

Winkle Standard Smokey Gray PLA Matte Gray

Material Engineering Report
MaterialID MAT0158

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

5/6

PUBLIC MSRP

\$39.96 USD/kg

Material identity

MaterialID	MAT0158
Material	Winkle Standard Smokey Gray PLA Matte Gray
Manufacturer	Winkle
Product line	Standard
Base material	PLA
Category	Standard
Variant / finish	Matte
Reinforcement	—
Color	Gray

Governed engineering profile

Overall

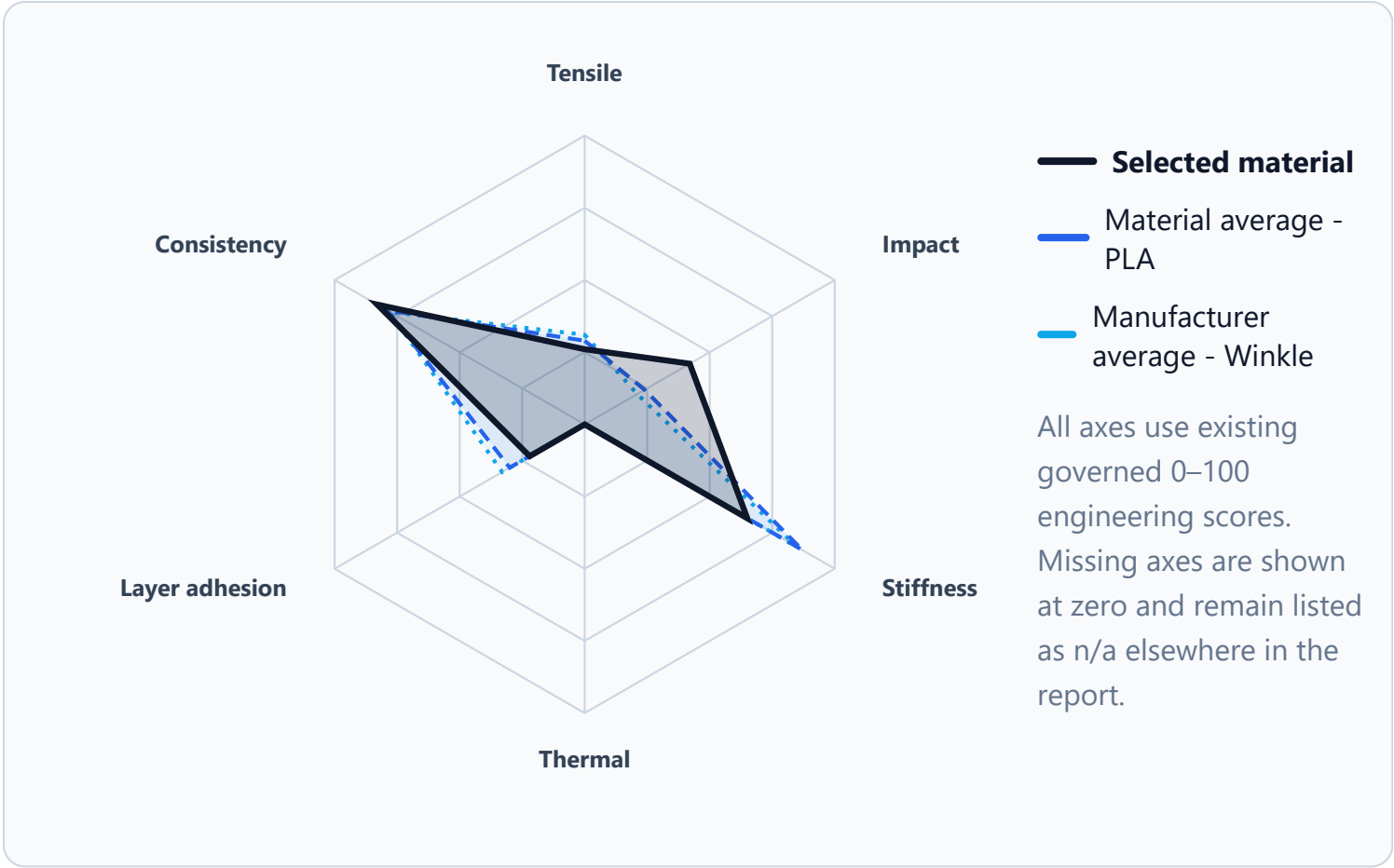
48/100

Tensile	26/100
Impact	42/100
Stiffness	65/100
Consistency	83/100
Layer adhesion	22/100
Thermal	—
Best available axis	consistency

Engineering score profile



Engineering radar



Fixture thermal result

— · score — · method —
—

Material and manufacturer context

Metric	Selected material	Material average	Manufacturer average
Overall	48/100	50/100	49/100
Tensile	26/100	29/100	31/100
Impact	42/100	24/100	21/100
Stiffness	65/100	87/100	85/100
Consistency	83/100	79/100	78/100
Layer adhesion	22/100	30/100	33/100
Thermal	—	—	—

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	7.49 MPa	2.36 MPa	31.5%	10	10/10
Tensile flat	33.884 MPa	6.338 MPa	18.7%	10	10/10
Impact upright	133.129 kJ/m ²	15.459 kJ/m ²	11.6%	10	10/10
Impact flat	706.673 kJ/m ²	33.165 kJ/m ²	4.7%	10	10/10
Stiffness modulus	1962.896 MPa	—	—	—	—
Stiffness deflection	2.765 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: Winkle Standard Smokey Gray PLA Matte Gray has a specialized or limited engineering profile. It is below its material-family average by 2,3 points and below its manufacturer average by 1,3 points. Its strongest measured axis is Consistency, while the weakest axis is Layer Adhesion.

Data-driven review: Winkle Standard Smokey Gray PLA Matte Gray 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 54% 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 54%
108 / 234

Strengths

- Consistency: 83/100. Repeatability is one of the stronger signals in this material profile.
- Impact: 42/100. Impact behavior is competitive against the material-family context.

Limitations

- Tensile: 26/100. Avoid using this as the primary choice for tensile-loaded parts.
- Stiffness: 65/100. Expect less shape stability than the stronger materials in the same family.
- Layer adhesion: 22/100. 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

Metric rankings and percentiles

Metric	Score	Rank	Percentile
Overall	48/100	108 / 234	Better than 54%
Tensile	26/100	141 / 226	Better than 38%
Impact	42/100	43 / 226	Better than 81%
Stiffness	65/100	168 / 223	Better than 25%
Consistency	83/100	40 / 231	Better than 83%
Layer adhesion	22/100	126 / 226	Better than 45%

Metric	Score	Rank	Percentile
Thermal	—	—	—

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.

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
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	—

MaterialID	Material	Manufacturer	Overall	Tensile	Impact
MAT0122	Add:North Enhanced PLA Clear	Add:North	59/100	40/100	10/100

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](#)