

Coex 3D Standard Scarlet Red PLA Red

Material Engineering Report
MaterialID MAT0265

3DPiceland Engineering Platform
3DPiceland Labs

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IMPACT-METHODOLOGY - Izod and Charpy Methodology
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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.

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

\$0.24 USD/kg

Material identity

MaterialID	MAT0265
Material	Coex 3D Standard Scarlet Red PLA Red
Manufacturer	Coex 3D
Product line	Standard
Base material	PLA
Category	Standard
Variant / finish	—
Reinforcement	—

Color	Red
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Governed engineering profile

Overall	58/100
Tensile	39/100
Impact	—
Izod	4/100
Charpy	3/100
Stiffness	100/100
Consistency	86/100
Layer adhesion	61/100
Thermal	25/100
Best available axis	stiffness

Engineering score profile



Engineering radar

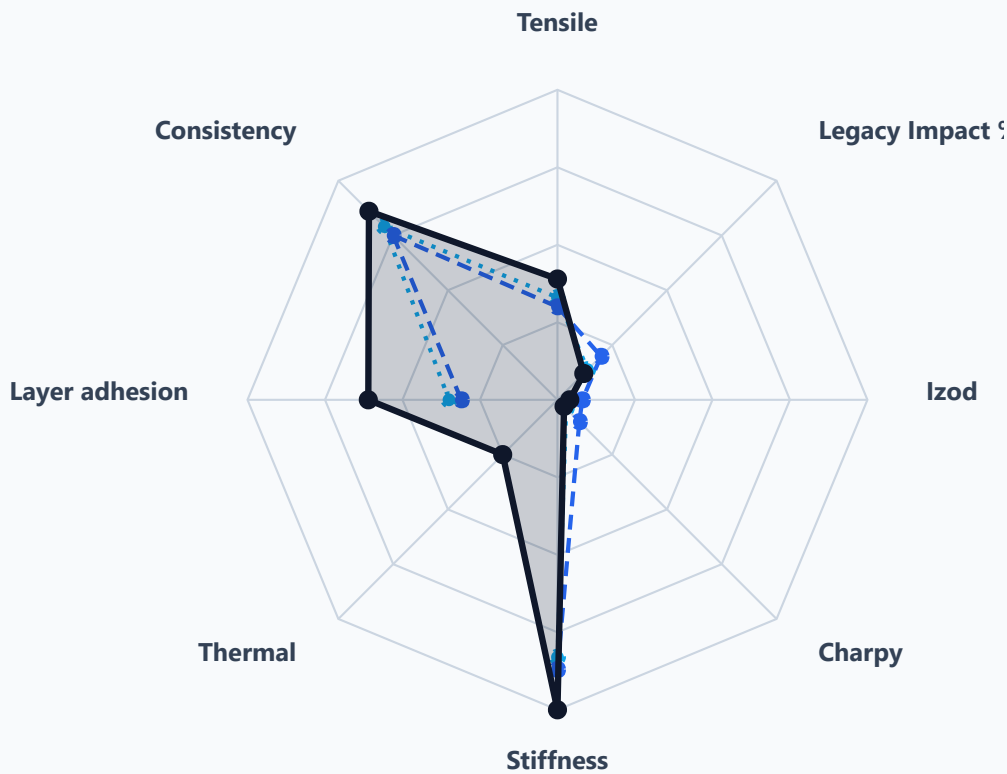
— **Selected material**

— Material average - PLA

— Manufacturer average - Coex 3D

Legacy Impact radar: 12.016 % 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

50 °C · score 25/100 · 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	58/100	—	47/100
Tensile	39/100	30/100	33/100
Impact	—	—	—
Izod	4/100	8/100	4/100
Charpy	3/100	10/100	4/100
Stiffness	100/100	87/100	83/100
Consistency	86/100	75/100	79/100
Layer adhesion	61/100	31/100	35/100
Thermal	25/100	—	—

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	23.579 MPa	4.054 MPa	17.2%	10	10/10
Tensile flat	38.744 MPa	7.844 MPa	20.2%	10	10/10
Impact upright	5.345 kJ/m ²	0.716 kJ/m ²	13.4%	10	10/10
Impact flat	8.347 kJ/m ²	0.734 kJ/m ²	8.8%	10	10/10
Izod	3.198 kJ/m ²	0.186 kJ/m ²	5.8%	10	10/10
Charpy	2.659 kJ/m ²	0.373 kJ/m ²	14%	10	10/10
Stiffness modulus	3127.326 MPa	—	—	—	—
Stiffness deflection	1.735 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	2026-09-28
Charpy	2026-09-28
Stiffness	2026-09-25
Thermal	2026-09-26

Engineering interpretation

Summary: Coex 3D Standard Scarlet Red PLA Red has a balanced mid-range engineering profile. It is without enough material-family average context and above its manufacturer average by 11,1 points. Its strongest measured axis is Stiffness, while the weakest axis is Charpy.

Data-driven review: Coex 3D Standard Scarlet Red PLA Red is best understood as a balanced material for general functional prototypes. Compared with the current verified dataset, it ranks better than 100% overall, is missing enough context for the material-family average, and is above the manufacturer average by 11,1 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 100%

1 / 80

Strengths

- Layer adhesion: 61/100. Z-axis bonding is better than the material-family context.
- Consistency: 86/100. Repeatability is one of the stronger signals in this material profile.
- Tensile: 39/100. Tensile behavior is competitive against the material-family context.
- Stiffness: 100/100. Stiffness is a relative advantage in this comparison group.

Limitations

- Tensile: 39/100. 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.

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
- Parts where Z-axis bonding is important
- 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	58/100	1 / 80	Better than 100%
Tensile	39/100	16 / 243	Better than 94%
Impact	—	—	—
Izod	4/100	74 / 83	Better than 12%
Charpy	3/100	72 / 82	Better than 13%
Stiffness	100/100	1 / 240	Better than 100%

Metric	Score	Rank	Percentile
Consistency	86/100	25 / 243	Better than 90%
Layer adhesion	61/100	9 / 243	Better than 97%
Thermal	25/100	204 / 226	Better than 10%

Decision guidance

- Use this material for moderate requirements after checking the weakest axis.
- Validate impact-focused or shock-loaded designs against the measured Izod/Charpy results.

Better alternatives

MaterialID	Material	Manufacturer	Overall	Tensile	Impact	Izod	Charpy
No stronger same-base-material alternatives were identified in the current governed dataset.							

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
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 Brown	Prusa3D	52/100	30/100	—	n/a	n/a
MAT0203	Prusa3D Prusament Prusa Orange PLA Orange	Prusa3D	52/100	42/100	—	n/a	n/a
MAT0264	Coex 3D Prime Scarlet Red PLA Red	Coex 3D	52/100	34/100	—	n/a	n/a

MaterialID	Material	Manufacturer	Overall	Tensile	Impact	Izod	Charpy
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 2.659 kJ/m²; Std. Dev 0.373 kJ/m²; CV 14.039%; Samples 10; Confidence 10
No break 0; invalid 0; excluded 0.
Comparative measurements; standard conformity unverified.

Izod Impact Strength · 2026-09-28
Instrument readings in kJ/m²
Mean 3.198 kJ/m²; Std. Dev 0.186 kJ/m²; CV 5.808%; Samples 10; Confidence 10
No break 0; invalid 0; excluded 0.
Comparative measurements; standard conformity unverified.