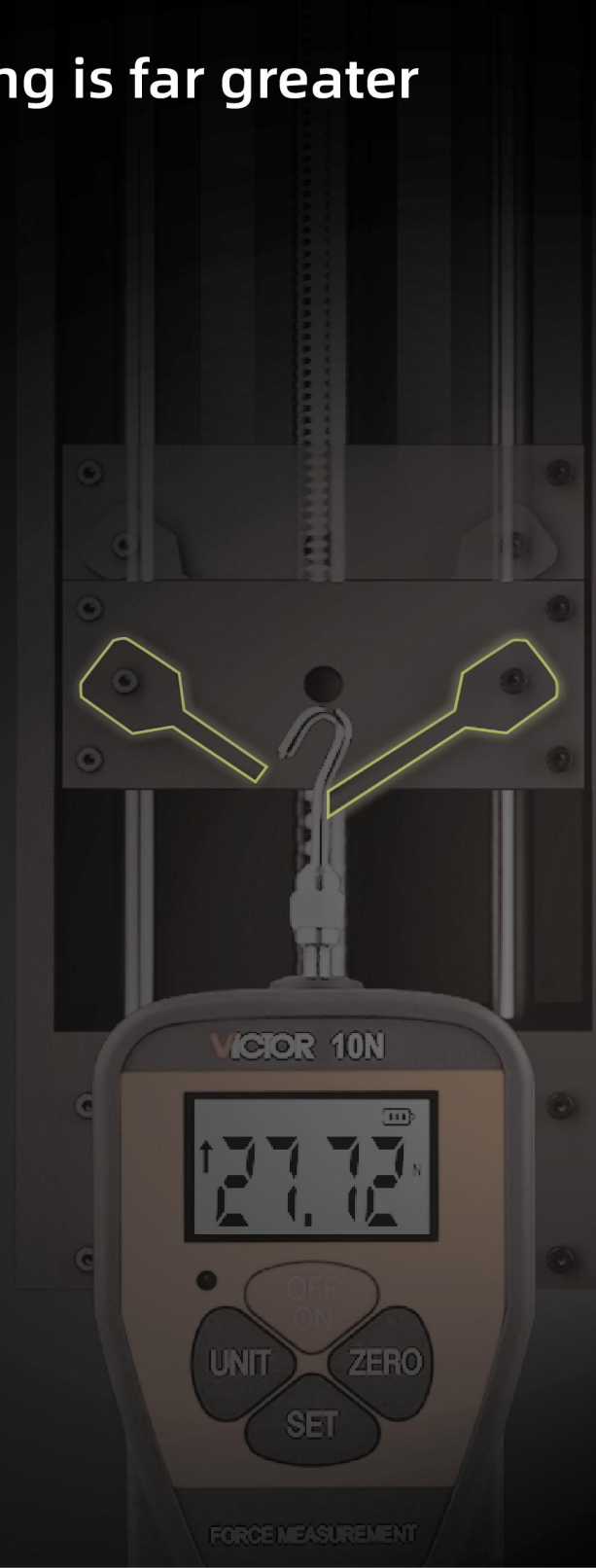


Consumer-grade or Professional-grade

The strength **gap** in 3D printing is far greater than you might imagine

 **CreatBot** VS  **Bambu Lab**

A Comprehensive Comparison from Model to Material



F430 NX

VS

X1C



Pro-grade



IDEX



400*300*300mm³



70°C
Chamber



420°C
Nozzle Temp



Consumer-grade



Single nozzle



256*256*256mm³



60°C
Chamber



300°C
Nozzle Temp

Test Filament

ABS High strength & toughness, ideal for mechanical tests.

ASA ABS-like strength, excellent UV/weather resistance.

D600 Pro2 HS

VS

H2D



Enterprise-grade



Dual-nozzle



600*600*600m³



70°C
Chamber



420°C
Nozzle Temp



Pro-grade



Dual-nozzle



350*320*325mm³



65°C
Chamber



350°C
Nozzle Temp

Test Filament

PA-CF High rigidity, heat resistance, but moisture-absorbent.

