HP 3D Printing Materials

Empowering Scalable Innovation with HP 3D Printing Materials

HP 3D Printing Materials are unlocking new possibilities for industries ready to scale digital production. By combining advanced materials innovation with HP's Multi Jet Fusion technology, manufacturers can achieve design freedom, reduce part weight, accelerate time to market, and optimize cost and part quality—without compromising performance or efficiency. This is key to enabling scalability and minimizing the environmental impact of additive manufacturing.

At the heart of this transformation is HP's commitment to reducing Total Cost of Ownership (TCO). Through high powder reusability[1], optimized part quality, and consistent mechanical performance, HP's growing portfolio of materials empowers businesses to overcome traditional barriers to adoption—delivering reliable, repeatable results at a low cost per part.

With the latest addition of the HP 3D High Reusability (HR) PA 11 Gen2 material, HP Multi Jet Fusion technology continues to disrupt the status quo—delivering exceptional material reusability[1], optimizing part costs, and achieving the lowest possible carbon footprint for parts printed using HP Multi Jet Fusion technology[2]. This next-generation bio-based material offers optimal material efficiency and consistently high mechanical properties[3].

From durable thermoplastics to flexible elastomers, HP 3D Printing materials are engineered to meet the demands of industrial, mobility, healthcare, aerospace, consumer goods and electronics applications. Engineered for high mechanical strength and ductility, they are ideal for orthotics and prosthetics—where comfort and durability are essential—and equally suited for applications that demand repeatability, quality and performance at sacale.

HP 3D Printing Materials are driving innovation to overcome traditional barriers to 3D printing—cost, quality, performance, and diversity—through a growing portfolio of HP 3D Printing materials and materials Certified for HP Jet Fusion 3D Printing. By delivering high performance while optimizing cost and part quality, these materials open the door to broader adoption of additive manufacturing across many sectors.

HP 3D High Reusability (HR) PA 11Gen2

A ductile, bio-based material[4] for repeatable and costeffective part production[5]

Produce strong, ductile parts with high repeatability	Minimize material waste and cost of production	Reduce your environmental impact
▪ Engineered to produce consistently high mechanical properties. ▪ Maximize part quality and yield for production applications[6]. ▪ Ideal for final use parts across a variety of industries.	▪ Thermoplastic material delivering optimal mechanical properties. ▪ Enables up to 80% material reusability[7]. Manufactures parts at up to 40% lower cost than previous PA 11 generation[8].	▪ Bio-based material, derived from castor oil, reduces your environmental impact [3,4]. ▪ Access the best PA 11 reusability in the market for optimal material efficiency[2]. ▪ Achieve the lowest possible carbon footprint for MJF parts[3].

To learn more about this material, please visit: hp.com/PA11Gen2

Data courtesy of Cure Lab

HP 3D High Reusability PA 11

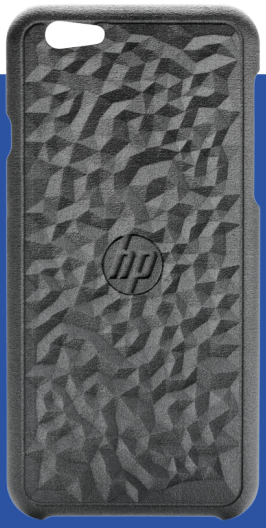
Ideal for producing ductile[11], quality fuctional parts

Produce strong, ductile[11] unctional parts	Minimize waste with a quality bio-based material[14]	Engineered for HP Multi Jet Fusion technology and parts that reduce your carbon footprint[18]
▪ Thermoplastic material delivering optimal mechanical properties. ▪ Provides excellent chemical resistance.[12] and enhanced elongation-at-break.[11] ▪ Impact resistance and ductility[11] for prostheses, insoles, sports goods, snap fits, living hinges, and more. ▪ Designed for production of functional parts across a variety of industries, including healthcare, industrial and consumer goods.[13]	▪ Bio-based material[15], derived from vegetable castor oil, reduces your environmental impact. ▪ Minimize waste—reuse surplus powder batch after batch and get functional parts without throwing away the excess anymore.[16] ▪ Get consistent performance while achieving up to 70% surplus powder reusability.[17] ▪ Optimize cost and part quality—cost-efficient material with industry-leading surplus powder reusability.[16]	▪ Uses biomethane for polymer production, which reduces the material's carbon footprint by 46%.[18] ▪ Designed for production of functional and final parts across a variety of industries. ▪ Provides the best balance between performance and reusability.[19] ▪ Easy-to-process material enables high productivity and less waste.[20] ▪ Engineered to reliably produce final parts and functional prototypes with fine detail and dimensional accuracy.

To learn more about this material, please visit: hp.com/PA11

Data courtesy of NACAR

Data courtesy of Bowman - additive production



Data courtesy of Addit-ion

Data courtesy of
OT4 Orthopädietechnik GmbH

Data courtesy of Optimus 3D

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

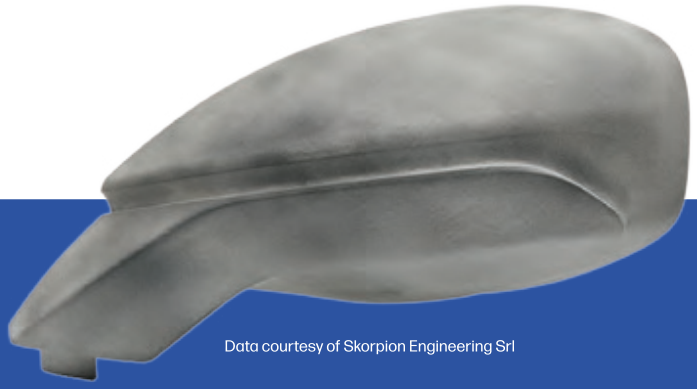
Ideal for producing strong, low-cost parts that reduce your carbon footprint[21]

