



ProtoPasta HTPLA Tangerine Orange PLA Orange

Material Engineering Report
MaterialID MAT0067

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
\$91.74 USD/kg

Material identity

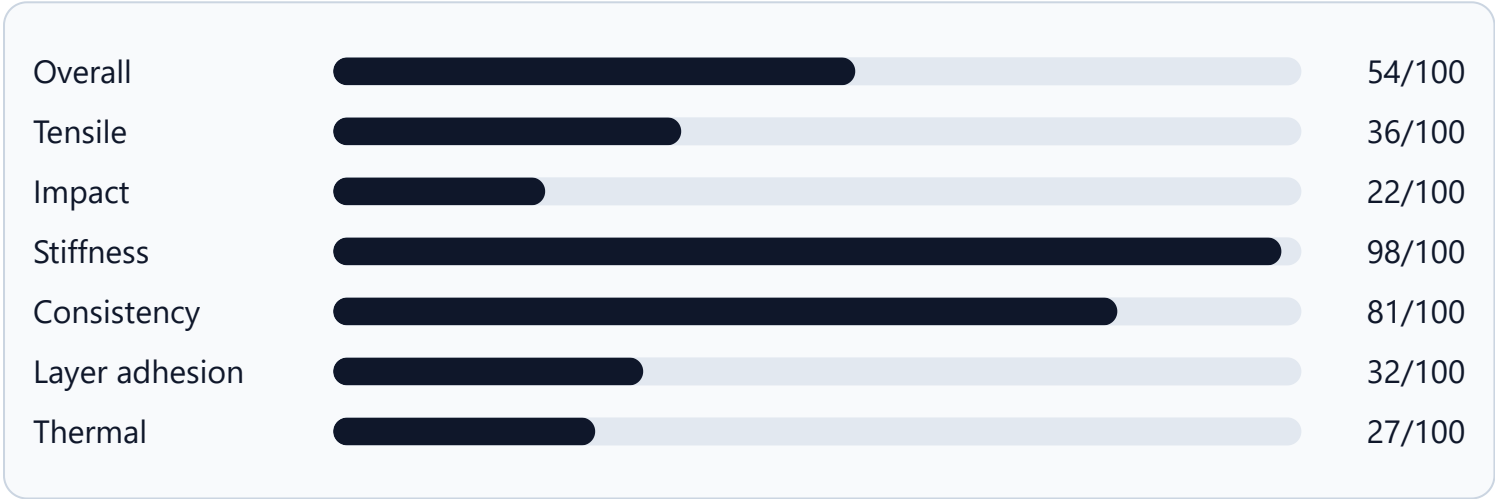
MaterialID	MAT0067
Material	ProtoPasta HTPLA Tangerine Orange PLA Orange
Manufacturer	ProtoPasta
Product line	HTPLA
Base material	PLA
Category	Standard
Variant / finish	—
Reinforcement	—
Color	Orange

Governed engineering profile

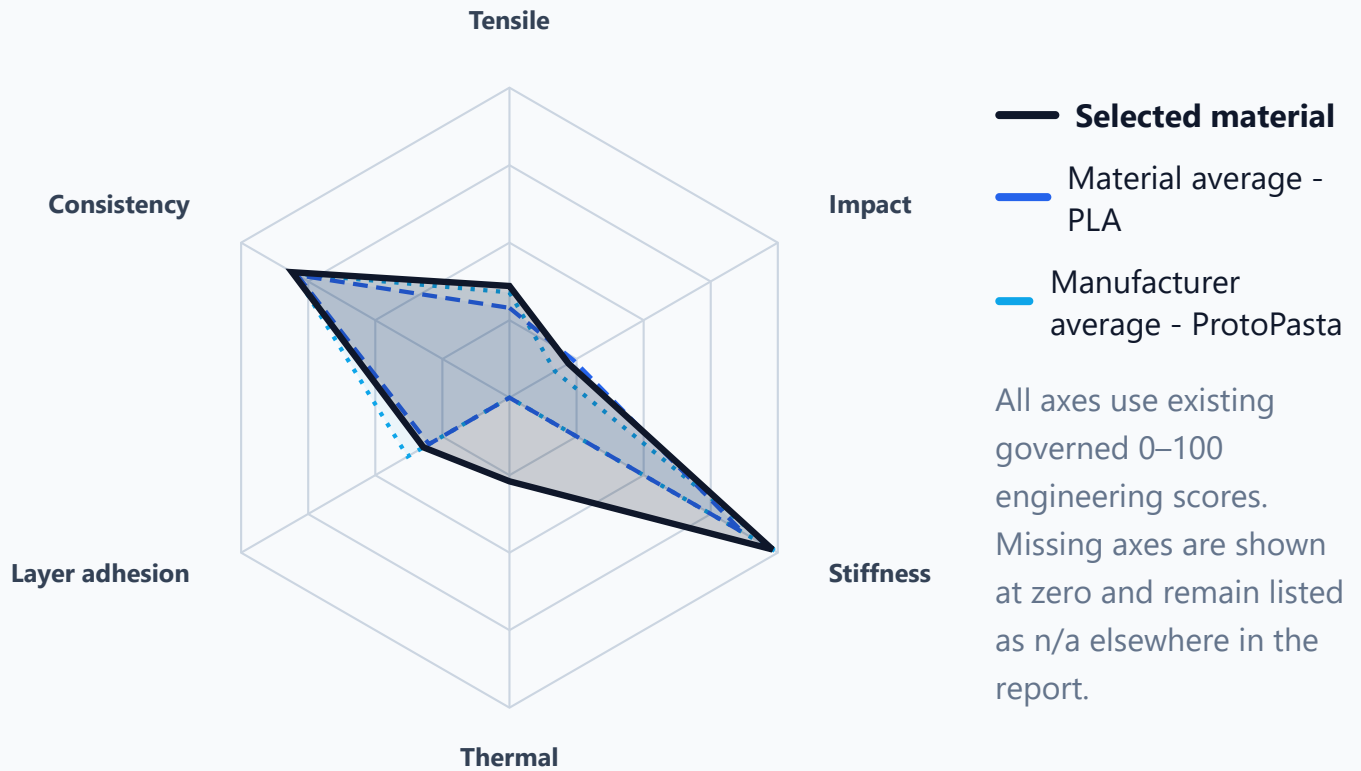
Overall	54/100
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Tensile	36/100
Impact	22/100
Stiffness	98/100
Consistency	81/100
Layer adhesion	32/100
Thermal	27/100
Best available axis	stiffness

