

Coex 3D Prime Scarlet Red PLA Red

Material Engineering Report
MaterialID MAT0264

3DPiceland Engineering Platform
3DPiceland Labs

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IMPACT-METHODOLOGY - Izod and Charpy Methodology
Generated 2026-10-04 18:07:33

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.

RIGID TEST COVERAGE

Complete; 5/5 score families; Izod/Charpy 2/2 measured, 2/2 scored; Overall eligible; policy engineering-score-v70-1

ENGINEERING AXES

7/8

PUBLIC MSRP

\$0.28 USD/kg

Material identity

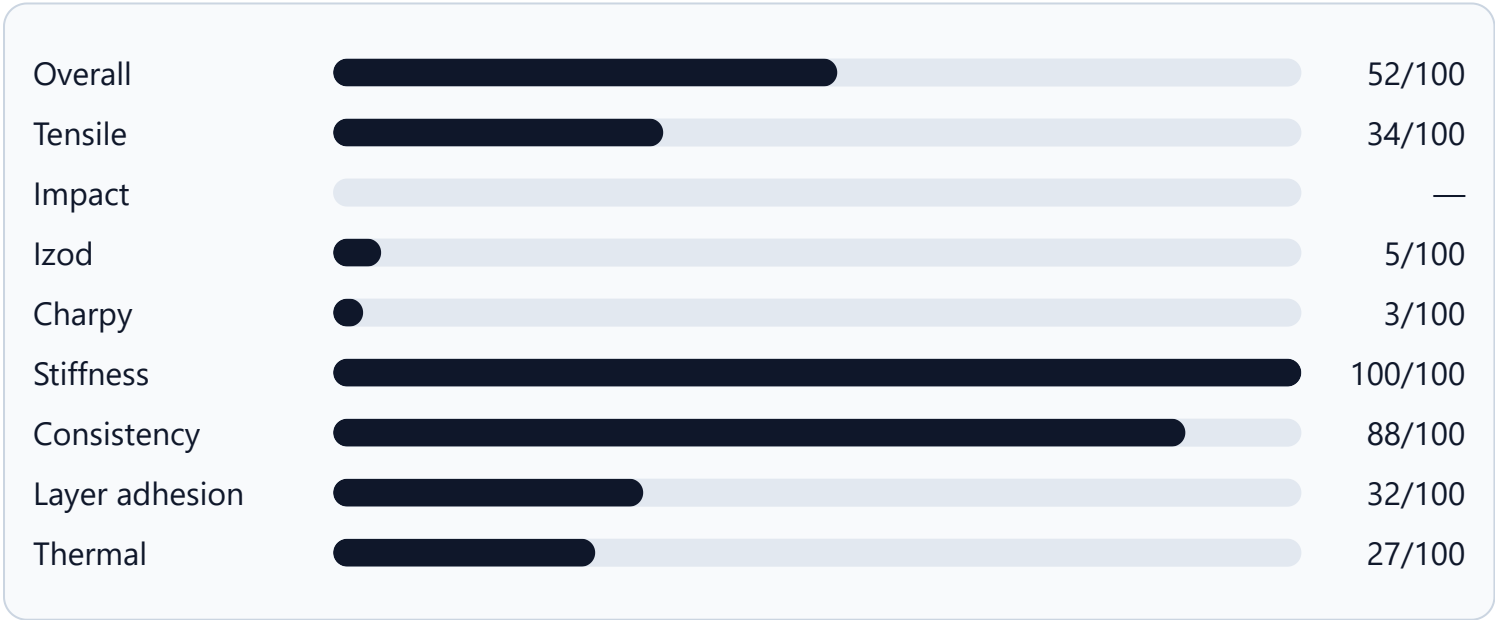
MaterialID	MAT0264
Material	Coex 3D Prime Scarlet Red PLA Red
Manufacturer	Coex 3D
Product line	Prime
Base material	PLA
Category	Standard
Variant / finish	—
Reinforcement	—

Color	Red
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Governed engineering profile

Overall	52/100
Tensile	34/100
Impact	—
Izod	5/100
Charpy	3/100
Stiffness	100/100
Consistency	88/100
Layer adhesion	32/100
Thermal	27/100
Best available axis	stiffness

