

TPU Material Family Comparison



3DP Iceland Labs
Generated with 3DP Iceland Engineering Platform v70.0.4 DIRECT-IMPACT-METHODOLOGY - Izod and Charpy Methodology
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Public-data contract: only explicitly allowlisted MaterialIDs and existing Verified Material Summary scores are included. No measurements or scores are recalculated.

Comparison scope: Stable Material Family preset for TPU. Every included MaterialID has explicit Public reports opt-in.

Materials compared
8

Overall score available
0

All 8 axes available
0

Engineering-axis leaders in this comparison

Axis	Leading material	Score
Overall	—	n/a
Tensile	Siraya Tech Fiberheart Black TPU 67D GF Black	27
Impact	—	n/a
Izod	Siraya Tech Fiberheart Black TPU 67D GF Black	48
Charpy	Siraya Tech Fiberheart Black TPU 67D GF Black	47

Axis	Leading material	Score
Stiffness	—	n/a
Consistency	Siraya Tech Fiberheart Black TPU 67D GF Black	92
Layer adhesion	Siraya Tech Fiberheart Black TPU 67D GF Black	25
Thermal	Siraya Tech Fiberheart Black TPU 67D GF Black	56

Tensile comparison

Siraya Tech Fiberheart Black TP... 27/100

Izod comparison

Siraya Tech Fiberheart Black TP... 48/100

Charpy comparison

Siraya Tech Fiberheart Black TP... 47/100

Thermal comparison

Siraya Tech Fiberheart Black TP... 56/100

Materials and evidence context

Material ID	Material	Manufacturer	Product line	Type	Reinforcement	Rigid test coverage	Engineering axes
MAT0253	Bedrock 3D Standard Black TPU 64D Black	Bedrock 3D	Standard	TPU		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8
MAT0256	Bedrock 3D Standard Black TPU Foaming Black	Bedrock 3D	Standard	TPU		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8
MAT0255	Bedrock 3D Standard Natural TPU 85A Natural	Bedrock 3D	Standard	TPU		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8
MAT0254	Bedrock 3D Standard White TPU 95A White	Bedrock 3D	Standard	TPU		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8
MAT0257	Prima Creator Select Black TPU Black	Prima Creator	Select	TPU		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8
MAT0261	Prusa3D Prusament Jet Black TPU 95A Black	Prusa3D	Prusament	TPU		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8
MAT0200	Siraya Tech Fiberheart Black TPU 67D GF Black	Siraya Tech	Fiberheart	TPU	GF	Partial; 4/5 score families; Izod/Charpy 2/2 measured, 2/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	6/8
MAT0260	Thorwell Standard Blue TPU Blue	Thorwell	Standard	TPU		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8

Side-by-side engineering scores

Material ID	Material	Manufacturer	Reinforcement	Rigid coverage	Evidence	Overall	Tensile	Impact	Izod	Charpy	Stiffness	Consistency	Layer adhesion	Thermal	Fixture °C	Method	Thermal limitation	MSRP USD/kg
MAT 0253	Bedrock 3D Standard Black TPU 64D Black	Bedrock 3D		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8	—	—	—	—	—	—	—	—	—	n/a			\$42.39
MAT 0256	Bedrock 3D Standard Black TPU Foaming Black	Bedrock 3D		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8	—	—	—	—	—	—	—	—	—	n/a			\$94.20
MAT 0255	Bedrock 3D Standard Natural TPU 85A Natural	Bedrock 3D		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8	—	—	—	—	—	—	—	—	—	n/a			\$48.85
MAT 0254	Bedrock 3D Standard White TPU 95A White	Bedrock 3D		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8	—	—	—	—	—	—	—	—	—	n/a			\$48.85
MAT 0257	Prima Creator Select Black TPU Black	Prima Creator		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8	—	—	—	—	—	—	—	—	—	n/a			\$47.74
MAT 0261	Prusa3D Prusament Jet Black TPU 95A Black	Prusa 3D		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8	—	—	—	—	—	—	—	—	—	n/a			n/a
MAT 0200	Siraya Tech Fiberheart Black TPU 67D GF Black	Siraya Tech	GF	Partial; 4/5 score families; Izod/Charpy 2/2 measured, 2/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	6/8	—	27/100	—	48/100	47/100	—	92/100	25/100	56/100	111 °C	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.	\$35.19
MAT 0260	Thorwell Standard Blue TPU Blue	Thorwell		No native results; 0/5 score families; Izod/Charpy 0/2 measured, 0/2 scored; Overall unavailable: missing measurements or references; policy engineering-score-v70-1	0/8	—	—	—	—	—	—	—	—	—	n/a			\$40.00