Produce strong, functional, and detailed complex parts	Quality at a low cost per part[24]	Engineered for HP Multi Jet Fusion technology and parts that reduce your carbon footprint[21]
▪ Robust thermoplastic produces high-density parts with balanced property profiles and strong structures. ▪ Provides good chemical resistance to oils, greases, aliphatic hydrocarbons, and alkalies.[22] ▪ Ideal for complex assemblies, housings, enclosures, and watertight applications. ▪ Designed for production of functional parts across a variety of industries, including healthcare, industrial and mobility.[23]	▪ Achieve a low cost per part[24] and reduce your total cost of ownership.[25] ▪ Minimize waste—reuse surplus powder batch after batch and get functional parts without throwing away the excess anymore.[26] ▪ Get consistent performance while achieving up to 80% surplus powder reusability.[25] ▪ Optimize cost and part quality—cost-efficient material with industry-leading surplus powder reusability.[26]	▪ Uses renewable energy sources and biomethane for polymer production, which reduces the material's carbon footprint by 49%.[21] ▪ Provides the best balance between performance and reusability.[28] ▪ 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.

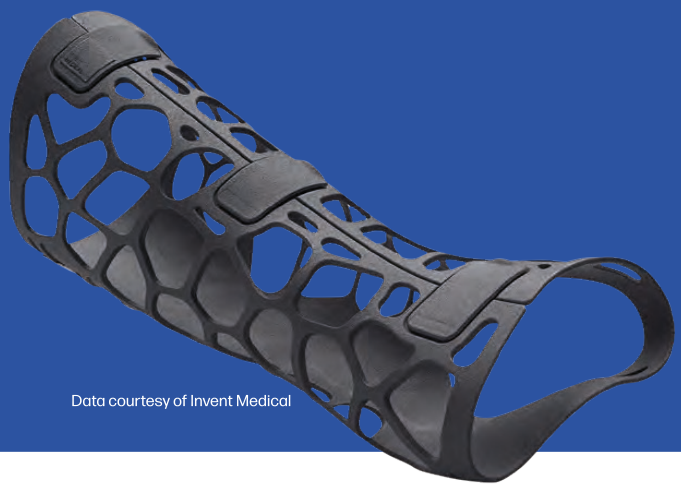
To learn more about this material, please visit:

hp.com/PA12withJetFusion5600

hp.com/PA12withJetFusion5200



Data courtesy of Skorpion Engineering Srl



Data courtesy of Invent Medical

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

Ideal for producing premium surface aesthetics with a lower cost per part[29] and high reusability[30]

Produce quality parts with premium surface aesthetics	Achieve an even lower cost per part[29]	Minimize waste and embrace recyclability
▪ Achieve premium surface aesthetic parts directly from the printer that are up to 70% smoother,[29] 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.	▪ Reduce variable cost per part and your total cost of ownership.[32] ▪ Get consistent performance while achieving up to 85% surplus powder reusability with this low reactive material.[33] ▪ 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.	▪ Maximize powder efficiency with an 85% reusability ratio and optimize usage, allowing for continuous printing and a reduced environmental impact.[29] ▪ 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 responsibility.[30]

To learn more about this material, please visit: hp.com/PA12S

Data courtesy of Bega

Data courtesy of Decathlon

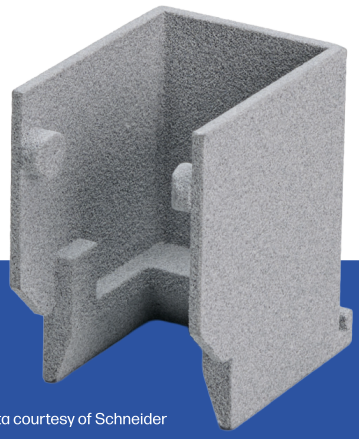
Bega's part was printed with PA 12 S and has been post-processed
Decathlon's part was printed with PA 12 S and has been post-processed

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

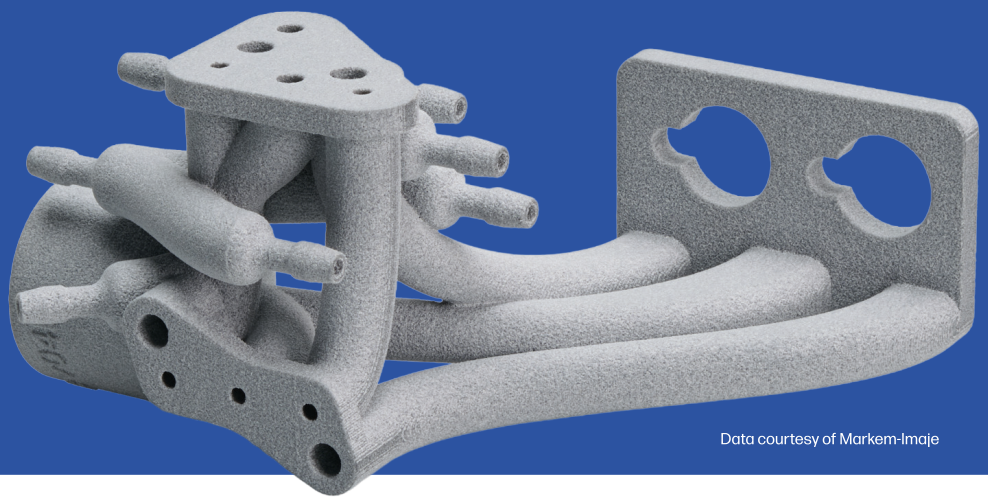
Halogen-free Flame Retardant (FR) material with 60% reusability[34] disruptive cost per part[32] and smooth surface finish[36]

Flame Retardant	60% reusability[33]	Premium quality
▪ Halogen-free material,[37] UL94 certified[38] ▪ Made with halogen-free chemicals.[36] ▪ Achieves UL94 V0 flammability safety standard at 2.5 mm thickness.[38] ▪ PA12 particles encapsulated with FR particles provide homogenous flammability across parts.	▪ Maximize powder efficiency with a 60% reusability ratio.[34] ▪ Disruptive cost per part: Reduce variable cost per part and your total cost of ownership.[35] ▪ Minimize waste while balancing performance and reusability. ▪ Reduced carbon footprint: Manufactured using renewable energy sources and biomethane for polymer production.[39]	▪ Produce quality parts with premium surface aesthetics. ▪ Smooth surface: Achieve premium surface aesthetic parts directly from the printer that are up to 60% smoother.[40] ▪ Isotropic properties: Produce functional prototypes and final parts with fine detail and dimensional accuracy across a variety of applications.

