HP Multi Jet Fusion

Polymer Materials Portfolio

Description

HP Multi Jet Fusion utilizes powdered thermoplastic material to create accurate, complex, and finely detailed parts. Our high-quality thermoplastics deliver optimal mechanical properties and chemical resistance, producing parts with balanced property profiles and strong structures.

When manufactured layer-by-layer in a powder bed, this unique process uses a combination of binding agents and energy, allowing for stronger adhesion.

Materials

Nylon PA 11 - This thermoplastic delivers optimal mechanical properties, and is known for producing strong, ductile, functional parts.

Nylon PA 12 - An engineering grade thermoplastic for high-density parts with extreme dimensional accuracy and fine detail for functional prototyping and final parts.

Nylon PA 12 White - This engineering-grade thermoplastic yields high-quality functional production parts in a premium white finish.

Nylon PA 12 S - This smooth and sustainable nylon offers an optimized production process that streamlines post-processing steps, saving time and further reducing costs.

BASF Ultrasint TPU - This MJF specific thermoplastic from BASF offers high wear/abrasion resistance, and is ideal for applications needing rubber-like flexibility and excellent shock absorption.

Benefits

- Ideal for prototyping and small batch productions
- Ultra thin layers: 80 microns (high resolution and excellent dimensional accuracy)
- High impact and temperature resistance
- Price to Quality Ratio
- Reusability = more sustainable
- Shorter lead times

Applications

- Complex Assemblies
- Housings
- Enclosures & Connectors
- Consumer Goods
- Prosthetics & Medical Devices
- Sporting Goods
- Fashion & Wearables
- Aerospace Applications
- Automotive Hoses
- Industrial Machinery

Portfolio Selection Guide & General Properties

Material Name	Nylon 11	Nylon 12	TPU
Description	HP 3D High Reusability PA 11	HP 3D High Reusability PA 12	BASF Ultrasint™ TPU01
Shore Hardness	80D	80D	88A
Elongation at Break	55%, 40%	20%, 15%	220%, 120%
Impact Strength	6 kJ/m², 5 kJ/m²	3.6 kJ/m², 3.5 kJ/m²	Partial break, No break
Powder melting point (DSC)	396°F (202°C)	369°F (187°C)	248 - 302°F (120 – 150°C)
Bulk Density of Powder	0.017 lb/in3 (0.48 g/cm3)	N/A (0.425 g/cm3)	0.0180 lb/in3 (0.5 g/cm3)
Particle Size	54 µm (54 µm)	60 µm (60 µm)	70 - 90 µm (70 - 90 µm)
Density of Parts	0.038 lb/in3 (1.05 g/cm3)	N/A (1.01 g/cm3)	0.0397 lb/in3 (1.1 g/cm3)

Tolerances

Material Name	Nylon 11	Nylon 12	TPU
Under 30 mm (1.2")	XY = ± 0.30 mm / .012"; Z = ± 0.42 mm / .017"	XY = ± 0.25 mm / .010"; Z = ± 0.42 mm / .017"	XY = ± 0.44 mm / .017"; Z = ± 1.05 mm / .041"
30 - 50 mm (1.2" - 2.0")	XY = ± 0.36 mm / .014"; Z = ± 0.62 mm / .024"	XY = ± 0.30 mm / .012"; Z = ± 0.50 mm / .020"	XY = ± 0.52 mm / .020"; Z = ± 1.35 mm / .053"
50 - 80 mm (2.0" - 3.2")	XY = ± 0.44 mm / .017"; Z = ± 1.18 mm / .046"	XY = ± 0.37 mm / .015"; Z = ± 0.60 mm / .024"	XY = ± 0.66 mm / .026"; Z = ± 1.80 mm / .071"
> 80 mm (3.2")	± 1.75%	± 1.75%	± 2.25%

*Based on HP 5200-Series