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HP 3D High Reusability PA 12 Glass Beads

Materials Technical Fact Sheet

General Properties

Common information for all print modes

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/cm ³	ASTM D1895
		0.017 lb/in ³	
Density of parts	1.3 g/cm ³	ASTM D792	
	0.047 lb/in ³		
Reusability	Refresh ratio for stable performance	30%	
Environmental conditions	Recommended relative humidity	50-70% RH	

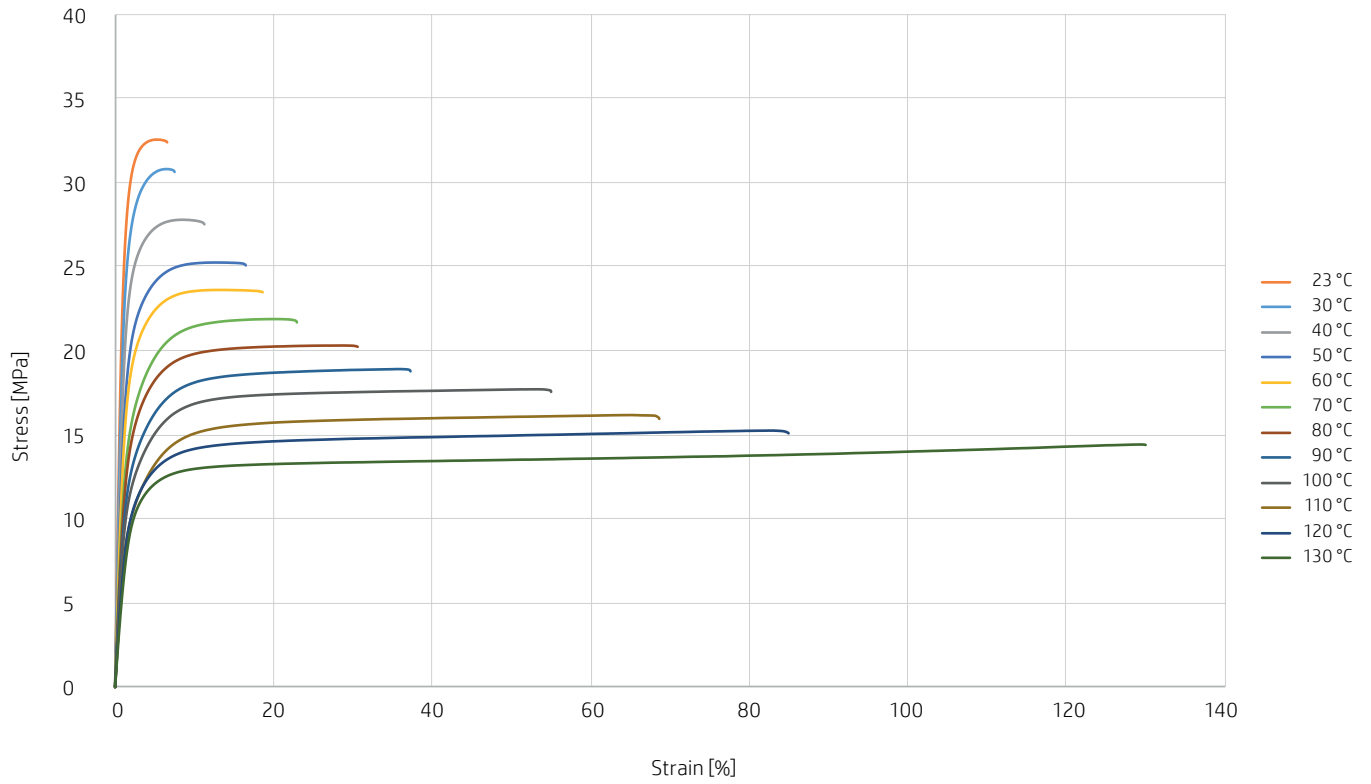
Balanced print mode

Technical specifications¹

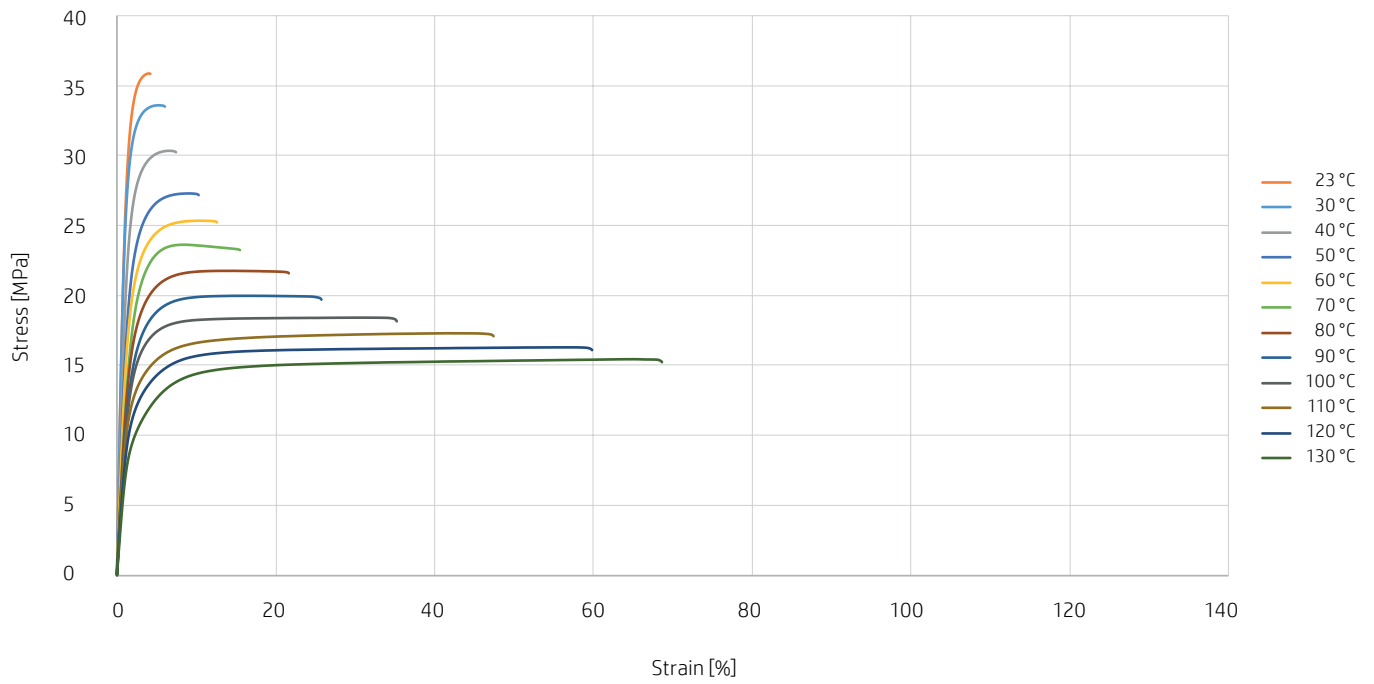
Category	Measurement	Specimen	Value	Method	
Mechanical properties	Tensile strength, max load, ² XY, XZ, YX, YZ	Type V	30 MPa/4351 psi	ASTM D638	
		Type I	30 MPa/4351 psi	ASTM D638	
	Tensile strength, max load, ² ZX, ZY	Type V	30 MPa/4351 psi	ASTM D638	
		Type I	30 MPa/4351 psi	ASTM D638	
	Tensile modulus, ² XY, XZ, YX, YZ	Type V	2500 MPa/363 ksi	ASTM D638	
		Type I	2500 MPa/363 ksi	ASTM D638	
	Tensile modulus, ² ZX, ZY	Type V	2700 MPa/392 ksi	ASTM D638	
		Type I	2700 MPa/392 ksi	ASTM D638	
	Elongation at break, ² XY, XZ, YX, YZ	Type V	10%	ASTM D638	
		Type I	9%	ASTM D638	
	Elongation at break, ² ZX, ZY	Type V	10%	ASTM D638	
		Type I	7%	ASTM D638	