To learn more about this material, please visit: hp.com/PA12FR



Data courtesy of Schneider



Data courtesy of Markem-Imaje

HP 3D High Reusability (HR) PA 12 Glass Beads

Ideal for producing stiff, dimensionally stable, quality parts

Produce stiff, functional parts	Quality and high reusability[41]	Engineered for HP Multi Jet Fusion technology
▪ 40% glass bead-filled thermoplastic material with both optimal mechanical properties and high reusability.[41] ▪ Provides dimensional stability along with repeatability.[42] Ideal for applications requiring high stiffness, like enclosures and housings, fixtures and tooling.	▪ Less waste—reuse surplus powder batch after batch and get functional parts without throwing away the excess anymore.[41] ▪ Get consistent performance while achieving up to 70% surplus powder reusability.[43] ▪ Glass beads come from recycled glass. ▪ Optimize cost and part quality—cost-efficient material with high surplus powder reusability.[41]	▪ Designed for production of functional parts across a variety of industries. ▪ Provides the best balance between performance and reusability.[44] ▪ Engineered to produce common glass bead applications with fine detail and dimensional accuracy.

To learn more about this material, please visit: hp.com/PA12GB

Data courtesy of Prometal3D

HP 3D High Reusability (HR) PP, enabled by Forward AM

Ideal for producing chemical-resistant,[45] weldable, low moisture absorption, functional parts

Genuine, functional PP parts	Chemical resistance,[45] low moisture absorption	Lowest cost HP 3D material for HP Multi Jet Fusion
▪ Get the same properties as many commonly used PPs with this genuine polypropylene material. ▪ Accelerate your product development process using the same prototyping material as the final part. ▪ Designed for production of functional parts across a variety of industries, including healthcare, industrial and mobility.[46]	▪ Excellent chemical resistance and low moisture absorption ideal for piping or fluid systems, and containers.[45] ▪ Outstanding welding capabilities with other PP parts produced with traditional methods, like injection molding. ▪ Versatile material ideal for a wide range of automotive, industrial, consumer goods, and medical[46] applications.	▪ Our best value HP 3D material delivers consistent performance with up to 90% surplus powder reuse.[47] ▪ Provides the optimal balance between performance and cost.[48] ▪ Easy-to-process material enables high productivity and less waste.[47]

To learn more about this material, please visit: hp.com/polypropylene

Data courtesy of Oeschler AG

2021 R&D 100 FINALIST

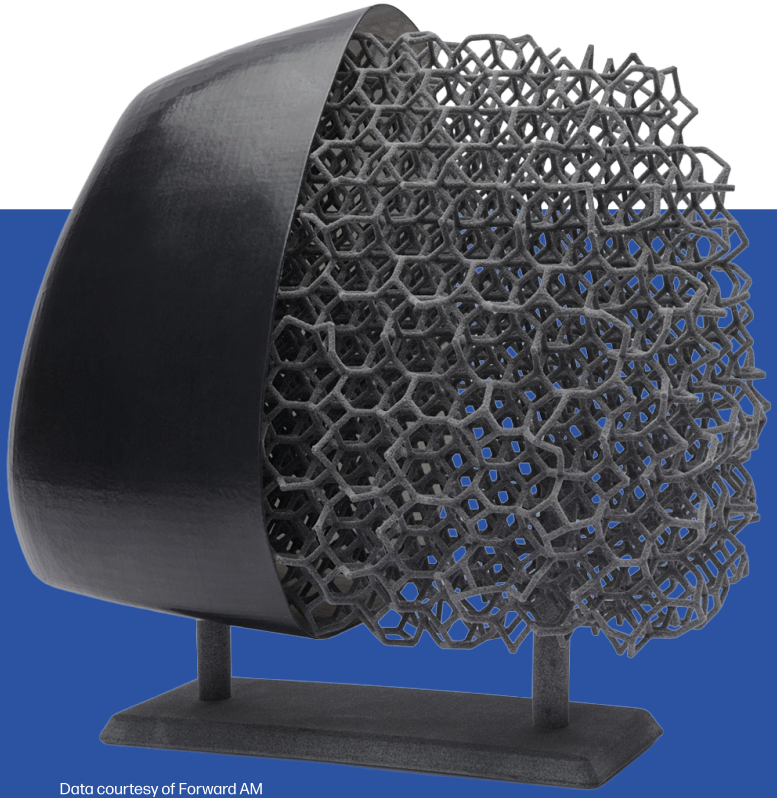
Printed with HP 3D High Reusability PP, enabled by Forward AM

HP 3D High Reusability (HR) TPU 01

Produce flexible, durable parts with excellent elasticity and impact resistance, unlocking reliable performance across a wide range of applications—from healthcare, sports gear, or industrial seals to footwear and automotive interiors