PET-CF High rigidity, stability, creep resistance, for precision parts.

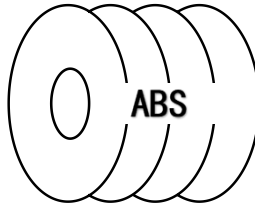
Test Content

Each group of printers uses corresponding consumables to print test specimens in the XY direction and Z direction for comparison.

F430 NX

VS

X1C



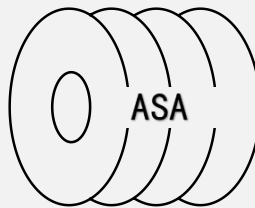
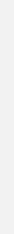
XY Direction Comparison

Z Direction Comparison

F430 NX

VS

X1C

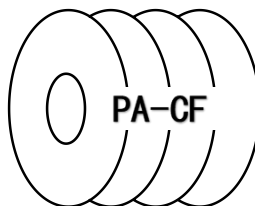


XY Direction Comparison

Z Direction Comparison

XY Direction Comparison

Z Direction Comparison



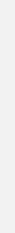
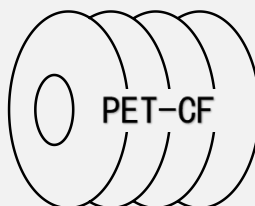
D600 Pro2 HS

