

HP 3D High Reusability PA 12 S, enabled by Arkema— ideal for producing premium surface aesthetics with a lower cost per part⁵¹ and high reusability⁵²

Produce quality parts with premium surface aesthetics

- Achieve premium surface aesthetic parts directly from the printer that are up to 70% smoother⁵⁰, thanks to unique particle shapes and narrow particle size distribution, which makes it ideal for when exceptionally smooth surfaces are required
- Produce functional prototypes and final parts with fine detail and dimensional accuracy across a variety of industries
- Deliver smooth and accurate molds for clear aligners, ideal for dental applications. No additional post-processing needed to attain clean surfaces and enhanced transparency
- Gain versatility to produce a broad range of parts, including industrial and consumer goods. Extend your reach into lighting, merchandising/promotional items, volume prototyping, jigs and fixtures, and eye-catching covers



Achieve an even lower cost per part⁵¹

- Reduce variable cost per part and your total cost of ownership⁵⁰
- Get consistent performance while achieving up to 85% surplus powder reusability with this low reactive material⁵⁰
- Optimize production with HP Multi Jet Fusion technology, which streamlines post-processing to help save time and reduce costs. Minimize tumbling post processing and still achieve smooth end products

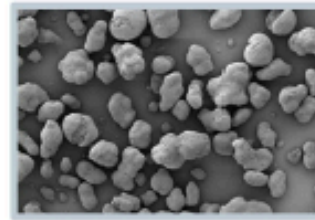
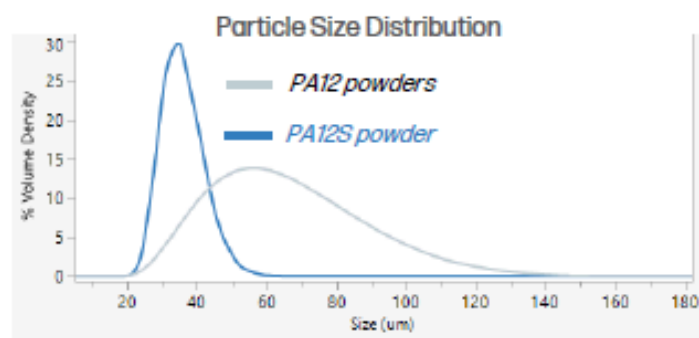
Minimize waste and embrace recyclability

- Maximize powder efficiency with an 85% reusability ratio and optimize usage, allowing for continuous printing and a reduced environmental impact⁵²
- Embrace a circular economy with Arkema's Virtucycle recycling program. Grant a second life to polymer waste powder and printed parts, fostering sustainability and environmental responsibility⁵²



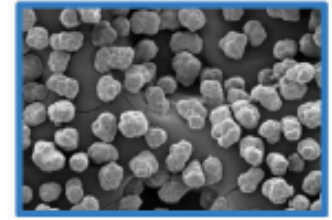
Why is HP 3D HR PA 12 S, enabled by Arkema so smooth?

Main material differences between HP 3D HR PA 12 S, enabled by Arkema and HP 3D HR PA 12, enabled by Evonik are particle shape, particle size distribution, reactivity, and powder density.



HP 3D HR PA 12,
enabled by Evonik

- Various particle sizes
- Less rounded particle morphologies
- Reactive Material



HP 3D HR PA 12 S,
enabled by Arkema

- All particles are of similar size
- Unique particle shape
- Non- reactive Material

Thanks to its unique particle shape and narrow particle size distribution, the HP 3D HR PA 12 S, enabled by Arkema powder is the perfect material for smooth surfaces with no post-processing

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	PA12	PA12s
D50v	60	40
D90v	90	50
Tm (°C)	187	183
Bulk Density	0.43	0.53

PA12 S | Mechanical & Dimensional properties

MECHANICAL PROPERTIES

- **Less ductility**, small parts are more fragile
- Recommended to reinforce them for post printing process (unpack, sandblaster, etc.)

	HP 3D HR PA 12 S, enabled by Arkema		HP 3D HR PA 12, enabled by Evonik		Method
	Average XY	Average Z	Average XY	Average Z	
Tensile Strength (MPa)	45	43	50	50	ASTM D638
Tensile Modulus (MPa)	1700	1700	1900	1900	ASTM D638
Elongation at yield (%)	10	6	10	8	ASTM D638
Elongation at break (%)	12	6	17	9	ASTM D638
Impact strength (kJ/m ²)	3,2	2,5	4,2	3,8	ASTM D256
Density (g/cm ³)	0.98		1.01		ASTM D792

Tests characteristics:
 HP 3D HR PA 12 S, enabled by Arkema: 80% recycled material / 10% fresh material mix. Half bulks: 190mm print job height. Packing density of approx. 6%
 HP 3D HR PA 12, enabled by Evonik: 80% material / 20% fresh material mix. Half bulks: 190mm print job height. Packing density of approx. 6%. Balanced print mode.

DIMENSIONAL PROPERTIES

- HP 3D HR PA 12 S, enabled by Arkema has the **same dimensional accuracy** than current HP 3D HR PA 12, enabled by Evonik in Balanced print mode

Tolerances for C _{pk} =1.33 (In mm)	Nominal dimension					
	0-30mm		30-50mm		50-80mm	
	XY	Z	XY	Z	XY	Z
With general dimension profile	± 0.25	± 0.42	± 0.30	± 0.50	± 0.37	± 0.60
Tolerances for C _{pk} =1.00 (In mm)						
	With general dimension profile	± 0.19	± 0.34	± 0.23	± 0.40	± 0.28

Tests characteristics:
 85% recycled material / 15% fresh material mix. Full bulks: 380 mm print job height

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