Produce durable, flexible, functional parts	Reduce part cost while maintaining quality	Simplify processing from print to post-production
▪ Produce elastomeric parts that combine excellent elasticity rebound and fatigue resistance—ideal for cushioning protection and repeated use. ▪ Maintain structural integrity under stress with outstanding shock absorption and mechanical durability. ▪ Achieve excellent surface finish and fine detail with high process stability—reducing the need for post-processing and enabling clean aesthetics straight from the printer. ▪ Ideal for a wide range of industries requiring elastomeric properties including healthcare sports gear industrial seals footwear and automotive interiors such as seat components.	▪ Reduce cost per part and support sustainable production with up to 80% surplus powder reusability[49]—while maintaining consistent performance and excellent thermal stability across multiple cycles. ▪ Minimize material use while maximizing performance with lattice-optimized geometries—enabling lightweight yet strong parts. ▪ Achieve reliable, high-yield printing, and fast cycle times helping reduce lead times and boosting operational efficiency.	▪ Print with confidence, right from the start—HP AM's optimized PrintMode settings help reduce trial-and-error, providing consistent results and minimizing downtime. ▪ Easily achieve final part aesthetics and functional finishing with avalaible advanced smoothing and dyeing techniques in the market. ▪ Seamless integration within HP AM's ecosystem—from job preparation and printing to material reuse and support—making it easier to scale your elastomeric production.

To learn more about this material, please visit: hp.com/TPU01



Data courtesy of Forward AM

Data courtesy of HP/Forward AM
Printed with HP 3D HR TPU 01

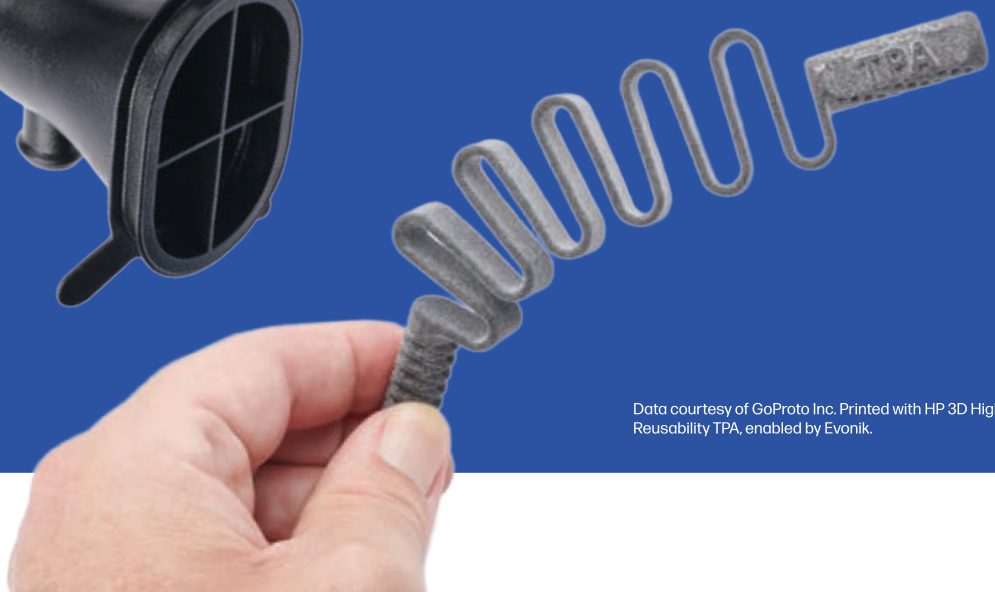
HP 3D High Reusability TPA, enabled by Evonik*

Ideal for producing easy-to-process, flexible, and lightweight parts

Flexible and lightweight parts with enhanced rebound resilience	Elastomer with high part uniformity	Easy to process
▪ Enhanced rebound resilience and elongation-at-break with lighter parts. ▪ Optimal mechanical resistance at low temperature. ▪ Ideal for applications like winter sports equipment, car interiors, robotics and grippers, and fluid systems.	▪ A flexible polyamide (PA)—one of the most used additive manufacturing materials—in a thermoplastic elastomer. ▪ High level of detail and color uniformity.	▪ Smooth workflow is comparable to using other PAs, with a simple printing process and easy clean-up of complex parts. ▪ Fastest time-to-part compared to other HP 3D Printing materials.[50] ▪ Robust parts withstand the cleaning process. ▪ Get consistent performance while achieving 80% surplus powder reusability.[50]

*This material is compatible with HP Jet Fusion 4200 3D Printing Solution which is currently discontinued, if you need further information about this material please contact your HP AM representative.

Data courtesy of GoProto Inc.
Printed with HP 3D High Reusability TPA, enabled by Evonik.
Post-processed with AMT PostPro chemical vapor smoothing



Data courtesy of GoProto Inc. Printed with HP 3D High Reusability TPA, enabled by Evonik.

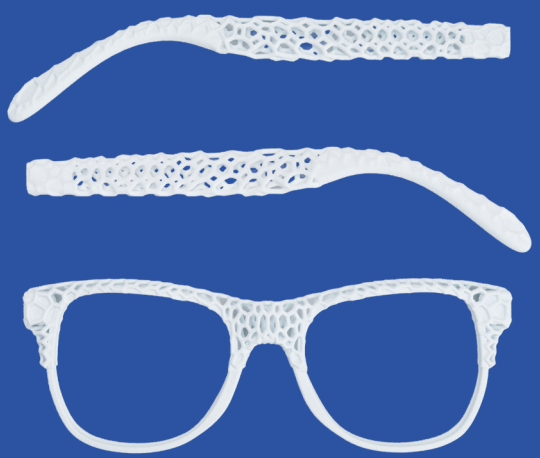
HP 3D High Reusability (HR) PA 12 W

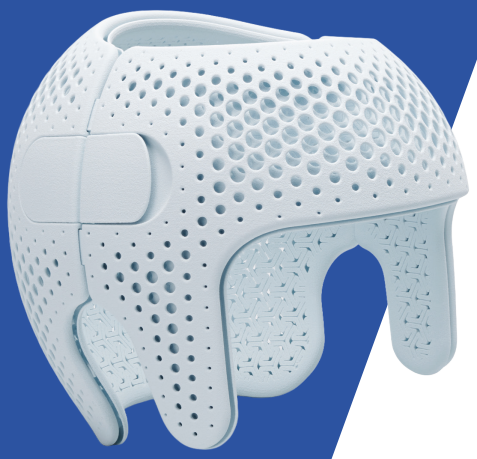
Ideal for engineering-grade, white and light grey, quality functional production parts

