# HP Jet Fusion 3D Printing Solution







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# **Creating limitless potential**

Welcome to a new era of 3D printing.

Leap beyond the limits of previous technologies and enter a world where 3D printing allows you to move rapidly from thoughts to things, from radical prototyping to final parts manufacturing.

A world where you can think and create without limits and propel your business forward by unlocking the full potential of 3D printing.

Because now, HP is bringing decades of expertise in printing and materials science—with more than 5,000 HP patents—to the unique performance of HP Multi Jet Fusion technology.

## Faster form, fit and function

HP Multi Jet Fusion technology enables production of functional parts, up to 10 times faster,<sup>1</sup> at the lowest cost,<sup>2</sup> and with no trade-offs in the process.

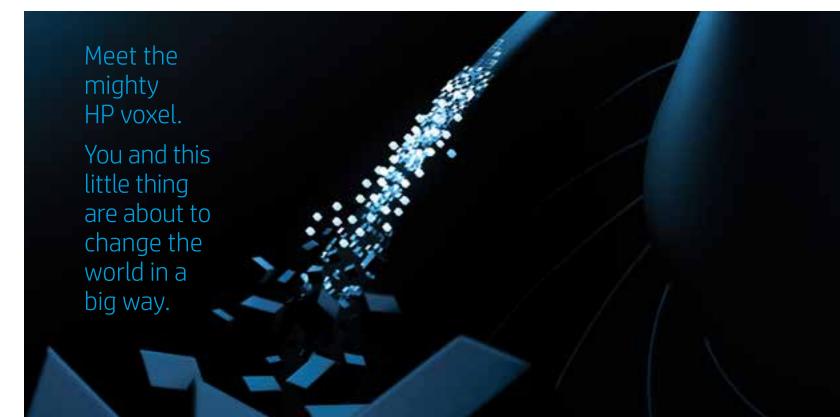
That's because HP's technology can transform part properties voxel by voxel—enabling a future of limitless applications, materials and colors. Imagine a future where we can produce 'Smart Parts' with embedded electronics and integrated traceability and intelligence.

HP is here to help your business get ready for a future era of Digital Manufacturing.

## Collaboration to advance the state of the art

HP's Multi Jet Fusion Open Platform, will bring down the barriers to widespread 3D printing adoption across industries, in order to:

- Facilitate the development of never-before-seen 3D printing materials and new software to expand applications
- Enable new 3D printing materials that combine lower costs with enhanced properties
- Support the transformation from traditional manufacturing to a future of Digital Manufacturing
- Drive software innovation and standards such as 3MF, an improved 3D printing file format, through collaboration with partners



# Reinventing prototyping and manufacturing: **HP Jet Fusion 3D 4200/3200 Printing Solution**

The HP Jet Fusion 3D printing solution reinvents how you prototype and produce functional parts, delivering quality output, up to 10 times faster<sup>1</sup> at half the cost<sup>2</sup>



## Superior, consistent part quality

- Get extreme dimensional accuracy and fine detail,<sup>3</sup> thanks to HP's unique Multi-Agent printing process
- Produce truly functional parts with optimal mechanical properties,<sup>4</sup> faster<sup>1</sup>
- Obtain predictable, reliable final printed parts that match your design<sup>5</sup>
- Access new future materials and uncover new applications thanks to the HP Multi Jet Fusion Open Platform



#### Only with the HP Jet Fusion 3D 4200 Printing Solution

- Use advanced and custom print modes to control mechanical, functional, and aesthetic properties, accuracy, and speed
- Benefit from advanced part quality monitoring during the printing process



## **Breakthrough productivity**

- Produce more parts per day with continuous printing and fast cooling<sup>6</sup>
- Streamline your workflow with HP's automated materials preparation and post-processing station
- Cleaner experience with an enclosed Processing Station and materials not classified as hazardous7
- Rely on HP's world-class Technical Services and Support to maximize uptime and productivity
- Choose your ideal end-to-end solution from a range of printing and processing options



