3DXTECH® Additive Manufacturing

Technical Data Sheet: Obsidian FR-Nylon

Material Description:

Obsidian FR-Nylon is 3DXTech's affordable alternative to Markforged's Onyx-FR. This material is not only formulated to integrate seamlessly into the Markforged platform, but also print on open-source ecosystems with stunning surface finish. Achieving a UL94 V-0 classification (3.0 mm thickness) from an accredited, third-party lab and leveraging the proven performance of Obsidian+CF v2, Obsidian FR-Nylon is prepared to take on applications which require strength, toughness, chemical resistance, and flame retardancy.

Mechanical Properties	Testing Standard	Orientation	Unit	Obsidian FR-Nylon	Onyx-FR
Tensile Strength	ASTM D638	Vertical	MPa	12.9	10.4
Young's Modulus	ASTM D638		MPa	1100	746
Elongation at Break	ASTM D638		%	3.4	4.7
Tensile Strength	ASTM D638	Edge	MPa	36.7	30.1
Young's Modulus	ASTM D638		MPa	3350	1770
Elongation at Break	ASTM D638		%	15.1	26.1
Tensile Strength	ASTM D638	Flat	MPa	20.9	19.0
Young's Modulus	ASTM D638		MPa	885	694
Elongation at Break	ASTM D638		%	26.4	37.2
Flexural Strength	ASTM D790	Edge	MPa	51.9	43.3
Tangent Modulus (1%)	ASTM D790		MPa	2100	2290

Material	Printer	Nozzle Temp	Print Speed	Layer Height	Infill
Obsidian FR-Nylon	Markforged X7	275°C	30 mm/s	0.20 mm	Solid
Onyx-FR	Markforged X7	275°C	30 mm/s	0.20mm	Solid

Note: Testing data provided in this document was generated by an independent, third-party lab to ensure an unbiased comparison. For accuracy, each sample of our filament was tested directly against a corresponding sample from Markforged, using identical printers, settings, and part orientations. This standardized approach allows for a true one-to-one comparison, providing a clear picture of material performance across the same conditions.

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TDS Rev 1.1

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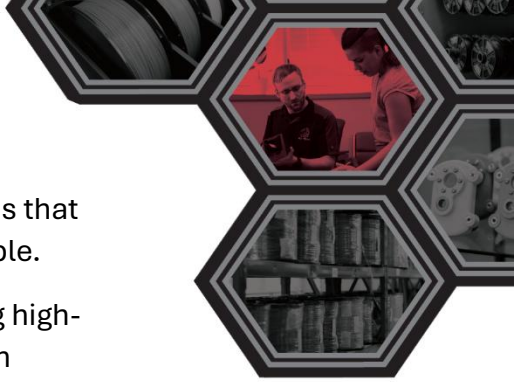

Mission: To inspire creators by delivering innovative manufacturing solutions that empower professionals to solve complex challenges once thought impossible.

Vision: Become a trusted partner for demanding applications by developing high-performance materials that fuel sustainable design and engineering, with an unwavering commitment to continuous improvement.

Physical Properties	Testing Standard	Unit	Value
Density	ISO 1183	g/cc	1.2

Mechanical Properties	Testing Standard	Orientation	Unit	Value
Tensile Strength	ASTM D638	Vertical	MPa	19.0
Young's Modulus	ASTM D638		MPa	1495
Elongation at Break	ASTM D638		%	7.3
Tensile Strength	ASTM D638	Edge	MPa	32.9
Young's Modulus	ASTM D638		MPa	1880
Elongation at Break	ASTM D638		%	12.3
Tensile Strength	ASTM D638	Flat	MPa	30.4
Young's Modulus	ASTM D638		MPa	1480
Elongation at Break	ASTM D638		%	17.7
Flexural Strength	ASTM D790	Edge	MPa	48.4
Tangent Modulus (1%)	ASTM D790		MPa	1990
IZOD Impact, Notched	ASTM D256-26	Flat	J/m	60.9

Thermal Properties	Testing Standard	Unit	Value
Heat Deflection Temp (66 psi)	ASTM D648	°C	164
Vertical Burn Test (3.0 mm thickness)	UL94	Rating	V-0

Material	Printer	Nozzle Temp	Bed Temp	Chamber Temp	Infill
Obsidian FR-Nylon	Bambu H2D	285°C	100°C	65°C	Solid

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