Strong, functional complex parts	Quality white parts	Engineered for HP Multi Jet Fusion technology
▪ Robust thermoplastic produces high-density parts with balanced property profiles and strong structures. ▪ Ideal for white parts like prosthetics, medical equipment, lighting décor, fashion and wearables, and household appliances.	▪ Produce functional white parts with optimal mechanical properties. ▪ Get consistent performance while achieving up to 75% surplus powder reusability.[51] ▪ Optimize cost and quality—white functional parts and industry-leading reusability.[51]	▪ Designed for production of white functional parts across a variety of industries, including healthcare and consumer goods. ▪ Provides the best balance between white performance and reusability.[28] ▪ Engineered to produce functional prototypes with fine detail and dimensional accuracy.

To learn more about this material, please visit: hp.com/PA12WwithJetFusion5400

Data Courtesy of Castomade





Data Courtesy of Invent Medical

Regulatory Summary

Documentation (Certifications / Declarations / Statements)	Material Datahseet	Compliance Declarations	Environmental Attributes and Regulatory Summary (EARS)	Ad-hoc Inquiries and in-depth customer use case assessment
PA 12	hp.com/PA12withJetFusion5600	Please contact your HP Representative for a copy of this document		Detailed information specific to customer use case(S) and applications, including relevant toxicology and testing summaries. Please contact your HP Representative
PA 12 S	hp.com/PA12S			
PA 12 W	hp.com/PA12WwithJetFusion5600			
PA 12 FR	hp.com/PA12FR			
PA 11 Gen2	https://hp.com/PA11Gen2			
PA 11	hp.com/PA11			
PP	hp.com/polypropylene			
PA 12 GB	hp.com/PA12GB			
TPA	-			
TPU 01	hp.com/TPU01			
M88A	https://media.lubrizol.com/-/media/Project/Lubrizol-Corporation/Lubrizol/Master-Site/Engineered-Polymers/Documents/TDS/ESTANE-3D-TPU-M88A-565-OR-UV-PW-01312023.pdf			
M95A	https://media.lubrizol.com/-/media/Project/Lubrizol-Corporation/Lubrizol/Master-Site/Engineered-Polymers/Documents/Literature/ESTANE-3D-TPU-M95A-for-Additive-Manufacturing-Solution-Data-Sheet.pdf			

Materials certified for HP Jet Fusion 3D Printing

HP Additive Manufacturing is committed to expanding our portfolio of materials certified for HP Jet Fusion 3D Printing Solutions. We're working with a variety of other third-party vendors to increase the materials and application options available.

Materials partners interested in engaging with HP Additive Manufacturing Solutions are invited to complete the "Connect with us" form here: hp.com/go/3Dcontactus

HP AM committed to expanding our portfolio of materials certified for HP Jet Fusion 3D Printing solutions. We're working with a variety of other third-party vendors to increase the materials and application options available.

Certified for HP Jet Fusion 3D printers

Tested and approved solely for compatibility with HP Jet Fusion 3D printers[27]

ESTANE® 3D TPU M95A: high rebound and good abrasion resistance	ESTANE® 3D TPU M88A: flexible, durable, and lightweight parts
An ideal fit for both prototyping and manufacturing scale-up applications, delivering high-energy rebound, high-impact absorption, a good abrasion resistance rate, and high elasticity, combined with excellent unpacking/de-powdering properties. ▪ Skin contact compatibility[53] ▪ Hardness (Shore A): 95[54] ▪ Up to 80% powder reusability[55]	Easy to unpack, which means you can produce more complex lattice design structures while also improving operational and cost efficiencies. Dye and coat finished raw parts when colored parts or aesthetics are needed. They're highly durable, offering high abrasion and puncture resistance, low-temperature flexibility, high-temperature resistance, and outstanding chemical resistance. ▪ Skin contact compatibility[56] ▪ Hardness (Shore A): 88[57] ▪ Up to 80% powder reusability[58]

Visit Lubrizol website for more information on these two HP certified materials:

https://lubrizol.com/

Data Courtesy of Lubrizol

Data Courtesy of Lubrizol

Active partnerships

We're working with the following industry-leading materials companies to better address 3D printing needs across industries. Together with our growing network of materials innovation partners, we're enabling performance improvements and new possibilities for part properties.

EVONIK Leading Beyond Chemistry

forward am

Lubrizol

ARKEMA

Hands-on materials advancement

Material Development Kit	HP 3D Open Platform Materials and Applications Lab	Technical guidelines for material development
Jumpstart the development process with the Material Development Kit (MDK)—developed by HP and SIGMADESIGN, the industry's first MDK helps materials suppliers more effectively—and successfully—develop their first powder materials for the HP Multi Jet Fusion platform. The MDK enables companies interested in certifying their materials to quickly test 3D powder spreadability and compatibility with HP Jet Fusion 3D Printers prior to submitting the materials to HP for testing.	HP 3D Open Platform Materials and Applications Lab—As part of our commitment to the evolution and widespread adoption of 3D printing, we're inviting materials companies to work in a collaborative lab environment. Located in Corvallis, Oregon, the HP 3D Open Platform Materials and Applications Lab is the world's first state-of-the-art lab helping companies develop, test, certify, and deliver the next generation of materials and applications for HP 3D Printing. This 3,500 square-feet facility offers 3D partners a range of equipment and in-house expertise to jumpstart and accelerate materials innovation and the development of new applications. This is critical to quickening the evolution and adoption of 3D printing technologies.	Access to comprehensive technical guidelines for suppliers who are interested in developing suitable materials for HP Multi Jet Fusion technology through the HP Open Materials platform. For more information, please contact us at: https://reinvent.hp.com/us-en-3d-prints-plastics-cwu-b

