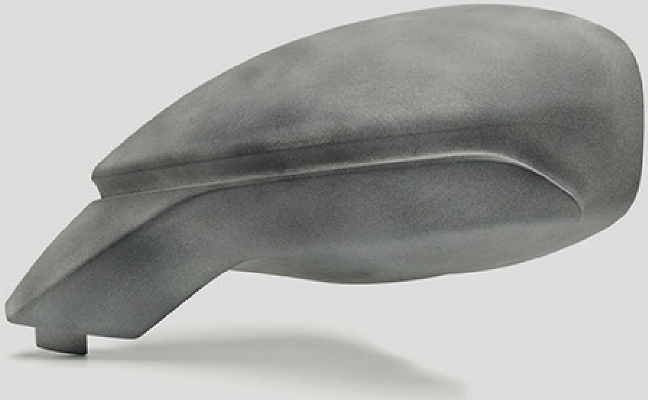
HP 3D High Reusability (HR) PA 12, enabled by Evonik

with the HP Jet Fusion 5200 Series 3D Printing Solution



Data courtesy of Skorpion Engineering SRL

HP 3D High Reusability PA 12, enabled by Evonik—ideal for producing strong, low-cost parts that reduce your carbon footprint[1]

Produce strong, functional, and detailed complex parts

- Robust thermoplastic produces high-density parts with balanced property profiles and strong structures
- Provides good chemical resistance to oils, greases, aliphatic hydrocarbons, and alkalies[2]
- Ideal for complex assemblies, housings, enclosures, and watertight applications
- Bio-compatibility—meets USP Class I-VI and US FDA guidance for Intact Skin Surface Devices[3]
- Meets strict automotive safety standards, including the Federal Motor Vehicle Safety Standard (FMVSS)[4]

Quality at a low cost per part[5]

- Achieve a low cost per part[5] and reduce your total cost of ownership[6]
- Minimize waste—reuse surplus powder batch after batch and get functional parts without throwing away the excess anymore[7]
- Get consistent performance while achieving up to 80% surplus powder reusability[8]
- Optimize cost and part quality—cost-efficient material with industry-leading surplus powder reusability[7]

Engineered for HP Multi Jet Fusion technology and parts that reduce your carbon footprint[1]

- Uses renewable energy sources and biomethane for polymer production, which reduces the material's carbon footprint by 49%[1]
- Provides the best balance between performance and reusability[9]
- Achieves watertight properties without any additional post-processing
- Engineered to produce final parts and functional prototypes with fine detail and dimensional accuracy across a variety of industries

General properties

	Value	Method
Powder melting point (DSC) (ºC / ºF)	187 / 369	ASTM D3418
Particle size (µm)	60	ASTM D3451
Bulk density of powder (g/cm^3 / lb/in^3)	0.425 / 0.015	ASTM 1895

Mechanical properties

This table shows the values that were obtained for HP 3D HR PA 12, enabled by Evonik in the HP Jet Fusion 5200 Series 3D Printing Solution, with the Balanced PA 12 print profile and Type I tensile specimens, following the ASTM D638 standard.

HP 3D HR PA 12, enabled by Evonik[i,ii,iii]	Axis	Average value	Method
Tensile Strength (MPa)[iv]	XY	50	ASTM D638
	Z	50	
Tensile Modulus (MPa)[iv]	XY	1900	ASTM D638
	Z	1900	
Elongation at Yield (%)	XY	10	ASTM D638
	Z	8	
Elongation at Break (%)	XY	17	ASTM D638
	Z	9	
Impact strength (kJ/m^2)[v]	XY	4.2	ASTMD256
	Z	3.8	
Density (g/cm^3)	XY	1.01	ASTMD792
	Z	1.01	

i. Based on internal testing and measured using the "HP Half_ Commercial_Datasheet_Job". Results may vary with other jobs and geometries.
ii. Using HP 3D HR PA 12, enabled by Evonik material, 20% refresh ratio, Balanced print profile, natural cooling, and measured after bead-blasting with glass beads at 5-6 bars.
iii. Following all HP-recommended printer setup and adjustment processes and printheads aligned using semi-automatic procedure.
iv. Tensile strength typical variation (95% of parts) falls within the 45-55 MPa range, while tensile modulus values remain within the 1650-2200 Mpa range.
v. Using the Izod test method A with notched @ 3.2 mm specimen according to the ASTM D256 standard.

This table shows the values that were obtained for HP 3D HR PA 12, enabled by Evonik in the HP Jet Fusion 5200 Series 3D Printing Solution, with the Robust PA 12 print profile and Type I tensile specimens, following the ASTM D638 standard.

HP 3D HR PA 12, enabled by Evonik[i,ii,iii]	Axis	Value	Method
Tensile Strength (MPa)[iv]	XY	54	ASTM D638
	Z	52	
Tensile Modulus (MPa)[iv]	XY	2000	ASTM D638
	Z	2000	
Elongation at Yield (%)	XY	10	ASTM D638
	Z	9	
Elongation at Break (%)	XY	17	ASTM D638
	Z	10	
Impact strength (kJ/m^2)[v]	XY	4.2	ASTMD256
	Z	4.2	
Density (g/cm^3)	XY	1.01	ASTMD793
	Z	1.01	

i. Based on internal testing and measured using the "HP Half_ Commercial_Datasheet_Job". Results may vary with other jobs and geometries.
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