Engineering score profile



Engineering radar

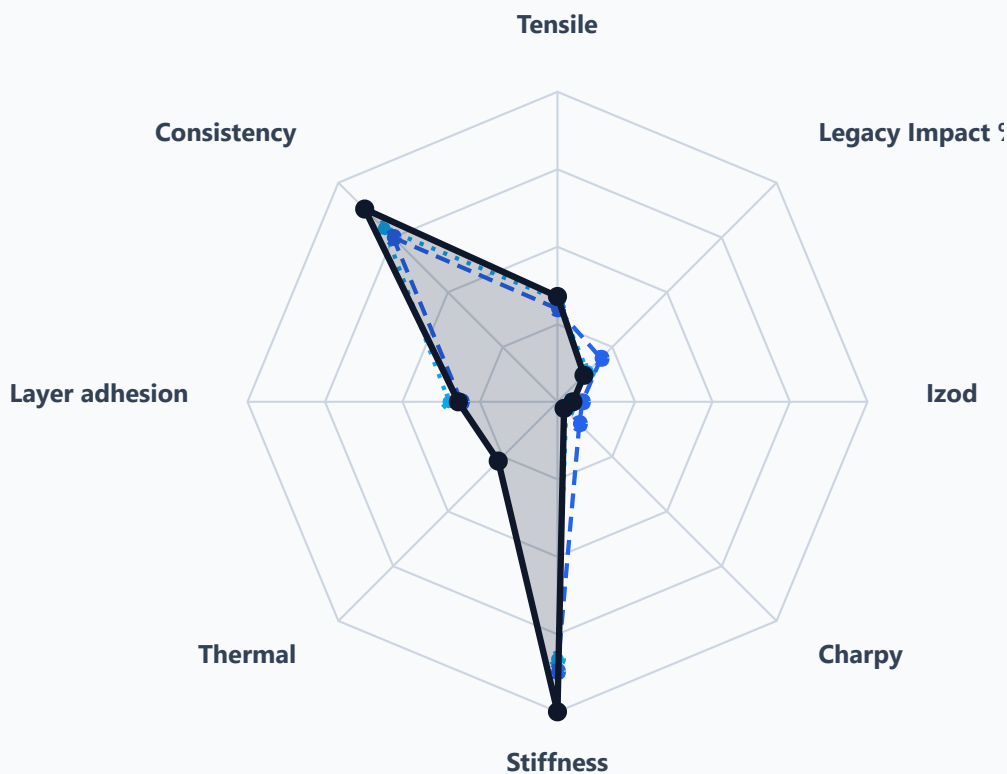
— **Selected material**

— Material average - PLA

— Manufacturer average - Coex 3D

Legacy Impact radar: 12.103 % of legacy rig capacity. This historical visual reference is the mean corrected Flat/Upright result divided by the matching rig capacity; it is not a modern engineering score.

Izod and Charpy use versioned method references and together form one equally weighted impact family. Overall requires all five families and both calibrated methods; incomplete profiles are not ranked. Legacy Impact and thermal are outside Overall. Missing axes have gaps with no marker or filled polygon; measured zero retains a centre marker.



Fixture thermal result

54 °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	52/100	—	47/100
Tensile	34/100	30/100	33/100
Impact	—	—	—
Izod	5/100	8/100	4/100
Charpy	3/100	10/100	4/100
Stiffness	100/100	87/100	83/100
Consistency	88/100	75/100	79/100
Layer adhesion	32/100	31/100	35/100
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	13.104 MPa	2.958 MPa	22.6%	10	10/10
Tensile flat	40.605 MPa	5.883 MPa	14.5%	10	10/10
Impact upright	3.997 kJ/m ²	0.778 kJ/m ²	19.5%	10	10/10
Impact flat	9.794 kJ/m ²	1.88 kJ/m ²	19.2%	10	10/10
Izod	3.754 kJ/m ²	0.222 kJ/m ²	5.9%	8	8/10
Charpy	2.277 kJ/m ²	0.053 kJ/m ²	2.3%	10	10/10
Stiffness modulus	3024.791 MPa	—	—	—	—
Stiffness deflection	1.794 mm	—	—	—	—

Measurement provenance

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

Module	Measured date
Tensile	2026-09-25
Impact	2026-09-26
Izod	2026-09-29
Charpy	2026-09-28
Stiffness	2026-09-25
Thermal	2026-09-26

Engineering interpretation

Summary: Coex 3D Prime Scarlet Red PLA Red has a specialized or limited engineering profile. It is without enough material-family average context and above its manufacturer average by 4,7 points. Its strongest measured axis is Stiffness, while the weakest axis is Charpy.