HP 3D Printing materials portfolio selection guide[75]

	HP 3D HR PA 12 W	HP 3D HR PA 11	HP 3D HR PA 12 S, enabled by Arkema	HP 3D HR PA 12, enabled by Evonik	HP 3D HR PA 12 GB	HP 3D HR PP, enabled by Forward AM	HP 3D HR PA 11 Gen2	HP 3D HR PA 12 FR
	Rigid polymer							
Stiffness	★★	★★	★★	★★	★★★	★	★★	★★
Impact resistance	★	★★	★	★	–	★	★★	★
Elongation	★	★★	–	★	–	★	★★	★
Dimensional capability	★★★	★★	★★★	★★★	★★	★	★★	★★★
Level of detail	★★★	★★★	★★★	★★	★★	★	★★★	★★
Flat part	★★	★	★★	★★	★★★	–	★	★★
Temperature resistance	★	–	★	★	★★	★	–	★★★
Chemical resistance[12,23,46]	★★	★★	★★	★★	n/a	★★★	★★	–
Low moisture absorption	–	–	–	–	–	★★★	–	–
Lightweight	★★	★★	★★	★★	★	★★★	★★	★
Surface roughness	★★	★★	★★★	★★	★★	★	★★	★★★

	HP 3D HR TPA, enabled by Evonik	HP 3D HR TPU 01	ESTANE® 3D TPU M95A	ESTANE® 3D TPU M88A
	Elastomeric polymer			
Rebound (%)	★★★	★★	★★	★★
Elongation-at-break (%)	★★	★★	★★★	★★
Tensile strength (MPa)	★★	★★	★★★	★★
Abrasion resistance (mm)	★★	★★★	★★	★★

★★★ Best ★★ Good ★ Fair – Not recommended

Ordering information*

Product Number	Material
B87XLA	HP 3D High Reusability PA 11 Gen2 material 300L (146 Kg)
B87XMA	HP 3D High Reusability PA 11 Gen2 product material 300L (146 Kg)[66]
B87XNA	HP 3D High Reusability PA 11 Gen2 material 1700L (451 Kg)
V1R18A	HP 3D High Reusability PA 11 material 300L (140 Kg)
V1R36A	HP 3D High Reusability PA 11 product material 300L (140 Kg)[60]
V1R24A	HP 3D High Reusability PA 11 material 1700L (750 Kg)[60,61,63]
V1R16A	HP 3D High Reusability PA 12 enabled by Evonik material 300L (130 Kg)
V1R34A	HP 3D High Reusability PA 12 enabled by Evonik product material 300L (130 Kg)[68]
V1R20A	HP 3D High Reusability PA 12 enabled by Evonik material 1400L (600 Kg)[58,62,63]
910J7A	HP 3D High Reusability PA12 S enabled by Arkema material 300L (170 Kg)
910J8A	HP 3D High Reusability PA12 S enabled by Arkema product material 300L (170 Kg)[59]
9V508A	HP 3D High Reusability PA12 S enabled by Arkema material 1220L (500 Kg)[58,64,65]
AN5S8A	HP 3D High Reusability PA 12 FR enabled by Evonik material 300L (130 Kg)
AN5S9A	HP 3D High Reusability PA 12 FR enabled by Evonik product material 300L (130 Kg)[57]
AN5T0A	HP 3D High Reusability PA 12 FR enabled by Evonik material 1400L (600 Kg)[57,58,59]
V1R22A	HP 3D High Reusability PA 12 GB material 300L (150 Kg)
V1R35A	HP 3D High Reusability PA 12 GB product material 300L (150 Kg)[60]
V1R23A	HP 3D High Reusability PA 12 GB material 1400L (700 Kg)[59,60,61]
6M032A	HP 3D High Reusability PA12 W material 300L (130 Kg)
6J0B2A	HP 3D High Reusability PA12 W production material 300L (130 Kg)[68]
6M033A	HP 3D High Reusability PA12 W material 1400L (600 Kg)[58,68,72]
V1R28A	HP 3D High Reusability PP enabled by Forward AM material 300L (100 Kg)
V1R37A	HP 3D High Reusability PP enabled by Forward AM product material 300L (100 Kg)[70]
V1R29A	HP 3D High Reusability PP enabled by Forward AM material 1200 L (400 Kg)[58,70,73]
V1R38A	HP 3D High Reusability TPA enabled by Evonik material 300L (120 Kg)[71]
V1R39A	HP 3D High Reusability TPA enabled by Evonik product material 300L (120 Kg)[58,71,76]
B83R5A	HP 3D High Reusability TPU 01 material 300L (140 Kg)
B83R6A	HP 3D High Reusability TPU 01 product material 300L (140 Kg)[64]
B83R7A	HP 3D High Reusability TPU 01 material 1000L (500 Kg)[58,67,68]
3DTW0300	ESTANE® 3D TPU M95A-545 material 300L (160Kg)
3DTW0900	ESTANE® 3D TPU M95A material 900 L (480 Kg)
3DTW003B	ESTANE® 3D TPU M88A 300 L (160 Kg)

*Para ver compatibilidades consultar:
hp.com/materialscompatibility

Dynamic security-enabled printer. Only intended to be used with cartridges using an Original HP chip. Cartridges using a non-HP chip may not work, and those that work today may not work in the future.
More at: hp.com/go learnaboutsupplies

