FATHOM

MULTI JET FUSION—NYLON 12

MATERIAL OVERVIEW

Nylon 12 is a commonly used thermoplastic that is strong enough for functional prototyping and production parts, small to medium in size—ideal for complex assemblies, housings, enclosures, and watertight applications. Achieve smooth surfaces and fine details with this durable material. It provides excellent chemical resistance to oils, greases, aliphatic hydrocarbons, and alkalies[1]. Parts produced are a non-uniform light gray and can be dyed a darker color for a uniform appearance.

Biocompatibility Certifications // Meets USP Class I-VI and US FDA Guidance for Intact Skin Surface Devices[2], RoHS[3], EU REACH, PAHs.

TECHNICAL SPECIFICATIONS[4]

CATEGORY	MEASUREMENT	XY VALUE	Z VALUE	METHOD
Mechanical Properties	Tensile Strength, Max Load[5]	48 MPa / 6960 psi	48 MPa / 6960 psi	ASTM D638
	Tensile Modulus[5]	1700 MPa / 247 ksi	1800 MPa / 261 ksi	ASTM D638
	Elongation at Break[5]	20%	15%	ASTM D638
	Flexural Strength (@ 5%)[6]	65 MPa / 9425 ksi	70 MPa / 10150 ksi	ASTM D790
	Flexural Modulus[6]	1730 MPa / 251 ksi	1730 MPa / 251 ksi	ASTM D790
	Izod Impact Notched (@3.2 mm, 23 °C)	3.5 kJ/m^2	3.5 kJ/m^2	ASTM D256 Test Method A
Thermal Properties	Heat Deflection Temp (@ 0.45 MPa)	175 °C / 347 °F	175 °C / 347 °F	ASTM D648 Test Method A
	Heat Deflection Temp (@ 1.82 MPa)	95 °C / 203 °F	106 °C / 223 °F	ASTM D648 Test Method A

CATEGORY	MEASUREMENT	VALUE	METHOD
General Properties	Powder Melting Point (DSC)	187 °C / 369 °F	ASTM D3418
	Particle Size	60 µm	ASTM 03451
	Bulk Density of Powder	0.425 g/cm^3	ASTM D1895
	Density of Parts	1.01 g/cm^3	ASTM D792

[1] Tested with diluted alkalies, concentrated alkalies, chlorine salts, alcohol, ester, ethers, ketones, aliphatic hydrocarbons, unleaded petrol, motor oil, aromatic hydrocarbons, toluene, and DOT 3 brake fluid.
[2] Based on HP internal testing, June 2017, HP 3D600 Fusing and Detailing Agents and HP 3D High Reusability PA 12 powder meet USP Class I-VI and US FDA's guidance for Intact Skin Surface Devices. Tested according to USP Class I-VI including irritation, acute systemic toxicity, and implantation; cytotoxicity per ISO 10993-5, Biological evaluation of medical devices–part 5 // Tests for in vitro cytotoxicity; and sensitization per ISO 10993-10, Biological evaluation of medical devices–Part 10 // Tests for irritation and skin sensitization. It is the responsibility of the customer to determine that its use of the fusing and detailing agents and powder is safe and technically suitable to the intended applications and consistent with the relevant regulatory requirements (including FDA requirements) applicable to the customer's final product. For more information, see www.hp.com/go/biocompatibilitycertificate/PA12.
[3] RoHS certification for EU, Bosnia-Herzegovina, China, India, Japan, Jordan, Korea, Serbia, Singapore, Turkey, Ukraine, Vietnam.
[4] The following technical information should be considered representative of averages or typical values and should not be used for specification purposes.
[5] Test results realized under the ASTM D638, speciments type V.
[6] Test results realized under ASTM D790 Procedure B at a test rate of 13.55 mm/min.
Information Reflects HP Documentation // 4AA6-4895ENA, November 2017.

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