

Product Quality Documentation

Markforged Lot Number: L-OFAEX012008171453	Customer Sales Order Number: SAMPLE	Markforged Part Number: F-MF-0006	Markforged Product Name: Onyx FR-A
Raw Material Lot Number: 10196921	Date Manufactured: 2020-08-17	Number of spools shipped: 2	Manufacturing Location: Markforged - Billerica

This is to certify that the FFF material(s) that belong to the Sales Order Number stated in the above table meet the requirements of the following specification(s), as applicable per product type:

- **MF-PCD-000 Rev. 1** | Onyx FR-A
- **NMS 754/1 Rev. -** | NCAMP Material Specification - Filament Specification (Onyx FR-A™)

Properties	Test Method	Unit	Requirements	Markforged Results
Spool Moisture	ASTM D6869	%	<= 0.10	0.06
Backpressure	MF-WI-001	kg	<= 1.4	1.32
XX Diameter, Avg.	MF-SOP-027	mm	1.6925-1.8019	1.7540
XX Diameter, Minimum (LSL)	MF-SOP-027	PASS/FAIL	>= 1.6925 mm	PASS
XX Diameter, Maximum (USL)	MF-SOP-027	PASS/FAIL	<= 1.8019 mm	PASS
YY Diameter, Avg.	MF-SOP-027	mm	1.6925-1.8019	1.7522
YY Diameter, Minimum (LSL)	MF-SOP-027	PASS/FAIL	>= 1.6925 mm	PASS
YY Diameter, Maximum (USL)	MF-SOP-027	PASS/FAIL	<= 1.8019 mm	PASS
Cross-Sectional Area, Avg	MF-SOP-027	mm ²	2.3000-2.5000	2.4138
Cross-Sectional Area, Minimum (LSL)	MF-SOP-027	PASS/FAIL	>= 2.3000 mm ²	PASS
Cross-Sectional Area, Maximum (LSL)	MF-SOP-027	PASS/FAIL	<= 2.5000 mm ²	PASS



Daphne Placais - Director, Quality



Scott Kaempfe - Senior Director, Manufacturing