VS

H2D

XY Direction Comparison

Z Direction Comparison

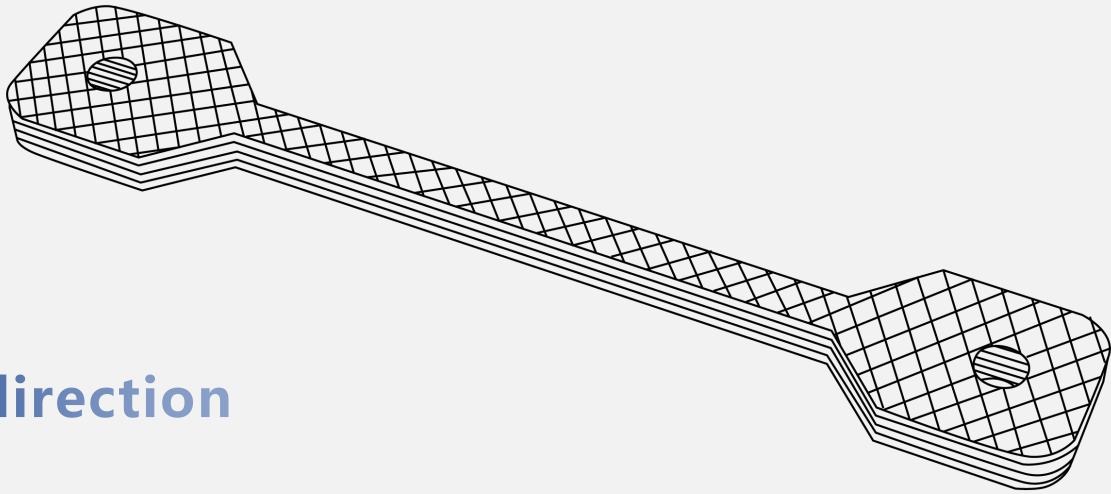


D600 Pro2 HS

VS

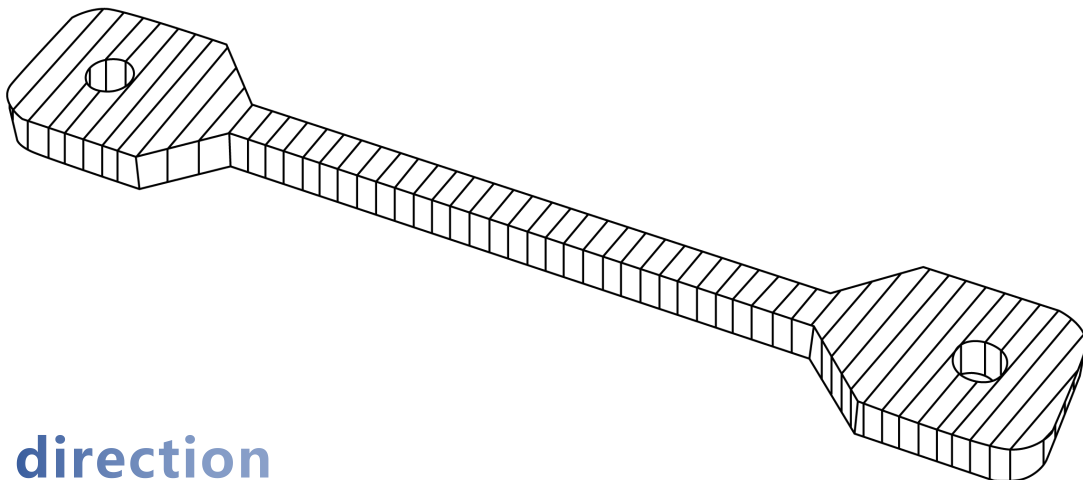
H2D

Print specialized test specimen models.



XY direction

Place the specimen's XY direction as the force-bearing direction (printed lying flat) and compare strength and cross-sectional properties.



Z direction

Place the specimen's Z direction as the force-bearing direction (printed standing upright) and compare strength and cross-sectional properties.

F430 NX

VS

X1C

Identical slicing parameters for both printers in each group.

* 0.20mm Standard @CreaBot 300ms

Quality **Strength** Speed Support Multimaterial Oth...

Walls

Wall loops 2

Alternate extra wall ☐

Detect thin walls ☐

Top/bottom shells

Top shell layers 5 layers

Top shell thickness 0.8 mm

Top surface pattern Monotonic ...

Bottom shell layers 3 layers

Bottom shell thickness 0 mm

Bottom surface pattern Monotonic

Top/Bottom solid infill/wall overlap 25 %

Infill

Sparse infill density 100 %

Sparse infill pattern Rectilinear

Maximum length of the infill anchor 20 mm or %

Sparse infill anchor length 400% mm or %

Internal solid infill pattern Monotonic

Apply gap fill Nowhere

Filter out tiny gaps 0 mm

Infill/wall overlap 15 %

Advanced

Sparse infill direction 45 °

Solid infill direction 45 °

Rotate solid infill direction ☒

External bridge infill direction 0 °

Internal bridge infill direction 0 °

Minimum sparse infill threshold 15 mm²

Infill combination ☐

Detect narrow internal solid infill ☒

Ensure vertical shell thickness All

* 0.20mm Standard @BBL X1C

Quality **Strength** Speed Support Others

Walls

Wall loops 2

Detect thin wall ☐

Top/bottom shells

Top surface pattern Monotoni...

Top shell layers 5

Top shell thickness 1 mm

Top paint penetration layers 5

Bottom surface pattern Monotonic

Bottom shell layers 3

Bottom shell thickness 0 mm

Bottom paint penetration layers 3

Internal solid infill pattern Rectilinear

Sparse infill

Sparse infill density 100 %

Sparse infill pattern Rectilinear

Length of sparse infill anchor 400% mm or %

Maximum length of sparse infill anchor 20 mm or %

Advanced

Infill/Wall overlap 15 %

Infill direction 45 °

Bridge direction 0 °

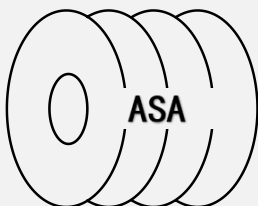
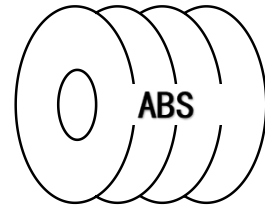
Minimum sparse infill threshold 15 mm²