## Only with the HP Jet Fusion 3D 4200 Printing Solution

- Add additional parts while printing is already in progress for
- Experience enhanced performance thanks to a higher disk capacity and additional memory



#### Lowest cost-per-part<sup>2</sup>

- Achieve lowest cost-per-part<sup>2</sup> and reduce operational costs, opening your doors to short-run manufacturing
- Benefit from a competitively-priced 3D printing solution<sup>2</sup>
- Optimize cost and part quality, with cost-efficient materials that offer industry-leading reusability<sup>8</sup>
- Plan production times more accurately and predictably, to increase your overall operational efficiency



#### Only with the HP Jet Fusion 3D 4200 Printing Solution

• Achieve a lower cost-per-part<sup>2</sup> versus the HP Jet Fusion 3D 3200 Printing Solution

For more information, please visit: hp.com/go/JetFusion3Dsolutions

**HP Jet Fusion 3D** 4200/3200 Printer





**HP Jet Fusion 3D 4200 printing solution** 

**HP Jet Fusion 3D Processing** 

Station with Fast Cooling<sup>6</sup>

Ideal for your prototyping and short-run manufacturing needs, with high productivity<sup>6</sup> to meet same-business-day demands, at lowest cost per part<sup>2</sup>

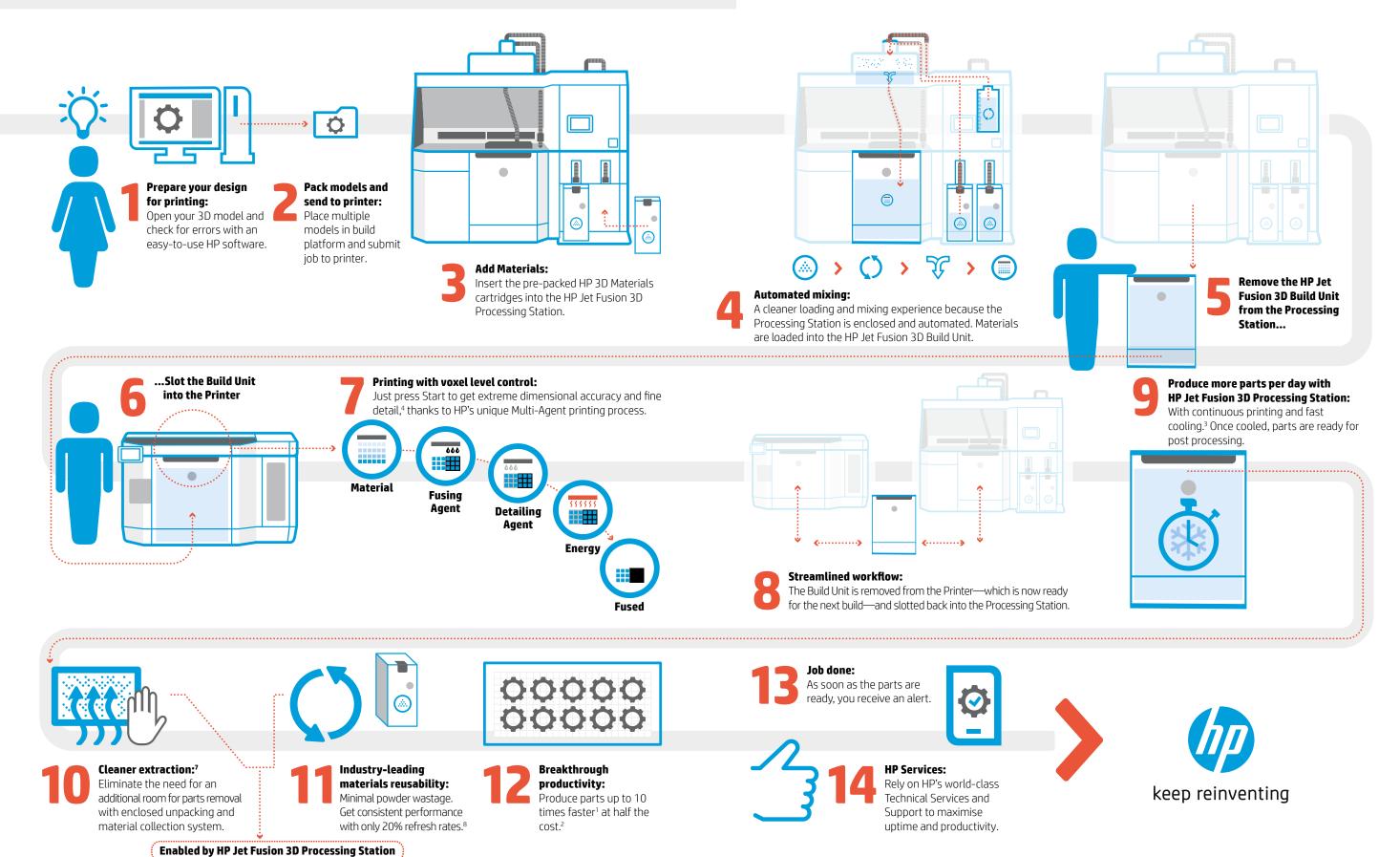
## **HP Jet Fusion 3D 3200 printing solution**