Results are comparative 3DPIceland measurements and do not replace manufacturer datasheets or accredited laboratory testing.

[Testing methodology](#) · [Engineering methodology whitepaper](#) · [Download PDF](#)

Bedrock 3D Standard Black TPU 64D Black

Flexible Material Testing

Comparative in-house measurements; n = independent specimens. Separate test groups; Overall unchanged.

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	10 s hold · 2 mm displacement · cycle 1	6.885	9	0.133	1.934	6.728–7.074	0
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	30 s hold · 2 mm displacement · cycle 1	6.352	9	0.128	2.016	6.193–6.571	0
eaacea91	Compression Force at 20% Strain (N)	10 s hold · 2 mm displacement · cycle 1	438	9	8.471	1.934	428–450	0
eaacea91	Compression Force at 20% Strain (N)	30 s hold · 2 mm displacement · cycle 1	404.111	9	8.146	2.016	394–418	0
eaacea91	Force reduction from 10 s to 30 s at 20% Strain (%)	first compression only · 2 mm displacement	7.738	9	0.443	5.731	7.111–8.372	0
eaacea91	Force retention at 20% Strain (%)	10–30 s · 2 mm displacement · cycle 1	92.262	9	0.443	0.481	91.628–92.889	0
eaacea91	Residual height loss after recovery (%)	20% compression · 30 s compressed hold · 60 s rest · 10 mm initial height · cycle 1	1.956	9	0.124	6.321	1.8–2.2	0
ed381ba8	Shore A Hardness (Shore A)	10 s reading · 8 mm	91.9	1	—	—	91.9–91.9	0

Shore location statistics

Within each specimen; specimen numbers are local to each test group. SD uses the sample formula. These readings do not increase independent n.

Method	Scale	Condition	Specimen	Readings	Mean	Location SD	Location CV %
ed381ba8	Shore A Hardness	10 s reading · 8 mm	1	5	91.9	4.561	4.963

Bedrock 3D Standard Black TPU Foaming Black

Flexible Material Testing

Comparative in-house measurements; n = independent specimens. Separate test groups; Overall unchanged.

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	10 s hold · 2 mm displacement · cycle 1	0.357	10	0.011	2.973	0.346–0.377	0
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	30 s hold · 2 mm displacement · cycle 1	0.329	10	0.012	3.53	0.314–0.346	0
eaacea91	Compression Force at 20% Strain (N)	10 s hold · 2 mm displacement · cycle 1	22.7	10	0.675	2.973	22–24	0
eaacea91	Compression Force at 20% Strain (N)	30 s hold · 2 mm displacement · cycle 1	20.9	10	0.738	3.53	20–22	0
eaacea91	Force reduction from 10 s to 30 s at 20% Strain (%)	first compression only · 2 mm displacement	7.928	10	1.851	23.348	4.348–9.091	0
eaacea91	Force retention at 20% Strain (%)	10–30 s · 2 mm displacement · cycle 1	92.072	10	1.851	2.01	90.909–95.652	0
eaacea91	Residual height loss after recovery (%)	20% compression · 30 s compressed hold · 60 s rest · 10 mm initial height · cycle 1	2.96	10	0.615	20.777	2.2–4.1	0
ed381ba8	Shore A Hardness (Shore A)	10 s reading · 8 mm	54	1	—	—	54–54	0

Shore location statistics

Within each specimen; specimen numbers are local to each test group. SD uses the sample formula. These readings do not increase independent n.