Infill combination ☐

Detect narrow internal solid infill ☒

Ensure vertical shell thickness Enabled

Detect floating vertical shells ☒



* 0.20mm Standard @CreaBot 300ms

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Detect floating vertical shells ☒

D600 Pro2 HS

VS

H2D

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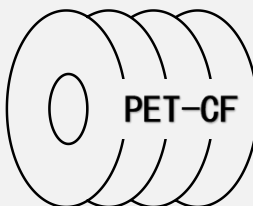
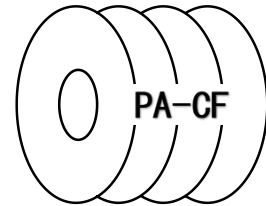
Minimum sparse infill threshold 15 mm²

Infill combination ☐

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Ensure vertical shell thickness Enabled

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Infill combination ☐

Detect narrow internal solid infill ☒

Ensure vertical shell thickness Enabled

Detect floating vertical shells ☒



Test Method

Setup Principle

Fix the load gauge to the frame and secure the specimen to the sliding platform. Connect the load gauge hook to the specimen.

The motor drives the ball screw to move the platform upward at a constant speed until the specimen fractures.

Record the peak load value at fracture.



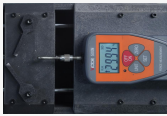
- Print at least 3+ samples each for XY and Z directions per material to minimize errors.
- Load gauge unit: kg.
- Calculate the average tensile strength and compare strength percentages.

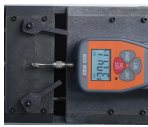
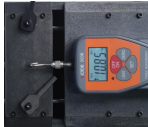
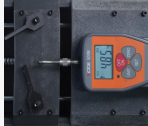
F430 NX

VS

X1C



Model/ ABS	Direction	Specimen 1	Specimen 2	Specimen 3	Average
F430 NX	XY				38.81kg
X1C	XY				29.57kg
F430 NX	Z				8.40kg
X1C	Z				4.07kg

Model/ ASA	Direction	Specimen 1	Specimen 2	Specimen 3	Average
F430 NX	XY				37.11kg
X1C	XY				28.31kg
F430 NX	Z				10.34kg
X1C	Z				6.11kg

注释：可放大查看每个样本的拉断瞬间数值

D600 Pro2 HS

VS

H2D



Model// PA-CF	Direction	Specime n1	Specimen 2	Specimen en 3	Average
D600 Pro2 HS	XY				37.68kg
H2D	XY				28.24kg
D600 Pro2 HS	Z				18.30kg
H2D	Z				14.05kg

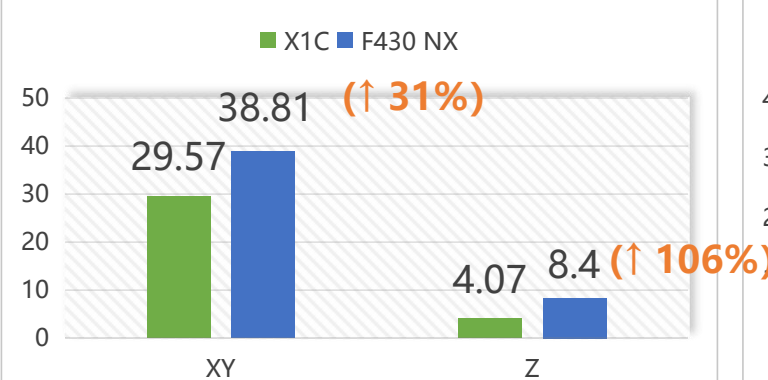
Model// PET-CF	Direction	Specimen1	Specimen 2	Specimen 3	Average
D600 Pro2 HS	XY				23.59kg
H2D	XY				17.03kg
D600 Pro2 HS	Z				12.84kg
H2D	Z				8.14kg