	Elongation at yied, ² XY, XZ, YX, YZ	Type V	9%	ASTM D638	
		Type I	8%	ASTM D638	
	Elongation at yied, ² ZX, ZY	Type V	9%	ASTM D638	
		Type I	6%	ASTM D638	
	Flexural modulus, ³ XY, XZ, YX, YZ			2400 MPa/348 ksi	ASTM D790
	Flexural modulus, ³ ZX, ZY			2700 MPa/392 ksi	ASTM D790
	Flexural strength (@ 5%), ³ XY, XZ, YX, YZ			57.5 MPa/8339 psi	ASTM D790
	Flexural strength (@ 5%), ³ ZX, ZY			65 MPa/9427 psi	ASTM D790
	Charpy impact notched (@23°C/73.4°F), XY, XZ, YX, YZ, ZX, ZY			2.2 kJ/m ²	ISO 179-1/1eA
	Charpy impact notched (@-20°C/-4°F), XY, XZ, YX, YZ, ZX, ZY			2.1 kJ/m ²	ISO 179-1/1eA
	Charpy impact notched (@-40°C/-40°F), XY, XZ, YX, YZ, ZX, ZY			1.8 kJ/m ²	ISO 179-1/1eA
Izod impact notched (@3.2 mm, 23°C/73.4°F), XY, XZ, YX, YZ, ZX, ZY			3 kJ/m ²	ASTM D256 Test Method A	
Izod impact notched (@3.2 mm, -20°C/-4°F), XY, XZ, YX, YZ, ZX, ZY			2.9 kJ/m ²	ASTM D256 Test Method A	
Izod impact notched (@3.2 mm, -40°C/-40°F), XY, XZ, YX, YZ, ZX, ZY			2.7 kJ/m ²	ASTM D256 Test Method A	
Izod impact notched (@10 mm, 23°C/73.4°F), XY, XZ, YX, YZ, ZX, ZY			2.7 kJ/m ²	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, ZY		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, ZY		120 °C/248 °F	ASTM D648 Test Method A	