Method	Scale	Condition	Specimen	Readings	Mean	Location SD	Location CV %
ed381ba8	Shore A Hardness	10 s reading · 8 mm	1	5	54	1.225	2.268

Bedrock 3D Standard Natural TPU 85A Natural

Flexible Material Testing

Comparative in-house measurements; n = independent specimens. Separate test groups; Overall unchanged.

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	10 s hold · 2 mm displacement · cycle 1	2.977	10	0.072	2.416	2.861–3.097	0
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	30 s hold · 2 mm displacement · cycle 1	2.848	10	0.067	2.353	2.735–2.955	0

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Compression Force at 20% Strain (N)	10 s hold · 2 mm displacement · cycle 1	189.4	10	4.575	2.416	182–197	0
eaacea91	Compression Force at 20% Strain (N)	30 s hold · 2 mm displacement · cycle 1	181.2	10	4.264	2.353	174–188	0
eaacea91	Force reduction from 10 s to 30 s at 20% Strain (%)	first compression only · 2 mm displacement	4.328	10	0.38	8.778	3.684–4.813	0
eaacea91	Force retention at 20% Strain (%)	10–30 s · 2 mm displacement · cycle 1	95.672	10	0.38	0.397	95.187–96.316	0
eaacea91	Residual height loss after recovery (%)	20% compression · 30 s compressed hold · 60 s rest · 10 mm initial height · cycle 1	1.2	10	0.2	16.667	0.9–1.6	0
ed381ba8	Shore A Hardness (Shore A)	10 s reading · 8 mm	84.8	1	—	—	84.8–84.8	0

Shore location statistics

Within each specimen; specimen numbers are local to each test group. SD uses the sample formula. These readings do not increase independent n.

Method	Scale	Condition	Specimen	Readings	Mean	Location SD	Location CV %
ed381ba8	Shore A Hardness	10 s reading · 8 mm	1	5	84.8	1.304	1.538

Bedrock 3D Standard White TPU 95A White

Flexible Material Testing

Comparative in-house measurements; n = independent specimens. Separate test groups; Overall unchanged.

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	10 s hold · 2 mm displacement · cycle 1	3.067	10	0.083	2.706	2.892–3.16	0
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	30 s hold · 2 mm displacement · cycle 1	2.93	10	0.075	2.569	2.767–3.018	0
eaacea91	Compression Force at 20% Strain (N)	10 s hold · 2 mm displacement · cycle 1	195.1	10	5.28	2.706	184–201	0
eaacea91	Compression Force at 20% Strain (N)	30 s hold · 2 mm displacement · cycle 1	186.4	10	4.789	2.569	176–192	0
eaacea91	Force reduction from 10 s to 30 s at 20% Strain (%)	first compression only · 2 mm displacement	4.452	10	0.91	20.429	2.105–5.208	0

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Force retention at 20% Strain (%)	10–30 s · 2 mm displacement · cycle 1	95.548	10	0.91	0.952	94.792–97.895	0
eaacea91	Residual height loss after recovery (%)	20% compression · 30 s compressed hold · 60 s rest · 10 mm initial height · cycle 1	1.09	10	0.208	19.073	0.8–1.4	0
ed381ba8	Shore A Hardness (Shore A)	10 s reading · 8 mm	86.5	1	—	—	86.5–86.5	0

Shore location statistics

Within each specimen; specimen numbers are local to each test group. SD uses the sample formula. These readings do not increase independent n.

Method	Scale	Condition	Specimen	Readings	Mean	Location SD	Location CV %
ed381ba8	Shore A Hardness	10 s reading · 8 mm	1	5	86.5	1.732	2.002

Prima Creator Select Black TPU Black

Flexible Material Testing

Comparative in-house measurements; n = independent specimens. Separate test groups; Overall unchanged.