注释：可放大查看每个样本的拉断瞬间数值

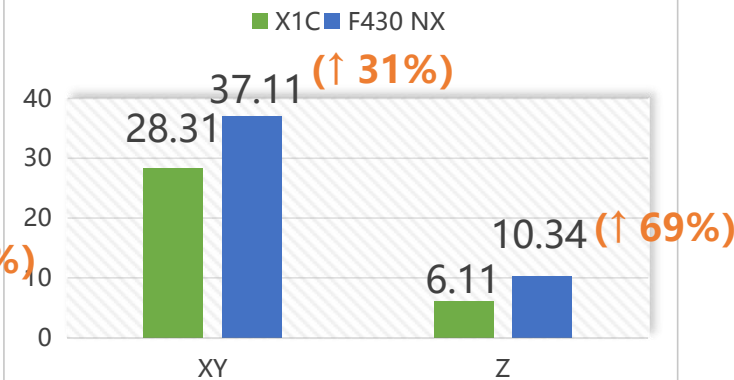
Test Data Summary



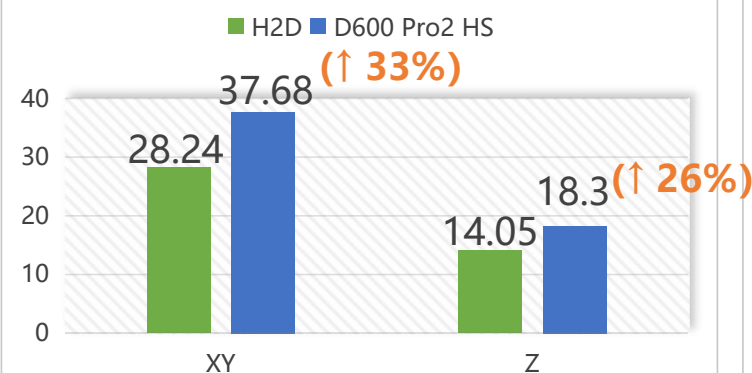
ABS Average Tensile Strength Comparison



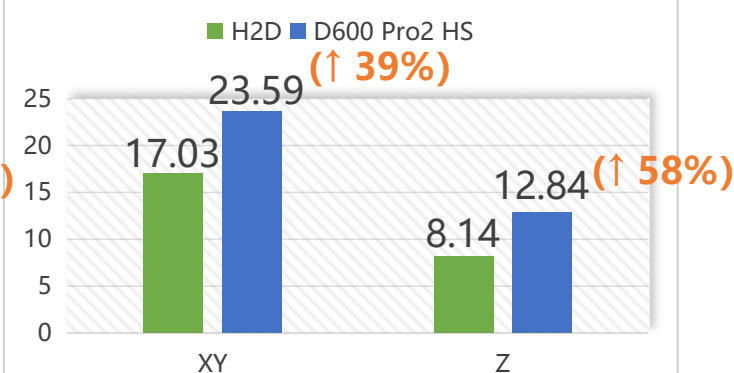
ASA Average Tensile Strength Comparison



PA-CF Average Tensile Strength Comparison



PET-CF Average Tensile Strength Comparison



Test materials	Test direction	CreatBot VS bambu Lab	Strength increase
ABS	XY direction	F430 NX vs. X1C	+31%
	Z direction	F430 NX vs. X1C	+106%
ASA	XY direction	F430 NX vs. X1C	+31%
	Z direction	F430 NX vs. X1C	+69%
PA-CF	XYdirection	D600 Pro2 HS vs. H2D	+33%
	Z direction	D600 Pro2 HS vs. H2D	+26%
PET-CF	XY direction	D600 Pro2 HS vs. H2D	+39%
	Z direction	D600 Pro2 HS vs. H2D	+58%

What This Data Means for You?

Z-Axis Strength is the Benchmark of Industrial Grade:

A up to 106% improvement means parts from consumer-grade 3D printers are like a fragile stack of cards with weak interlayer adhesion. CreatBot's fully enclosed, high-temperature chamber ensures powerful layer bonding, manufacturing reliable parts that are robust in all directions.