Data-driven review: Coex 3D Prime Scarlet Red PLA 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 90% overall, is missing enough context for the material-family average, and is above the manufacturer average by 4,7 points. Its strongest engineering signal is Stiffness, while Charpy is the main limitation to consider before using it for demanding applications.

BEST FEATURE

Stiffness

MAIN LIMITATION

Charpy

DATASET POSITION

Better than 90%
9 / 80

Strengths

- Consistency: 88/100. Repeatability is one of the stronger signals in this material profile.
- Stiffness: 100/100. Stiffness is a relative advantage in this comparison group.

Limitations

- Tensile: 34/100. Avoid using this as the primary choice for tensile-loaded parts.
- Izod/Charpy impact family: 4/100. Validate impact or shock-loaded components against their application requirements.
- 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 tensile load applications
- Avoid high impact components

Metric rankings and percentiles

Metric	Score	Rank	Percentile
Overall	52/100	9 / 80	Better than 90%
Tensile	34/100	67 / 243	Better than 73%
Impact	—	—	—
Izod	5/100	70 / 83	Better than 17%
Charpy	3/100	74 / 82	Better than 11%
Stiffness	100/100	1 / 240	Better than 100%

Metric	Score	Rank	Percentile
Consistency	88/100	15 / 243	Better than 94%
Layer adhesion	32/100	79 / 243	Better than 68%
Thermal	27/100	130 / 226	Better than 43%

Decision guidance

- Use this material for moderate requirements after checking the weakest axis.
- Review the listed alternatives if the application needs stronger overall performance.
- Do not choose it as a tensile-strength benchmark material.
- Validate impact-focused or shock-loaded designs against the measured Izod/Charpy results.

Better alternatives

MaterialID	Material	Manufacturer	Overall	Tensile	Impact	Izod	Charpy
MAT0265	Coex 3D Standard Scarlet Red PLA Red	Coex 3D	58/100	39/100	—		
MAT0118	Prusa3D Prusament Azure Blue PLA Blue	Prusa3D	55/100	36/100	—		

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	Izod	Charpy
MAT0265	Coex 3D Standard Scarlet Red PLA Red	Coex 3D	58/100	39/100	—	n/a	n/a
MAT0118	Prusa3D Prusament Azure Blue PLA Blue	Prusa3D	55/100	36/100	—	n/a	n/a
MAT0112	Prusa3D Prusament Galaxy Black PLA Black	Prusa3D	52/100	38/100	—	n/a	n/a
MAT0143	Prusa3D Prusament Corn Pigment PLA Recycled	Prusa3D	52/100	30/100	—	n/a	n/a

MaterialID	Material	Manufacturer	Overall	Tensile	Impact	Izod	Charpy
	Brown						
MAT0203	Prusa3D Prusament Prusa Orange PLA Orange	Prusa3D	52/100	42/100	—	n/a	n/a
MAT0205	Prusa3D Prusament Marble Gray PLA Marble Gray	Prusa3D	51/100	37/100	—	n/a	n/a
MAT0204	Prusa3D Prusament Jet Black PLA Black	Prusa3D	51/100	40/100	—	n/a	n/a
MAT0249	Bedrock 3D Standard Black PLA Black	Bedrock 3D	50/100	38/100	—	n/a	n/a

Public links

[Manufacturer website](#) [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](#)

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Izod and Charpy Impact Strength

Charpy Impact Strength · 2026-09-28
Instrument readings in kJ/m²
Mean 2.277 kJ/m²; Std. Dev 0.053 kJ/m²; CV 2.346%; Samples 10; Confidence 10
No break 0; invalid 0; excluded 0.
Comparative measurements; standard conformity unverified.

Izod Impact Strength · 2026-09-29

Instrument readings in kJ/m^2

Mean 3.754 kJ/m^2 ; Std. Dev 0.222 kJ/m^2 ; CV 5.914%; Samples 8; Confidence 8

No break 0; invalid 0; excluded 0.

Comparative measurements; standard conformity unverified.