Ideal for prototyping, giving you improved productivity<sup>6</sup> and the capacity to grow your usage at a low cost per part<sup>2</sup>

#### Ordering information

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	HP Jet	Fusion 3D 4200 Printing Solution	HP Jet	Fusion 3D 3200 Printing Solution
Product	M0P44A	HP Jet Fusion 3D 4200 Printer	M0P41A	HP Jet Fusion 3D 3200 Printer
Accessories	MOP49A	HP Jet Fusion 3D Processing Station with Fast Cooling <sup>6</sup>	M0P42A	HP Jet Fusion 3D Processing Station
	M0P45A	HP Jet Fusion 3D Build Unit	M0P45A	HP Jet Fusion 3D Build Unit
Original HP Printheads	F9K08A	HP 3D600 Printhead	F9K08A	HP 3D600 Printhead
Original HP Agents	V1Q60A	3D600 3-liter Fusing Agent	V1Q60A	3D600 3-liter Fusing Agent
	V1Q61A	3D600 3-liter Detailing Agent	V1Q61A	3D600 3-liter Detailing Agent
Other supplies	V1Q66A	HP 3D600 Cleaning Roll	V1Q66A	HP 3D600 Cleaning Roll
Original HP 3D Materials	V1R10A	HP 3D High Reusability PA12 30L <sup>9</sup> (13 kg)	V1R10A	HP 3D High Reusability PA12 30L <sup>9</sup> (13 kg)
Service and Support	U9EK5E	HP Installation and Introduction to Basic Operation	U9EJ8E	HP Installation and Introduction to Basic Operation
	HP Support Contracts (Next Business Day Onsite, Annual)		HP Support Contracts (Next Business Day Onsite, Annual)	
	U9EK4E	HP 3 year HP Next Business Day Onsite Support	U9EJ7E	HP 3 year HP Next Business Day Onsite Support
	U9EK7E	HP Operator Training	U9EK0E	HP Operator Training

# HP Jet Fusion 3D 4200/3200 Printing: an end-to-end solution



# **Engineering-grade thermoplastics...**

HP 3D High Reusability PA12 is a strong, multi-purpose thermoplastic, not classified as hazardous, <sup>7</sup> for functional prototyping and final parts. This material, combined with the HP Jet Fusion 3D Printing Solution, lets you optimize cost and part quality thanks to industry-leading reusability. <sup>8</sup>

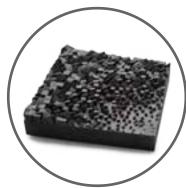
HP 3D High Reusability PA12 offers minimal powder wastage between production cycles, achieving consistent performance with only 20% refresh rate required.<sup>8</sup> This material is optimized for HP's Multi Jet Fusion platform to increase safety and deliver high-density parts with balanced property profiles. It is ideal for complex assemblies, housings, enclosures and connectors.



