Stress-strain curves at different temperatures

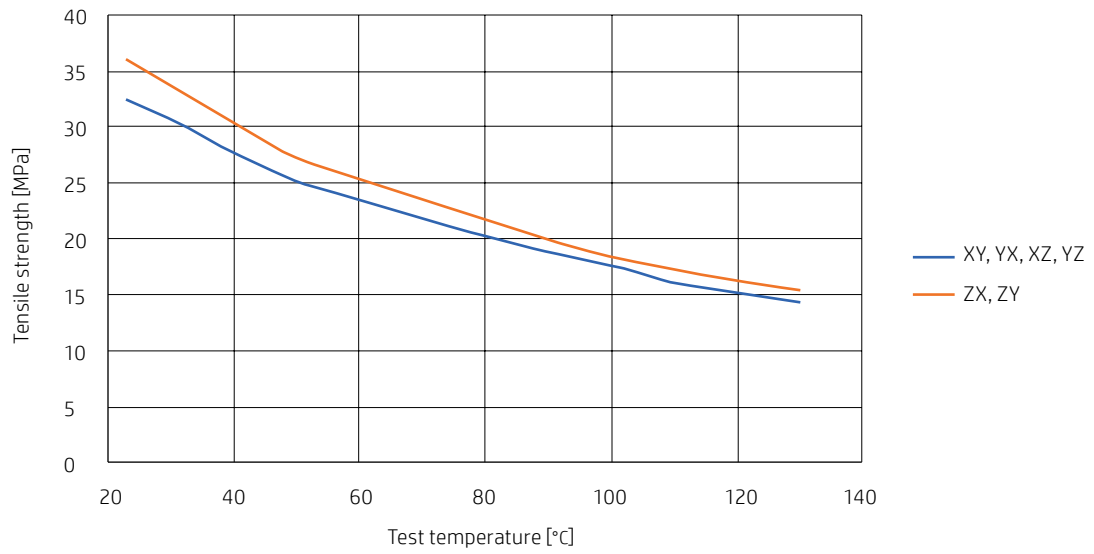
Stress-strain curves at different temperatures. XY-YX-XZ-YZ Orientations.



