HP 3D High Reusability PA 12 Glass Beads

Stiff, low-cost, quality parts

3D data courtesy of NACAR

Produce stiff, functional parts

- 40% glass bead filled thermoplastic material with both optimal mechanical properties and high reusability.[1]
- Provides dimensional stability along with repeatability.[2]
- Ideal for applications requiring high stiffness like enclosures and housings, fixtures and tooling.

Quality at a low cost per part

- Produce at a low cost per part and reduce your total cost of ownership.[3]
- Less waste—reuse surplus powder batch after batch and get functional parts, no throwing away anymore.[1]
- Get consistent performance while achieving 70% surplus powder reusability.[4]
- Optimize cost and part quality—cost-efficient material with high surplus powder reusability.[1]

Engineered for HP Multi Jet Fusion technology

- Designed for production of functional parts across a variety of industries.
- Provides the best balance between performance and reusability.[5]
- Engineered to produce common glass bead applications with detail and dimensional accuracy.

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

Technical specifications[6]

Category	Measurement	Value	Method
General properties	Powder melting point (DSC)	186 °C/367 °F	ASTM D3418
	Particle size	58 µm	ASTM D3451
	Bulk density of powder	0.48 g/cm³/0.017 lb/in³	ASTM D1895
	Density of parts	1.3 g/cm³/0.047 lb/in³	ASTM D792
Mechanical properties	Tensile strength, max load[7], XY, XZ, YX, YZ	30 MPa/4351 psi	ASTM D638
	Tensile strength, max load[7], ZX, XY	30 MPa/4351 psi	ASTM D638
	Tensile modulus[7], XY, XZ, YX, YZ	2500 MPa/363 ksi	ASTM D638
	Tensile modulus[7], ZX, XY	2700 MPa/392 ksi	ASTM D638
	Elongation at break[7], XY, XZ, YX, YZ	10%	ASTM D638
	Elongation at break[7], ZX, XY	10%	ASTM D638
	Flexural strength (@ 5%),[8] XY, XZ, YX, YZ	57.5 MPa/8340 psi	ASTM D790
	Flexural strength (@ 5%),[8] ZX, XY	65 MPa/9427 psi	ASTM D790
	Flexural modulus,[8] XY, XZ, YX, YZ	2400 MPa/348 ksi	ASTM D790
	Flexural modulus,[8] ZX, XY	2700 MPa/392 ksi	ASTM D790
	Izod impact notched (@ 3.2 mm, 23ºC), XY, XZ, YX, YZ, ZX, ZY	3 KJ/m²	ASTM D256 Test Method A
	Shore Hardness D, XY, XZ, YX, YZ, ZX, ZY	82	ASTM D2240
Thermal properties	Heat deflection temperature (@ 0.45 MPa, 66 psi), XY, XZ, YX, YZ	174 °C/345 °F	ASTM D648 Test Method A
	Heat deflection temperature (@ 0.45 MPa, 66 psi), ZX, XY	175 °C/347 °F	ASTM D648 Test Method A
	Heat deflection temperature (@ 1.82 MPa, 264 psi), XY, XZ, YX, YZ	114 °C/237 °F	ASTM D648 Test Method A
	Heat deflection temperature (@ 1.82 MPa, 264 psi), ZX, XY	120 °C/248 °F	ASTM D648 Test Method A
Reusability	Refresh ratio for stable performance	30%	
Recommended environmental conditions	Recommended relative humidity	50-70% RH	
Certifications	UL 94, UL 746A		

Ordering Information

	HP 3D High Reusability PA 12 Glass Beads	HP 3D High Reusability PA 12 Glass Beads	HP 3D High Reusability PA 12 Glass Beads Production Material	HP 3D High Reusability PA 12 Glass Beads[9]
Product Number	V1R11A	V1R22A	V1R35A	V1R23A
Weight	15 kg/33.1 lb	150 kg/330.7 lb	150 kg/330.7 lb	700 kg/1543.2 lb
Capacity	30L[10]	300L[10]	300L[10]	1400L[10]
Dimensions (xyz)	600 x 333 x 302 mm	800 x 600 x 1205 mm	800 x 600 x 1205 mm	1143 x 1143 x 1500 mm
Compatibility	HP Jet Fusion 3D 4210/4200 Printing Solution	HP Jet Fusion 3D 4210/4200 Printing Solution	HP Jet Fusion 3D 4210 Printing Solution	HP Jet Fusion 3D 4210 Printing Solution

Eco Highlights

- Powders and agents are not classified as hazardous[11]
- Cleaner, more comfortable workplace—enclosed printing system, and automatic powder management[12]
- Minimizes waste due to high reusability of powder[13]

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

Dynamic security enabled printer. Only intended to be used with cartridges using an HP original 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

Learn more at
hp.com/go/3DMaterials

1. 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.
2. Testing according to ASTM D638, ASTM D256, and ASTM D648 using HDT at different loads with a 3D scanner for dimensional stability. Testing monitored using statistical process controls.
3. 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, vacuumsealed 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.
4. HP Jet Fusion 3D printing solutions using HP 3D High Reusability PA 12 Glass Beads provide 70% post-production surplus powder reusability, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for recyclability). Parts are then made from each generation and tested for mechanical properties and accuracy.
5. 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 recyclability). Parts are then made from each generation and tested for mechanical properties and accuracy.
6. The following technical information should be considered representative of averages or typical values and should not be used for specification purposes. These values refer to a balanced print mode with FW TATDAG_15_18_11.38.
7. Test results realized under the ASTM D638 with a test rate of 1mm/min for Z type test and a test rate of 10mm/min for XY type test, specimens type V.
8. Test results realized under ASTM D790 Procedure B at a test rate of 13.55 mm/min.
9. Additional material management equipment is required.
10. Liters refers to the materials container size and not the actual materials volume. Materials are measured in kilograms.
11. The HP powder and agents do not meet the criteria for classification as hazardous according to Regulation (EC) 1272/2008 as amended.
12. Compared to manual print retrieval process used by other powder-based technologies. 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.
13. HP Jet Fusion 3D printing solutions using HP 3D High Reusability PA 12 Glass Beads material provide 70% post-production surplus powder reusability, producing functional parts batch after batch.

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