## ...and beyond

Next up, HP will be offering a wider family of thermoplastics—including PA11, PA12 glass beads and materials with flame retardant properties—as well as elastomers.

Thanks to the HP Multi Jet Fusion Open Platform and a network of materials innovation partners, HP plans to continue expanding the pallet of materials offerings even further. Accelerated materials innovation via the HP Multi Jet Fusion Open Platform is key so that even applications not yet imagined will become possible.

## Accelerating materials innovation

HP is bringing down the barriers of 3D printing adoption across industries through materials innovation.

Materials cost, quality, performance, and diversity are real pain points for 3D printing customers today. So HP is addressing this with HP's unique Open Platform approach based on:

- Expanding 3D printing materials to address a broader set of applications
- Driving down materials costs—resulting in a consistently lower cost-per-part<sup>2</sup>— so that 3D printing becomes a viable alternative to traditional production methods
- Driving performance improvements and new possibilities for part properties that address specific industry needs—thanks to unique combinations of materials and agents

For more information, please visit: hp.com/go/3Dmaterials



"By enabling us to directly develop 3D printing materials leveraging the HP Multi Jet Fusion Open Materials Platform, Arkema believes that we will be able to develop user-specific materials and uncover new applications for our customers and industry leaders. This great concept will accelerate the adoption of 3D printing and unlock its full potential. As a global designer of innovative, environmentally responsible Technical Polymer solutions for a wide variety of markets, Arkema is excited to collaborate with HP to change the way products are designed and produced and lead the way for the next industrial revolution."

Adrien Lapeyre Global Market Manager – Technical Polymers Powders

Arkema



"BASF has one of the broadest 3D Material portfolios in the chemical industry, and therefore, we are proud to join the HP Multi Jet Fusion Open Platform. BASF is a founding member of this Open Platform, and with our experience, knowledge of customer needs and applications, we are motivated to collaborate. The HP Open Platform is a great foundation to develop new materials and enable economies of scale, making materials more affordable and enabling not only prototyping but unlocking the potential of 3D printing for production."

Dietmar Geiser Senior Manager 3D-Printing Strategy & Planning

BASF New Business GmbH



"Evonik is developing new materials leveraging the HP Multi Jet Fusion Open Materials Platform. Evonik believes that HP's Open Materials program provides a unique opportunity to expand the adoption of 3D printing and creates a new platform to drive materials innovation through development of materials specifically suited for this process. HP's new MJF technology has the capabilities to create new applications for the 3D printing market by allowing us to develop new materials for the future."

Dr. Matthias Kottenhahn Sr. VP & GM, High Performance Polymers

Evonik Resource Efficiency GmbH



"Lehmann&Voss&Co. believes HP's Open Materials platform is a great concept and that with this approach HP can fulfill market needs that have so far limited the 3D printing market expansion. This platform will drive 3D adoption and will provide an on-ramp to companies to drive materials innovation using HP Multi Jet Fusion technology. Lehmann&Voss&Co. plans to collaborate with HP and looks forward to introducing a new material on this platform."

Dr. Marcus Rechberger Market Development LUVOSINT©

Lehmann&Voss&Co.



# **HP 3D printing software:** maximum efficiency end-to-end

## Discover a complete and easy-to-use 3D printing software solution

Best in class algorithms help you achieve superior, consistent part quality with dimensional accuracy and fine detail.<sup>3</sup> Embedded quality checks help minimize errors, automated packing increases the number of parts per build, and accurate build time estimations let you plan production more efficiently.