Engineering score profile



Engineering radar



Fixture thermal result

53 °C · score 27/100 · 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	54/100	50/100	63/100
Tensile	36/100	29/100	34/100
Impact	22/100	24/100	17/100
Stiffness	98/100	87/100	100/100
Consistency	81/100	79/100	80/100
Layer adhesion	32/100	30/100	38/100
Thermal	27/100	—	—

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	13.935 MPa	5.599 MPa	40.2%	10	10/10
Tensile flat	44.097 MPa	6.582 MPa	14.9%	10	10/10
Impact upright	174.194 kJ/m ²	25.904 kJ/m ²	14.9%	10	10/10
Impact flat	259.202 kJ/m ²	12.323 kJ/m ²	4.8%	10	10/10
Stiffness modulus	2928.765 MPa	—	—	—	—
Stiffness deflection	1.853 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: ProtoPasta HTPLA Tangerine Orange PLA Orange has a specialized or limited engineering profile. It is above its material-family average by 3,6 points and below its manufacturer average by 9,2 points. Its strongest measured axis is Stiffness, while the weakest axis is Impact.

Data-driven review: ProtoPasta HTPLA Tangerine Orange PLA Orange 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 82% overall, is above the material-family average by 3,6 points, and is below the manufacturer average by 9,2 points. Its strongest engineering signal is Stiffness, while Impact is the main limitation to consider before using it for demanding applications.

BEST FEATURE

Stiffness

MAIN LIMITATION

Impact

DATASET POSITION

Better than 82%
43 / 234

Strengths

- Consistency: 81/100. Repeatability is one of the stronger signals in this material profile.
- Tensile: 36/100. Tensile behavior is competitive against the material-family context.
- Stiffness: 98/100. Stiffness is a relative advantage in this comparison group.

Limitations

- Tensile: 36/100. 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: 32/100. 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	54/100	43 / 234	Better than 82%

Metric	Score	Rank	Percentile
Tensile	36/100	32 / 226	Better than 86%
Impact	22/100	115 / 226	Better than 50%
Stiffness	98/100	47 / 223	Better than 79%
Consistency	81/100	65 / 231	Better than 72%
Layer adhesion	32/100	79 / 226	Better than 65%
Thermal	27/100	131 / 209	Better than 38%

Decision guidance

- Use this material for moderate requirements after checking the weakest axis.
- Review the listed alternatives if the application needs stronger overall performance.
- Avoid selecting it for impact-focused testing or shock-loaded designs.

Better alternatives

MaterialID	Material	Manufacturer	Overall	Tensile	Impact
MAT0069	ProtoPasta HTPLA Blood of My Enemies PLA Red	ProtoPasta	100/100	—	—
MAT0079	Polymaker PolyLight PLA Pro Black	Polymaker	65/100	35/100	52/100
MAT0109	Polymaker PolyMax PLA Black	Polymaker	64/100	32/100	62/100

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
MAT0069	ProtoPasta HTPLA Blood of My Enemies PLA Red	ProtoPasta	100/100	—	—
MAT0079	Polymaker PolyLight PLA Pro Black	Polymaker	65/100	35/100	52/100

MaterialID	Material	Manufacturer	Overall	Tensile	Impact
MAT0109	Polymaker PolyMax PLA Black	Polymaker	64/100	32/100	62/100
MAT0080	Polymaker PolySonic PLA Pro Blue	Polymaker	64/100	30/100	58/100
MAT0076	BambuLab Tough+ PLA Tough+ Black	BambuLab	63/100	26/100	59/100
MAT0108	Polymaker PolyLight PLA Black	Polymaker	61/100	33/100	14/100
MAT0074	Winkle Matte PLA Matte Red	Winkle	60/100	34/100	—
MAT0122	Add:North Enhanced PLA Clear	Add:North	59/100	40/100	10/100

Public links

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