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	10 s hold · 2 mm displacement · cycle 1	1.767	10	0.032	1.789	1.713–1.823	0
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	30 s hold · 2 mm displacement · cycle 1	1.712	10	0.026	1.527	1.666–1.761	0
eaacea91	Compression Force at 20% Strain (N)	10 s hold · 2 mm displacement · cycle 1	112.4	10	2.011	1.789	109–116	0
eaacea91	Compression Force at 20% Strain (N)	30 s hold · 2 mm displacement · cycle 1	108.9	10	1.663	1.527	106–112	0
eaacea91	Force reduction from 10 s to 30 s at 20% Strain (%)	first compression only · 2 mm displacement	3.109	10	0.43	13.831	2.679–3.571	0
eaacea91	Force retention at 20% Strain (%)	10–30 s · 2 mm displacement · cycle 1	96.891	10	0.43	0.444	96.429–97.321	0
eaacea91	Residual height loss after recovery (%)	20% compression · 30 s compressed hold · 60 s rest · 10 mm initial height · cycle 1	0.644	9	0.142	22.097	0.4–0.8	0

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
ed381ba8	Shore A Hardness (Shore A)	10 s reading · 8 mm	77.7	1	—	—	77.7–77.7	0

Shore location statistics

Within each specimen; specimen numbers are local to each test group. SD uses the sample formula. These readings do not increase independent n.

Method	Scale	Condition	Specimen	Readings	Mean	Location SD	Location CV %
ed381ba8	Shore A Hardness	10 s reading · 8 mm	1	5	77.7	0.908	1.169

Prusa3D Prusament Jet Black TPU 95A Black

Flexible Material Testing

Comparative in-house measurements; n = independent specimens. Separate test groups; Overall unchanged.

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	10 s hold · 2 mm displacement · cycle 1	3.416	10	0.062	1.829	3.332–3.537	0
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	30 s hold · 2 mm displacement · cycle 1	3.254	10	0.057	1.764	3.175–3.364	0
eaacea91	Compression Force at 20% Strain (N)	10 s hold · 2 mm displacement · cycle 1	217.3	10	3.974	1.829	212–225	0
eaacea91	Compression Force at 20% Strain (N)	30 s hold · 2 mm displacement · cycle 1	207	10	3.651	1.764	202–214	0
eaacea91	Force reduction from 10 s to 30 s at 20% Strain (%)	first compression only · 2 mm displacement	4.737	10	0.589	12.442	3.67–5.455	0
eaacea91	Force retention at 20% Strain (%)	10–30 s · 2 mm displacement · cycle 1	95.263	10	0.589	0.619	94.545–96.33	0
eaacea91	Residual height loss after recovery (%)	20% compression · 30 s compressed hold · 60 s rest · 10 mm initial height · cycle 1	1.467	9	0.245	16.701	1–1.7	0
ed381ba8	Shore A Hardness (Shore A)	10 s reading · 8 mm	86.9	1	—	—	86.9–86.9	0

Shore location statistics

Within each specimen; specimen numbers are local to each test group. SD uses the sample formula. These readings do not increase independent n.

Method	Scale	Condition	Specimen	Readings	Mean	Location SD	Location CV %
ed381ba8	Shore A Hardness	10 s reading · 8 mm	1	5	86.9	1.432	1.648

Siraya Tech Fiberheart Black TPU 67D GF Black

Flexible Material Testing

Comparative in-house measurements; n = independent specimens. Separate test groups; Overall unchanged.