## Job preparation and monitoring

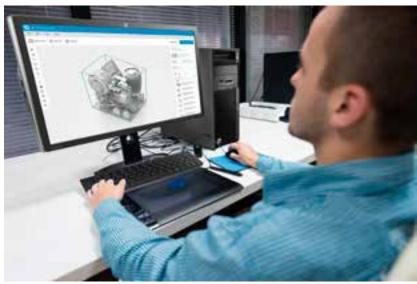
#### **HP SmartStream 3D Build Manager**

The intuitive and powerful HP SmartStream 3D Build Manager helps you prepare your jobs for printing and contains the essential features you need to prepare and send to print, including:

- Import 3MF and STL files
- 3D model error detection and correction
- 3D autopacking
- Send to print

#### **HP SmartStream 3D Command Center**

The HP SmartStream 3D Command Center allows you to fully monitor your HP Jet Fusion 3D Printers from your desktop. Keep track of build status, check consumables, and get real-time alerts.



# **Integration with industry-leading software solutions**



Autodesk® Netfabb® Engine for HP provides advanced software for AUTODESK the additive manufacturing of production quality parts. Quality control functions prevent machine errors and enhance your overall process reliability and efficiency.



Connect with Materialise Magics with Materialise Build Processor for HP Multi Jet Fusion, the industry standard software for professional 3D Printing, to unlock the full potential of your HP 3D printer and manage every step in your production process.

## **Founding member of 3MF Consortium**



HP is a founding member of the 3MF Consortium—an industry 3MF consortium working to define a new 3D printing format that will allow design applications to send full-fidelity 3D models to a mix of other applications, platforms, services and printers.



# **Boost your competive advantage with HP Technical Service and Support**

Rely on HP Technical Services and Support to stand behind your business maximizing your uptime and productivity, and driving your business growth.

With exclusive HP installation, training, support services and market-leading applications expertise, you can optimize your 3D printer performance, throughput, part quality and yield.

- Next-business-day onsite support and issue resolution<sup>10</sup>
- Next-business-day spare parts availability, 11 thanks to HP's global reach
- 3D printing productivity and professional services to accelerate your business growth

We help you do more as well as get more return on your investment. Not just from day one, but every day as your needs evolve. So you can grow your business with real peace of mind.

## For more information, please visit:

hp.com/go/3Dsupport



For more information, please visit: hp.com/go/3Dsoftware

10 11



# Technical specifications<sup>12</sup>

# HP Jet Fusion 3D 4200 Printer HP Jet Fusion 3D 3200 Printer

Printer	Technology	HP Multi Jet Fusion technology			
performance	Effective building volume	406 x 305x 406 mm (16 x 12 x 16 in)			
	Building speed	<b>3200 Printer:</b> 3500 cm³/hr (215 in³/hr)¹³ <b>4200 Printer:</b> 4500 cm³/hr (275 in³/hr)¹⁴ <b>3200 Printer:</b> 0.08 to 0.10 mm (0.003 to 0.004 in) <b>4200 Printer:</b> 0.07 to 0.12 mm (0.0025 to 0.005 in)			
	Layer thickness				
	Print resolution (x, y)	1200 dpi			
Dimensions (w x d x h)	Printer	2178 x 1238 x 1448 mm (85.7 x 48.7 x 57 in)			
	Shipping	2300 x 1325 x 1983 mm (91 x 52 x 78 in)			
	Operating area	3700 x 3700 mm (146 x 146 in)			
Weight	Printer	730 kg (1609 lb)			
	Shipping	900 kg (1984 lb)			
Network	Gigabit Ethernet (10/100/1000Base-T), supporting the following standards: TCP, DHCP (IPv4 only), TLS/SSL				
Hard disk	2 TB (AES-128 encrypted, FIPS 140, disk wipe DoD 5220M)				
Software	Included software	HP SmartStream 3D Build Manager, HP SmartStream 3D Command Center			
	Supported file formats	3mf, stl			
	Certified third-party software	Autodesk® Netfabb® Engine for HP, Materialise Magics with Materialise Build Processor for HP Multi Jet Fusion			
Power	Consumption	9 to 11 kW (typical)			
	Requirements	Input voltage three phase 380 to 415 V (line-to-line), 30 A max, 50/60 Hz / 200 to 240 V (line-to-line), 48 A max, 50/60Hz			
Certification	Safety	IEC 60950-1+A1+A2 compliant; United States and Canada (UL listed); EU (LVD and MD compliant, EN60950-1, EN12100-1, EN60204-1, and EN1010)			
	Electromagnetic	Compliant with Class A requirements, including: USA (FCC rules), Canada (ICES), EU (EMC Directive), Australia (ACMA), New Zealand (RSM)			
	Environmental	RoHS, REACH			
Warranty		One-year Services and Support coverage <sup>15</sup>			

