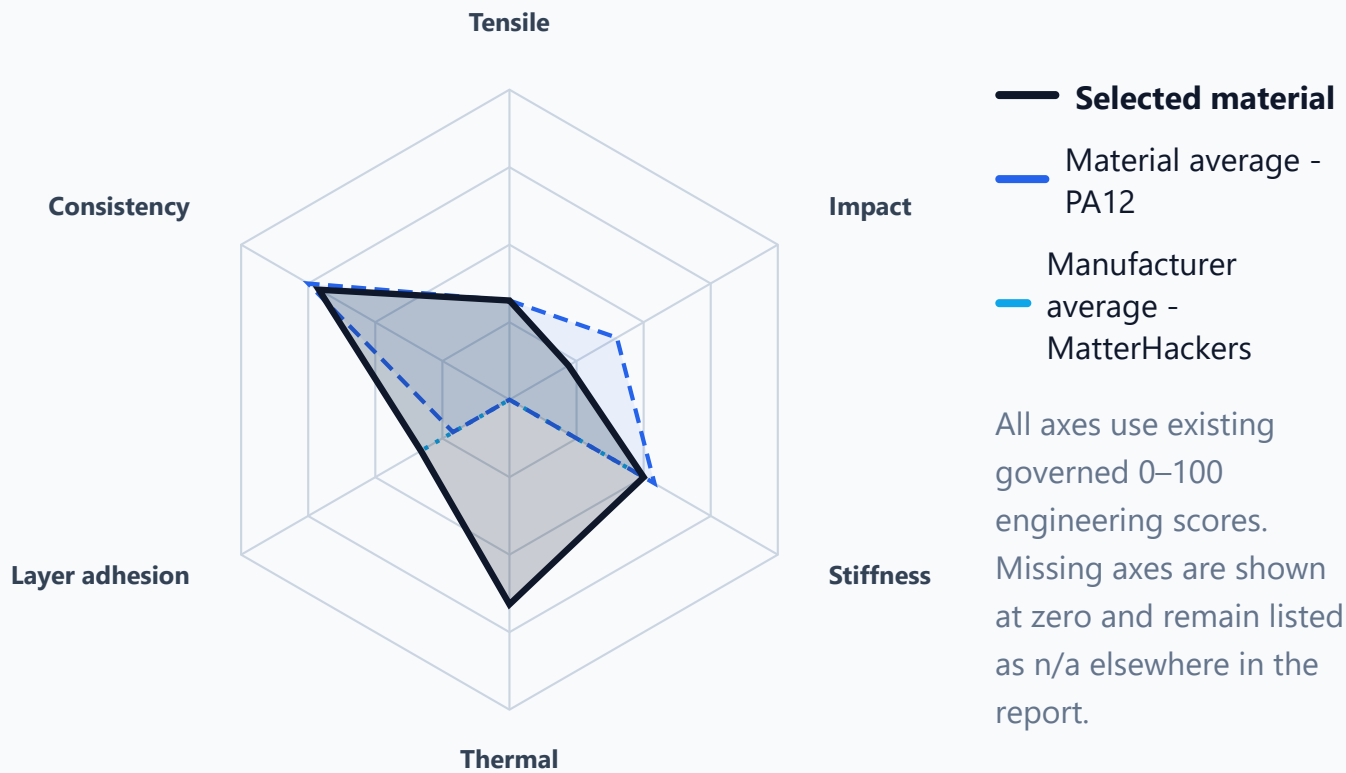
Overall	42/100
Tensile	32/100

Impact	22/100
Stiffness	50/100
Consistency	71/100
Layer adhesion	33/100
Thermal	66/100
Best available axis	consistency

Engineering score profile



Engineering radar



Fixture thermal result

131 °C · score 66/100 · 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	45/100	42/100
Tensile	32/100	32/100	32/100
Impact	22/100	40/100	22/100
Stiffness	50/100	54/100	50/100
Consistency	71/100	75/100	71/100
Layer adhesion	33/100	21/100	33/100
Thermal	66/100	—	—

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	12.735 MPa	2.373 MPa	18.6%	10	10/10
Tensile flat	38.175 MPa	4.81 MPa	12.6%	10	10/10
Impact upright	33.336 kJ/m ²	13.673 kJ/m ²	41%	10	10/10
Impact flat	410.531 kJ/m ²	169.697 kJ/m ²	41.3%	8	8/10
Stiffness modulus	1512.395 MPa	—	—	—	—
Stiffness deflection	3.588 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: MatterHackers NylonX PA12 CF Black has a specialized or limited engineering profile. It is below its material-family average by 2,8 points and above its manufacturer average by 0 points. Its strongest measured axis is Consistency, while the weakest axis is Impact.

Data-driven review: MatterHackers NylonX PA12 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 20% overall, is roughly aligned with the material-family average, and is roughly aligned with the manufacturer average. Its strongest engineering signal is Consistency, while Impact is the main limitation to consider before using it for demanding applications.

BEST FEATURE

Consistency

MAIN LIMITATION

Impact

DATASET POSITION

Better than 20%
188 / 234

Strengths

- Layer adhesion: 33/100. Z-axis bonding is better than the material-family context.
- Consistency: 71/100. Repeatability is one of the stronger signals in this material profile.

Limitations

- Tensile: 32/100. Avoid using this as the primary choice for tensile-loaded parts.
- Impact: 22/100. Avoid high impact or shock-loaded components without additional validation.
- Layer adhesion: 33/100. 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	188 / 234	Better than 20%

Metric	Score	Rank	Percentile
Tensile	32/100	80 / 226	Better than 65%
Impact	22/100	111 / 226	Better than 51%
Stiffness	50/100	205 / 223	Better than 9%
Consistency	71/100	195 / 231	Better than 16%
Layer adhesion	33/100	71 / 226	Better than 69%
Thermal	66/100	7 / 209	Better than 97%

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
MAT0214	Eryone Standard Black PA12 CF Black	Eryone	53/100	43/100	46/100
MAT0167	BambuLab Basic PA12 PAHT CF Black	BambuLab	51/100	39/100	41/100
MAT0020	Extrudr DuraPro PA12 Black	Extrudr	50/100	34/100	50/100

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
MAT0214	Eryone Standard Black PA12 CF Black	Eryone	53/100	43/100	46/100
MAT0167	BambuLab Basic PA12 PAHT CF Black	BambuLab	51/100	39/100	41/100
MAT0020	Extrudr DuraPro PA12 Black	Extrudr	50/100	34/100	50/100

MaterialID	Material	Manufacturer	Overall	Tensile	Impact
MAT0209	Eryone Standard Black PA12 GF Black	Eryone	49/100	33/100	67/100
MAT0022	Fillamentum FX256 PA12 Clear	Fillamentum	45/100	28/100	47/100
MAT0239	Yasin Standard Black PA12 CF Black	Yasin	41/100	33/100	25/100
MAT0196	Extrudr DuraPro Black PA12 CF Black	Extrudr	40/100	28/100	44/100
MAT0021	Yasin Standard Black PA12 Black	Yasin	31/100	22/100	13/100

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](#)