

Spectrum Premium Tooling Yellow PLA Yellow

Material Engineering Report
MaterialID MAT0230

3DPiceland Engineering Platform

3DPiceland Labs

Generated with 3DPiceland Engineering Platform v60.0.6

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

\$35.92 USD/kg

Material identity

MaterialID	MAT0230
Material	Spectrum Premium Tooling Yellow PLA Yellow
Manufacturer	Spectrum
Product line	Premium
Base material	PLA
Category	Standard
Variant / finish	—
Reinforcement	—
Color	Yellow

Governed engineering profile

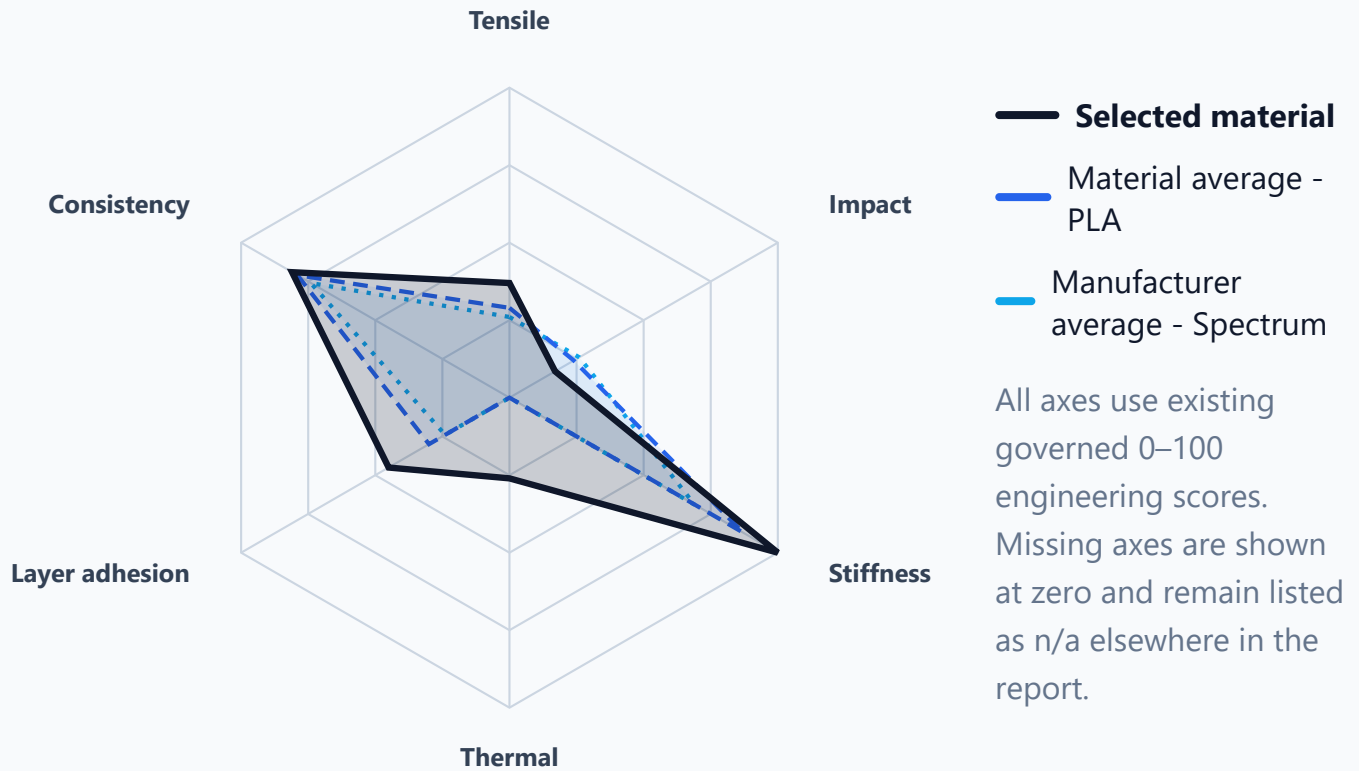
Overall	56/100
Tensile	37/100

Impact	17/100
Stiffness	100/100
Consistency	81/100
Layer adhesion	45/100
Thermal	26/100
Best available axis	stiffness

Engineering score profile



Engineering radar



Fixture thermal result

52 °C · score 26/100 · 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	56/100	50/100	44/100
Tensile	37/100	29/100	26/100
Impact	17/100	24/100	26/100
Stiffness	100/100	87/100	69/100
Consistency	81/100	79/100	74/100
Layer adhesion	45/100	30/100	24/100
Thermal	26/100	—	—

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	18.334 MPa	6.728 MPa	36.7%	10	10/10
Tensile flat	40.698 MPa	7.634 MPa	18.8%	10	10/10
Impact upright	140.813 kJ/m ²	17.104 kJ/m ²	12.1%	10	10/10
Impact flat	193.046 kJ/m ²	19.314 kJ/m ²	10%	10	10/10
Stiffness modulus	3237.057 MPa	—	—	—	—
Stiffness deflection	1.676 mm	—	—	—	—

Measurement provenance

Canonical per-module measured dates from SQLite, shown in unambiguous ISO format. Missing dates are not inferred.

Module	Measured date
Tensile	2026-08-15
Impact	2026-08-15
Stiffness	2026-08-15
Thermal	2026-08-15

Engineering interpretation

Summary: Spectrum Premium Tooling Yellow PLA Yellow has a balanced mid-range engineering profile. It is above its material-family average by 5,7 points and above its manufacturer average by 12,3 points. Its strongest measured axis is Stiffness, while the weakest axis is Impact.

Data-driven review: Spectrum Premium Tooling Yellow PLA Yellow is best understood as a balanced material for general functional prototypes. Compared with the current verified dataset, it ranks better than 88% overall, is above the material-family average by 5,7 points, and is above the manufacturer average by 12,3 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 88%
28 / 234

Strengths

- Layer adhesion: 45/100. Z-axis bonding is better than the material-family context.
- Consistency: 81/100. Repeatability is one of the stronger signals in this material profile.
- Tensile: 37/100. Tensile behavior is competitive against the material-family context.
- Stiffness: 100/100. Stiffness is a relative advantage in this comparison group.

Limitations

- Tensile: 37/100. Avoid using this as the primary choice for tensile-loaded parts.
- Impact: 17/100. Avoid high impact or shock-loaded components without additional validation.

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	56/100	28 / 234	Better than 88%
Tensile	37/100	28 / 226	Better than 88%
Impact	17/100	170 / 226	Better than 25%
Stiffness	100/100	1 / 223	Better than 100%
Consistency	81/100	72 / 231	Better than 69%
Layer adhesion	45/100	35 / 226	Better than 85%
Thermal	26/100	155 / 209	Better than 26%

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	—	—

MaterialID	Material	Manufacturer	Overall	Tensile	Impact
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	—
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](#)