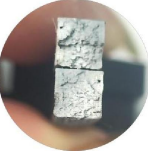
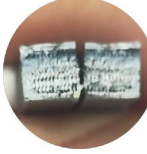
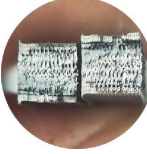
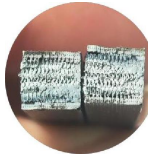
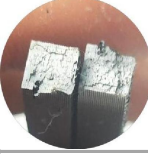
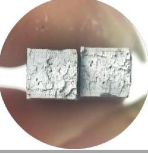
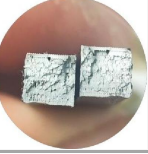
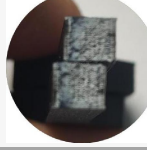
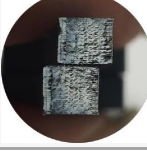
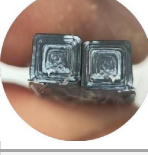
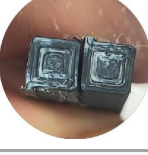
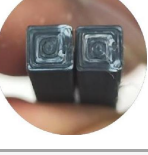
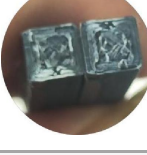
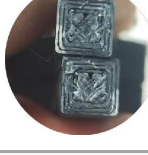
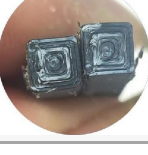
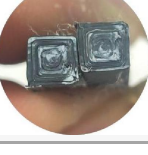
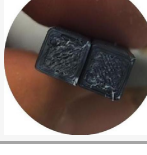
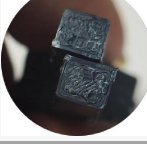
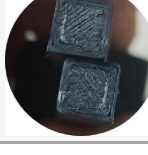
Achieving Nearly "Isotropic" Reliability:

We significantly minimize the inherent "anisotropy" weakness of 3D printing. This allows the components you design to deliver stable, predictable performance regardless of load direction, meeting the demands of rigorous industrial applications.

Unlocking the True Potential of Engineering Materials:

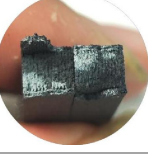
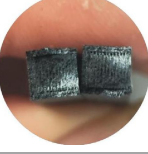
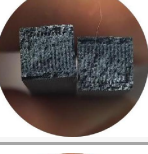
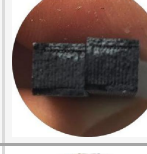
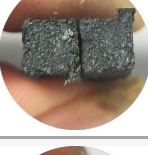
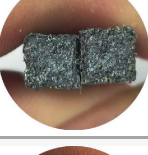
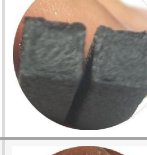
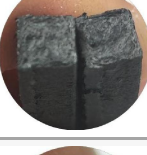
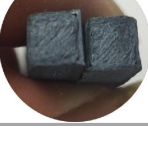
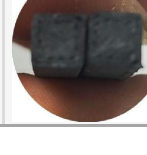
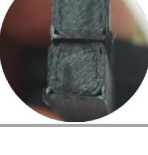
Only industrial-grade equipment provides the stable, high-temperature environment required by high-performance materials like PA-CF and PET-CF. This ensures your investment in materials translates into their intended performance.

F430 NX VS X1C-Comparison of XY/Z direction cross-sections of test specimens

ABS	Direction	Specimen 1	Specimen 2	Specimen 3	ASA	Direction	Specimen 1	Specimen 2	Specimen 3
F430 NX	XY				F430 NX	XY			
X1C	XY				X1C	XY			
F430 NX	Z				F430 NX	Z			
X1C	Z				X1C	Z			

Stress whitening observed in cross-sections — This phenomenon, known as "stress whitening," is a typical characteristic of engineering plastics.