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
3ef3953f	Apparent Compressive Stress at 20% Strain (MPa)	10 s hold · 2 mm displacement · cycle 1	4.282	7	0.186	4.332	3.977–4.559	0
3ef3953f	Apparent Compressive Stress at 20% Strain (MPa)	30 s hold · 2 mm displacement · cycle 1	3.945	7	0.167	4.241	3.663–4.181	0
3ef3953f	Compression Force at 20% Strain (N)	10 s hold · 2 mm displacement · cycle 1	272.429	7	11.802	4.332	253–290	0
3ef3953f	Compression Force at 20% Strain (N)	30 s hold · 2 mm displacement · cycle 1	251	7	10.646	4.241	233–266	0
3ef3953f	Force reduction from 10 s to 30 s at 20% Strain (%)	first compression only · 2 mm displacement	7.863	7	0.283	3.596	7.463–8.276	0
3ef3953f	Force retention at 20% Strain (%)	10–30 s · 2 mm displacement · cycle 1	92.137	7	0.283	0.307	91.724–92.537	0
3ef3953f	Residual height loss after recovery (%)	20% compression · 30 s compressed hold · 60 s rest · 10 mm initial height · cycle 1	2.567	6	0.333	12.961	2.1–3	0
ed381ba8	Shore A Hardness (Shore A)	10 s reading · 8 mm	91.4	1	—	—	91.4–91.4	0

Shore location statistics

Within each specimen; specimen numbers are local to each test group. SD uses the sample formula. These readings do not increase independent n.

Method	Scale	Condition	Specimen	Readings	Mean	Location	SD	Location	CV %
ed381ba8	Shore A Hardness	10 s reading · 8 mm	1	5	91.4	1.817		1.988	

Izod and Charpy Impact Strength

Izod Impact Strength · 2026-10-04
Instrument readings in kJ/m²
Mean 38.345 kJ/m²; Std. Dev 2.077 kJ/m²; CV 5.417%; Samples 10; Confidence 10
No break 0; invalid 0; excluded 0.
Comparative measurements; standard conformity unverified.

Charpy Impact Strength · 2026-10-04
Instrument readings in kJ/m²
Mean 37.801 kJ/m²; Std. Dev 0.917 kJ/m²; CV 2.426%; Samples 10; Confidence 10
No break 0; invalid 0; excluded 0.
Comparative measurements; standard conformity unverified.

Thorwell Standard Blue TPU Blue

Flexible Material Testing

Comparative in-house measurements; n = independent specimens. Separate test groups; Overall unchanged.

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	10 s hold · 2 mm displacement · cycle 1	3.942	10	0.08	2.031	3.835–4.103	0
eaacea91	Apparent Compressive Stress at 20% Strain (MPa)	30 s hold · 2 mm displacement · cycle 1	3.724	10	0.078	2.101	3.631–3.898	0
eaacea91	Compression Force at 20% Strain (N)	10 s hold · 2 mm displacement · cycle 1	250.8	10	5.095	2.031	244–261	0
eaacea91	Compression Force at 20% Strain (N)	30 s hold · 2 mm displacement · cycle 1	236.9	10	4.977	2.101	231–248	0
eaacea91	Force reduction from 10 s to 30 s at 20% Strain (%)	first compression only · 2 mm displacement	5.543	10	0.387	6.98	4.918–6	0
eaacea91	Force retention at 20% Strain (%)	10–30 s · 2 mm displacement · cycle 1	94.457	10	0.387	0.41	94–95.082	0

Method	Result	Condition	Mean	n	SD	CV %	Range	Not reached
eaacea91	Residual height loss after recovery (%)	20% compression · 30 s compressed hold · 60 s rest · 10 mm initial height · cycle 1	1.21	10	0.185	15.313	0.9–1.5	0
ed381ba8	Shore A Hardness (Shore A)	10 s reading · 8 mm	90.1	1	—	—	90.1–90.1	0

Shore location statistics

Within each specimen; specimen numbers are local to each test group. SD uses the sample formula. These readings do not increase independent n.

Method	Scale	Condition	Specimen	Readings	Mean	Location SD	Location CV %
ed381ba8	Shore A Hardness	10 s reading · 8 mm	1	5	90.1	2.382	2.644

Stable public path: reports/comparisons/material-family-tpu/

Score policy engineering-score-v70-1: Overall requires tensile, stiffness, consistency, layer adhesion and the Izod/Charpy impact family, each with equal weight. Both impact methods and configured versioned references are required. Missing results and unconfigured scores remain n/a. Legacy Impact is historical only; thermal remains separate. Engineering-axis counts describe displayed evidence, not Overall completeness.