#### **Eco Highlights**



- Powders or agents are not classified as hazardous<sup>16</sup>
- Enclosed printing system and automated powder management, including post-processing, for a cleaner and more comfortable environment<sup>7</sup>
- Minimum waste thanks to high reusability of powder<sup>8</sup>
- Take back program for PHs17

Find out more about HP sustainable solutions at hp.com/ecosolutions

- 1. Based on internal testing, HP Jet Fusion 3D printing solution average printing time is up to 10 times faster than FDM and SLS printer solutions from \$100,000 USD to \$300,000 USD on market as of April 2016. Testing variables: Part Quantity: 1 full bucket of parts from HP Jet Fusion 3D at 20% of packing density versus same number of parts on above-mentioned competitive devices; Part size: 30 g; Layer thickness: 0.1mm/0.004 inches. Fast cooling module available in 2017 with some models will further accelerate production time.
- 2. Based on internal testing and public data, HP Jet Fusion 3D average printing cost per part is half the cost of comparable FDM and SLS printer solutions from \$100,000 USD to \$300,000 USD on market as of April 2016. Cost analysis based on: standard solution configuration price, supplies price, and maintenance costs recommended by manufacturer. Cost criteria: printing 1-2 buckets per day/ 5 days per week over 1 year of 30-gram parts at 10% packing density using the powder reusability ratio recommended by manufacturer.
- Based on dimensional accuracy of ±0.2 mm/0.008 inches, measured after sand blasting. See hp.com/go/3Dmaterials for more info on materials specifications.
- Based on the following mechanical properties: Tensile strength at 50, Modulus Z 1900, Modulus XY 1900. ASTM standard tests with PA-12 material. See <a href="https://doi.org/10.30m/go/3Dmaterials">https://doi.org/10.30m/go/3Dmaterials</a> for more info on materials specifications.
- Within allowable margin of error. Based on dimensional accuracy of ±0.2 mm/0.008 inches, measured after sand blasting. See <a href="https://px.com/go/3Dmaterials">https://px.com/go/3Dmaterials</a> for more info on materials specifications.
- 6. Fast Cooling is enabled by HP Jet Fusion 3D Processing Station with Fast Cooling, available in 2017. HP Jet Fusion 3D Processing Station with Fast Cooling accelerates parts cooling time versus recommended manufacturer time of SLS printer solutions from \$100,000 USD to \$300,000 USD, as tested in April 2016. FDM not applicable. Continuous printing requires an additional HP Jet Fusion 3D Build Unit (standard printer configuration includes one HP Jet Fusion 3D Build Unit).
  Based on internal testing and simulation, HP Jet Fusion 3D printing solution average printing time is