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

1. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
2. As of May 2025, PA 11 Gen2 yields lower carbon footprint parts compared to all other materials enabled for HP MJF technology.
3. As of May 2025, no other PA 11 material in the Additive Manufacturing industry offers 80% material reusability. Source: internal audit.
4. The bio-based carbon content of HP 3D High Reusability PA 11 Gen2 powder is 100% according to ASTM D6866. The bio-based carbon atoms in the product originate from castor plants that do not compete with food crops and are grown without GMOs in semi-arid areas.
5. Compatible with HP Jet Fusion 5600 Series 3D Printing Solutions.
6. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability PA 11 Gen2 provide up to 80% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
7. As of May 2025, the HP Total Cost of Ownership (TCO) tool calculates 40% lower variable cost comparing HP 3D HR PA 11 Gen2 parts from the HP JF 5600 Series to HP 3D HR PA 11 (Gen1) parts from the HP JF 4200 Series, assuming maximum reusability of 80% for HP 3D HR PA 11 Gen2 and 70% for HP 3D HR PA 11 (Gen1).
8. Optional access to HP 3D Process Development is available on the HP JF 5600 Series 3D Printing Solution to fine tune part quality outcomes.
9. As of May 2025, no other PA 11 material in the Additive Manufacturing industry offers 80% material reusability. Source: internal audit.
10. As of May 2025, PA 11 Gen2 yields lower carbon footprint parts compared to all other materials enabled for MJF.
11. Testing according to ASTM D638, ASTM D256, and ASTM D648 using HDT at different loads with a 3D scanner for dimensional accuracy. Testing monitored using statistical process controls.
12. For HP 3D High Reusability PA 11 based on internal HP testing, June 2017. 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.
13. HP has completed preliminary biocompatibility testing of printed parts deemed representative of those that would most likely be used for commercial purposes. The intent of this testing is to initially characterize the suitability of printed parts for certain regulated market applications affiliated with the HP 3D HR PA 11 material. For additional information, please contact your HP representative. Environmental Attributes and Regulatory Summary (EARS) document are available upon request. Please contact your HP representative to get the latest version.
14. HP 3D High Reusability PA 11 powder is made with 100% renewable carbon content derived from castor plants grown without GMOs in arid areas that do not compete with food crops. HP 3D High Reusability PA 11 is made using renewable sources, and may be made together with certain non-renewable sources. A renewable resource is a natural organic resource that can be renewed at the same speed in which it is consumed. Renewable stands for the number of carbon atoms in the chain coming from renewable sources (in this case, castor seeds) according to ASTM D6866..
15. Bio-based raw material certified by Arkema.
16. Industry-leading surplus powder reusability, based on using HP 3D High Reusability PA 11 at recommended packing densities. Available for HP Jet Fusion 5200 Series 3D Printing Solutions.
17. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability PA 11 provide up to 70% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
18. Carbon footprint reduction calculated by Arkema.
19. Compared to selective laser sintering (SLS) technology. Providing an elongation at break XY of 50% with up to 70% powder reusability ratio according to the ASTM D638 test method. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
20. Easier to process than standard HP 3D High Reusability PA 12, providing proper fusing along with good spreadability and compatibility due to its small particle size.
21. Carbon footprint reduction calculated by Evonik.
22. For HP 3D High Reusability PA 12, enabled by Evonik based on internal HP testing, June 2017. 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.
23. HP has completed preliminary biocompatibility testing of printed parts deemed representative of those that would most likely be used for commercial purposes. The intent of this testing is to initially characterize the suitability of printed parts for certain regulated market applications affiliated with the HP 3D HR PA 12, enabled by Evonik material. For additional information, please contact your HP representative. Environmental Attributes and Regulatory Summary (EARS) document are available upon request. Please contact your HP representative to get the latest version.
24. Based on internal testing and public data for solutions 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 1.4 full build chambers of parts per day/5 days per week over 1 year of 30 cm3 parts at 10% packing density on Fast print mode using HP 3D High Reusability PA 12, enabled by Evonik material, and the powder reusability ratio recommended by manufacturer, and printing under certain build conditions and part geometries.
25. Compared to selective laser sintering (SLS) and fused deposition modeling (FDM) technologies, HP Multi Jet Fusion technology can reduce the overall energy requirements needed to attain full fusing and reduce the system requirements for large, vacuum-sealed ovens. In addition, HP Multi Jet Fusion technology uses less heating power than SLS systems for better material properties and material reuse rates, minimizing waste.
26. Industry-leading surplus powder reusability, based on using HP 3D High Reusability PA 12, enabled by Evonik at recommended packing densities.
27. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability PA 12, enabled by Evonik provide up to 80% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
28. Compared to selective laser sintering (SLS) technology. Tested according to ASTM D638, ASTM D256, ASTM D790, and ASTM D648.
29. Based on internal HP testing, you can achieve zero waste by applying all the fresh materials added to the system to the final printed parts (starting at 85% reusability ratio and 7% packing density). With HP 3D HR PA 12 S, enabled by Arkema, using Balanced print mode, printed part density doubles powder density, optimizing powder usage for continuous printing (requiring a fresh material ratio that's twice the input packing density).
30. Recycling program from Arkema. Available in Europe and US. Check Arkema's website for more information.
31. Based on internal HP testing for Linear Surface roughness (Ra). HP tested 5 copies using HP 3D HR PA 12 S, enabled by Arkema (using Balanced print mode), with the HP Jet Fusion 5200 series 3D Printing Solution and post-processed with sandblasting. Tested all 5 faces of the printed part.