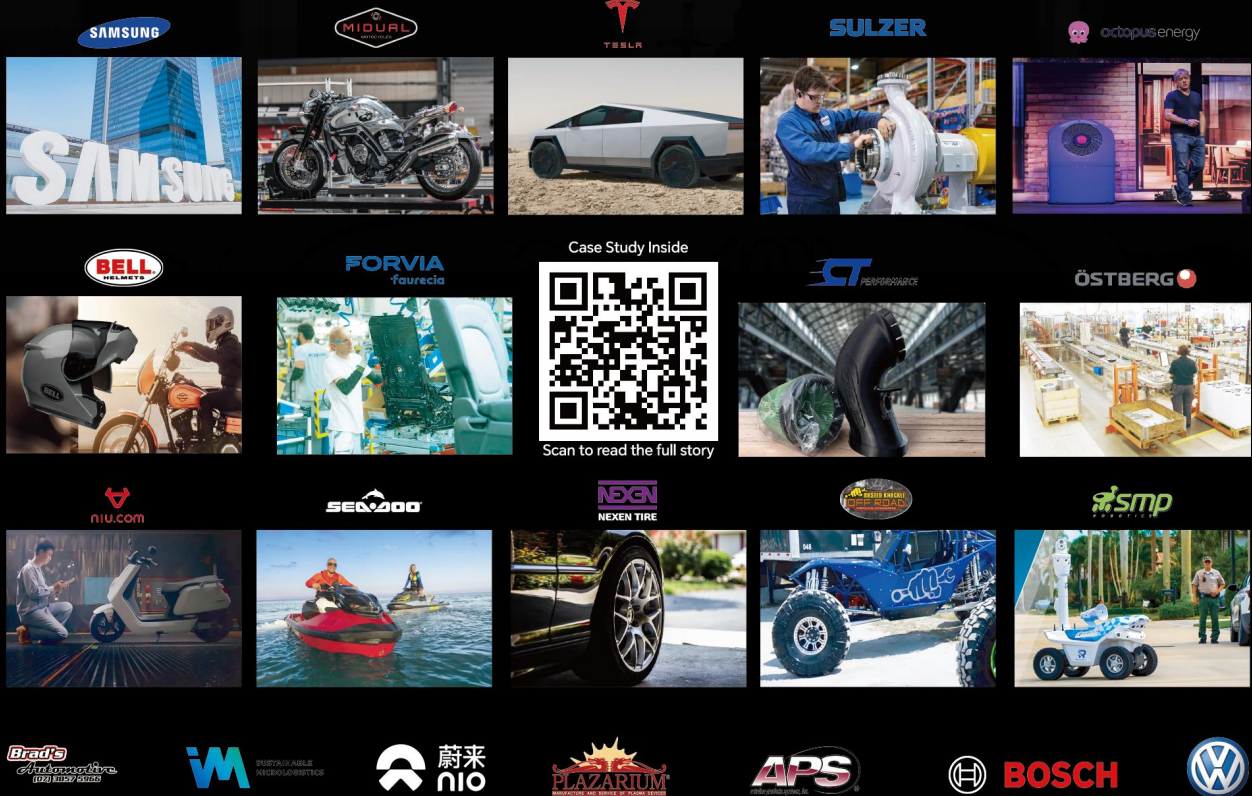
D600 Pro2 HS vs H2D-Comparison of XY/Z direction cross-sections of test specimens

PA-CF	Direction	Specimen 1	Specimen 2	Specimen 3	PET-CF	Direction	Specimen1	Specimen2	Specimen3
D600 Pro2 HS	XY				D600 Pro2 HS	XY			
H2D	XY				H2D	XY			
D600 Pro2 HS	Z				D600 Pro2 HS	Z			
H2D	Z				H2D	Z			

Note: Cross-sections of each sample may be enlarged for viewing.

Broken test spline samples





Do you know how to choose the right 3D printer?