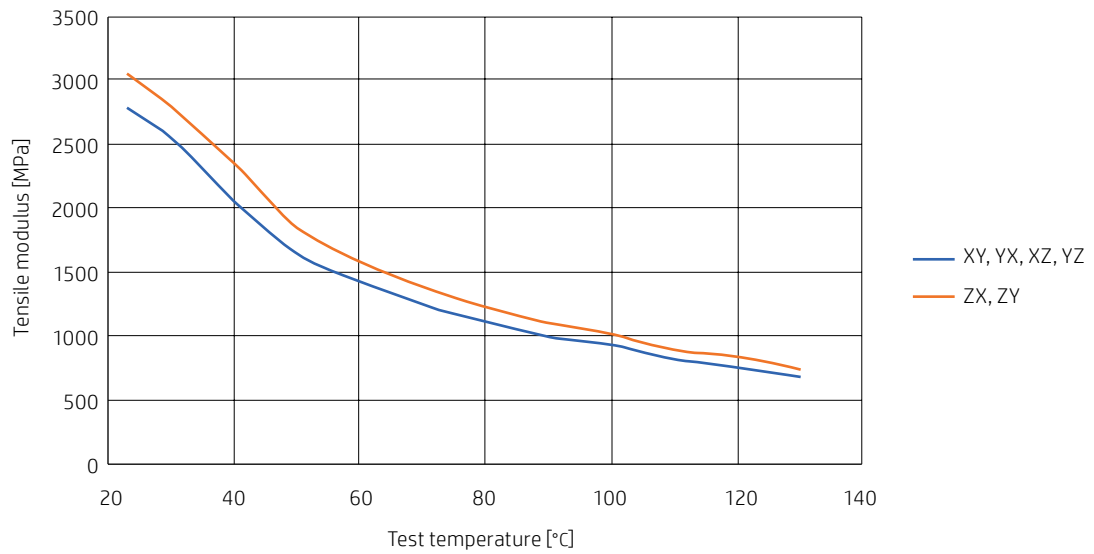
Stress-strain curves at different temperatures. ZX-ZY Orientations.



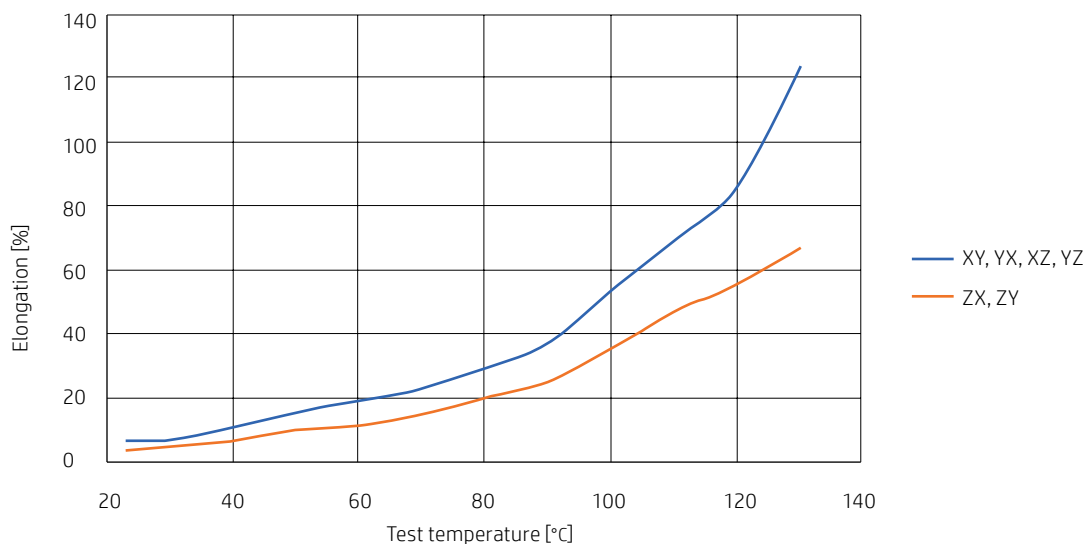
Tensile strength at different temperatures



Tensile modulus at different temperatures



Elongation at break at different temperatures



Certifications

- [UL 94](#)
- [UL 746A](#)

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

1. The following technical information should be considered representative of averages or typical values and should not be used for specification purposes. These values are with FW TATDAG_15_18_11.69 and have been obtained from a sample of specimens printed in plots with 6% packing density. Separation between specimens in the plot was 10 mm. Modulus has been calculated using the slope of the regression line between 0.05% and 0.25% strain measured with an automatic extensometer during the entire test. Crosssection dimension measures are done using a micrometer with round ends. Conditioning according to ASTM D618 Procedure A: 48 hours after printing and unpacking of the parts at 23°C/73°F and 50% RH. Orientations defined according to ASTM F2971.

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