#### HP Jet Fusion Processing Station with Fast Cooling<sup>6</sup> HP Jet Fusion Processing Station

Features	<b>Processing Station</b> (Only compatible with the HP Jet Fusion 3D 3200 Printer)	Automated mixing, sieving, and loading; manual unpacking	
	<b>Processing Station with Fast Cooling<sup>6</sup></b> (Compatible with the HP Jet Fusion 3D 3200 and 4200 Printers)	Automated mixing, sieving, and loading; semi-manual unpacking; fast cooling; external storage tank; compatible with high-capacity material cartridges	
Dimensions (w x d x h)	Processing Station	1926 x 1245 x 2400 mm (75.8 x 49 x 94.5 in)	
	Processing Station with Fast Cooling <sup>6</sup>	3121 x 1571 x 2400 mm (122.9 x 61.9 x 94.5 in)	
	Shipping		
	Processing Station	2304 x 1176 x 2180 mm (90.7 x 46.3 x 85.8 in)	
	Processing Station with Fast Cooling <sup>6</sup>	3499 x 1176 x 2180 mm (137.8 x 46.3 x 85.8 in)	
	Operating area		
	Processing Station	2126 x 2745 mm (83.7 x 108.1 in)	
	Processing Station with Fast Cooling <sup>6</sup>	3321 x 3071 mm (130.7 x 120.9 in)	
Weight	Processing station	450 kg (992 lb)	
	Processing station (loaded)	700 kg (1543 lb)	
	Processing Station with Fast Cooling <sup>6</sup>	480 kg (1058 lb)	
	Processing Station with Fast Cooling <sup>6</sup> (loaded)	810 kg (1786 lb)	
	Shipping		
	Processing Station	600 kg (1323 lb)	
	Processing Station with Fast Cooling⁵	620 kg (1367 lb)	
Certification	Safety	IEC 60950-1+A1+A2 compliant; United States and Canada (UL listed); EU (LVD and MD compliant, EN60950-1, EN12100-1, EN60204-1, and EN1010)	
	Electromagnetic	Compliant with Class A requirements, including: USA (FCC rules), Canada (ICES), EU (EMC Directive), Australia (ACMA), Net Zealand (RSM)	
	Environmental	RoHS, REACH	
Warranty		One-year Services and Support coverage <sup>15</sup>	





## For more information, please visit hp.com/go/JetFusion3Dsolutions

- up to 10x faster than FDM and SLS printer solutions from \$100,000 USD to \$300,000 USD on market as of April 2016. Testing variables: Part Quantity: 1 full bucket of parts from HP Jet Fusion 3D at 20% of packing density vs same number of parts on above-mentioned competitive devices; Part size: 30g; Layer thickness: 0.1mm/0.004 inches.
- The term "cleaner", does not refer to any indoor air quality requirements and/or consider related air quality regulations or testing that may be applicable. The HP powder and agents do not meet the criteria for classification as hazardous according to Regulation (EC) 1272/2008 as amended.
- 8. HP Jet Fusion 3D print solution with HP 3D High Reusability PA12 has the highest post-production surplus powder reusability with 80% reusability vs any other powder based 3D printing technology using PA12 material. Consistent performance with only 20% powder refresh rate.
- 9. 30L refers to the materials container size and not the actual materials volume.
- 10. Within warranty or Care Pack coverage.
- 11. Next-business-day parts availability in most countries
- 12. For latest technical specifications, please visit  $\underline{\text{hp.com/go/3Dprint}}.$
- 13. Based on 0.08-mm (0.003-in) layer thickness and 10 sec/layer.

  14. Based on 0.1-mm (0.004-in) layer thickness and 8 sec/layer.
- 15. Only available in certain countries and subject to Terms and Conditions of HP Limited Warranty and/ or Service Agreement. Please consult with your local sales representatives for further details.
- 16. The HP powder and agents do not meet the criteria for classification as hazardous according to Regulation (EC) 1272/2008 as amended.
- 17. Printing supplies eligible for recycling vary by printer. Visit <u>hp.com/recycle</u> to see how to participate and for HP Planet Partners program availability; program may not be available in your area. Where this program is not available, and for other consumables not included in the program, consult your local waste authorities on appropriate disposal.

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