32. Cost analysis based on standard solution configuration price, supplies price, and maintenance costs recommended by HP, comparing HP 3D HR PA 12 S, enabled by Arkema (using Balanced print mode) and power reusability recommended by HP. Cost criteria: printing 5 full builds per week, 220 working days per year, 36 cc part volume, 7% packing density, and 80 parts per build.
33. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability PA 12 S, enabled by Arkema, provide up to 85% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
34. HP Jet Fusion 5600 Series 3D Printing Solutions using HP 3D High Reusability PA 12 FR, enabled by Evonik, provide 60% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
35. Based on internal testing and public data for solutions on market as of March 2025. Cost analysis based on: standard solution configuration price, supplies price, and maintenance costs recommended by manufacturer. Cost criteria: printing 2 full build chambers of parts per week over 1 year of 41 cm^3 parts at 8% packing density on Balanced print mode using HP 3D High Reusability PA 12 FR material on HP Jet Fusion 5600 Series 3D Printing Solutions, and the powder reusability ratio recommended by manufacturer, and printing under certain build conditions and part geometries.
36. Compatible with HP Jet Fusion 5600 Series Printing Solutions.
37. Based on testing done by UL and reported on UL blue card in March 2025.
38. Based on carbon emissions calculations comparing HP 3D HR PA 12 FR, enabled by Evonik material with a theoretical version of the same material manufactured with non-renewable energy sources.
39. Based on internal HP testing for Linear Surface roughness (Ra). HP tested five copies using HP 3D HR PA 12 FR enabled by Evonik (both using Balanced print mode) with the HP Jet Fusion 5600 series Printing Solution and post processed with sandblasting. Tested all five faces of the printed part.
40. Based on using recommended packing densities, offers high reusability of surplus powder. Liters refers to the materials container size and not the actual materials volume. Materials are measured in kilograms.
41. Testing according to ASTM D638, ASTM D256, and ASTM D648 with a 3D scanner for dimensional stability. Testing monitored using statistical process controls.
42. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability PA 12 Glass Beads provide up to 70% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
43. Compared to selective laser sintering (SLS) technology. Based on running a scan on the 3D Printing part to measure and compare with the original STL file (using GOM software). For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
44. For HP 3D High Reusability PP enabled by Forward AM, based on internal HP testing, May 2020, with tests for mechanical property retention, dimensional stability, and weight change after 7- and 30-day immersion with acids, bases, organic solvents, and aqueous solutions. Due to the material characteristics, extra tuning is required in part design and printing, compared to other rigid HP 3D Printing materials.
45. HP has completed preliminary biocompatibility testing of printed parts deemed representative of those that would most likely be used for commercial purposes. The intent of this testing is to initially characterize the suitability of printed parts for certain regulated market applications affiliated with the HP 3D HR PP material. For additional information, please contact your HP representative. Environmental Attributes and Regulatory Summary (EARS) document are available upon request. Please contact your HP representative to get the latest version.
46. Based on internal HP testing, May 2020. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability PP, enabled by Forward AM, provide up to 90% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and reclaimed powder is tracked by generations (worst case for reusability). Parts are then made from each subsequent generation and tested for mechanical properties and accuracy showing no degradation of properties up to three generations of use.
47. Compared to other materials in the HP 3D materials portfolio as of May, 2020.
48. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability TPU 01, provide up to 80% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
49. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability TPA, enabled by Evonik, provide up to 80% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
50. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability PA 12 W provide up to 75% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.
51. Based on using recommended packing densities and compared to selective laser sintering (SLS) technology, offers excellent reusability without sacrificing mechanical performance. Tested according to ASTM D638, ASTM D256, ASTM D790, and ASTM D648, and using a 3D scanner. Testing monitored using statistical process controls.
52. Testing according to ISO 10993-5 and 10993-10.
53. Technical datasheet available upon request.
54. Reusability ratio recommended by Lubrizol.
55. Testing according to ASTM D-2240.
56. Standard refresh rate suggested by Lubrizol, as the powder blend is reclaimed for more printing cycles, the yellowness of the powder blend increases.
57. Only compatible with the HP Jet Fusion 5620 Pro/5610 3D Printing Solutions.
58. Additional material management equipment is required.
59. Only compatible with the HP Jet Fusion5620 Pro 3D Printing Solutions.
60. Only compatible with the HP Jet Fusion 5210 Pro/5210/4210/4210B 3D Printing Solutions.
61. Only compatible with the HP Jet Fusion 5210 Pro/4210B 3D Printing Solutions.
62. Only compatible with the HP Jet Fusion 5620 Pro/5610/5210 Pro/5210/4210/4210B 3D Printing Solutions.
63. Only compatible with the HP Jet Fusion5620 Pro/5210 Pro/4210B 3D Printing Solutions.
64. Only compatible with the HP Jet Fusion 5620 Pro/5610/5210 Pro/5210 3D Printing Solutions.
65. Only compatible with the HP Jet Fusion5620 Pro/5210 Pro 3D Printing Solutions.
66. Only compatible with the HP Jet Fusion 5620 Pro/5610 3D Printing Solutions.
67. Only compatible with the HP Jet Fusion5620 Pro 3D Printing Solutions.
68. Only compatible with the HP Jet Fusion 5620 Pro/5610/5410 Pro/5410 3D Printing Solutions.
69. Only compatible with the HP Jet Fusion5620 Pro/5410 Pro 3D Printing Solutions.
70. Only compatible with the HP Jet Fusion 5210 Pro/5210 3D Printing Solutions.
71. Only compatible with the HP Jet Fusion 4210B 3D Printing Solution.
72. Only compatible with the HP Jet Fusion 5210 Pro 3D Printing Solution.
73. Only compatible with the HP Jet Fusion 5410B/4210 3D Printing Solution.
74. Carbon footprint reduction calculated by Evonik
75. Based on internal HP testing, October 2022. For testing methodology and results, see hp.com/go/3Dprintingmaterialswhitepapers. Please consult your local sales representative for more information.
76. Only compatible with the HP Jet Fusion 4210B/4210 3D Printing Solution.

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