



HP 3D High Reusability PA 12

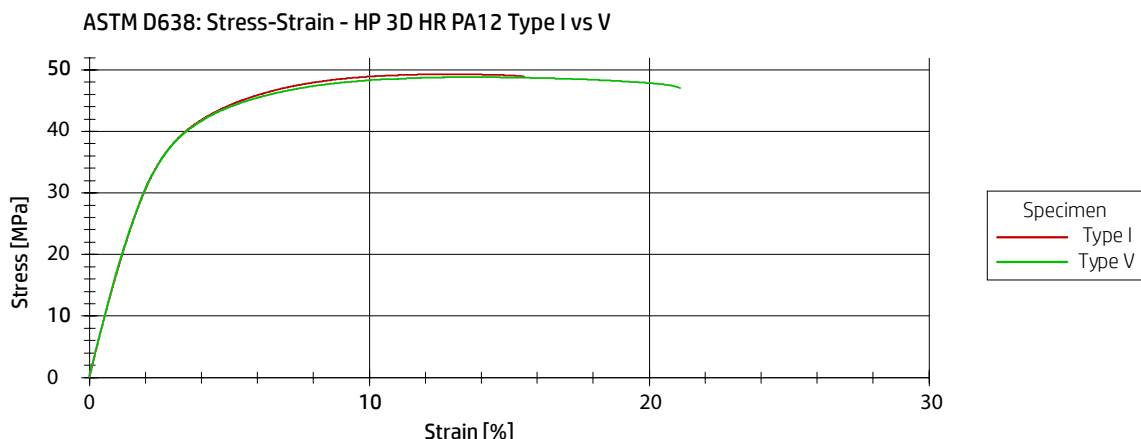
Materials Technical Fact Sheet

Balanced print mode

Technical specifications¹

Category	Measurement	Specimen	Value	Method
Mechanical properties	Tensile strength, max load ² , XY	Type V	48 MPa/6960 psi	ASTM D638
		Type I	48 MPa/6960 psi	ASTM D638
	Tensile strength, max load ² , Z	Type V	48 MPa/6960 psi	ASTM D638
		Type I	48 MPa/6960 psi	ASTM D638
	Tensile modulus ² , XY	Type V	1700 MPa/247 ksi	ASTM D638
		Type I	1700 MPa/247 ksi	ASTM D638
	Tensile modulus ² , Z	Type V	1800 MPa/261 ksi	ASTM D638
		Type I	1800 MPa/261 ksi	ASTM D638
	Elongation at break ² , XY	Type V	20%	ASTM D638
		Type I	15%	ASTM D638
	Elongation at break ² , Z	Type V	15%	ASTM D638
		Type I	12%	ASTM D638
	Flexural modulus ³ , XY		1730 MPa/251 ksi	ASTM D790
	Flexural modulus ³ , Z		1730 MPa/251 ksi	ASTM D790
	Flexural strength (@ 5%) ³ , XY		65 MPa/9425 psi	ASTM D790
	Flexural strength (@ 5%) ³ , Z		70 MPa/10150 psi	ASTM D790
	Charpy impact notched (@ 3 mm, 23°C), XY		2.8 kJ/m ²	ISO 179-1/1eA
	Charpy impact notched (@ 3 mm, 23°C), Z		2.8 kJ/ m ²	ISO 179-1/1eA
	Izod impact notched (@ 3 mm, 23°C), XY		3.5 kJ/ m ²	ASTM D256 Test Method A
	Izod impact notched (@ 3 mm, 23°C), Z		3.5 kJ/ m ²	ASTM D256 Test Method A
Izod impact notched (@ 10 mm, 23°C), XY		2.4 kJ/ m ²	ASTM D256 Test Method A	
Izod impact notched (@ 10 mm, 23°C), Z		2.4 kJ/ m ²	ASTM D256 Test Method A	
Thermal properties	Heat deflection temperature (@ 0.45 MPa, 66 psi), XY		175 °C/347 °F	ASTM D648 Test Method A
	Heat deflection temperature (@ 0.45 MPa, 66 psi), Z		175 °C/347 °F	ASTM D648 Test Method A
	Heat deflection temperature (@ 1.82 MPa, 264 psi), XY		95 °C/203 °F	ASTM D648 Test Method A
	Heat deflection temperature (@ 1.82 MPa, 264 psi), Z		106 °C/223 °F	ASTM D648 Test Method A

Stress strain curve Balanced Print Mode (XY values)



Mechanical print mode

Technical specifications¹

Category	Measurement	Specimen	Value	Method
Mechanical properties	Tensile strength, max load ² , XY	Type V	48 MPa/6960 psi	ASTM D638
		Type I	48 MPa/6960 psi	ASTM D638
	Tensile strength, max load ² , Z	Type V	48 MPa/6960 psi	ASTM D638
		Type I	48 MPa/6960 psi	ASTM D638
	Tensile modulus ² , XY	Type V	1700 MPa/247 ksi	ASTM D638
		Type I	1700 MPa/247 ksi	ASTM D638
	Tensile modulus ² , Z	Type V	1800 MPa/261 ksi	ASTM D638
		Type I	1800 MPa/261 ksi	ASTM D638
	Elongation at break ² , XY	Type V	20%	ASTM D638
		Type I	18%	ASTM D638
	Elongation at break ² , Z	Type V	15%	ASTM D638
		Type I	15%	ASTM D638
	Flexural modulus ³ , XY		1730 MPa/251 ksi	ASTM D790
	Flexural modulus ³ , Z		1730 MPa/251 ksi	ASTM D790
	Flexural strength (@ 5%) ³ , XY		65 MPa/9425 psi	ASTM D790
	Flexural strength (@ 5%) ³ , Z		70 MPa/10150 psi	ASTM D790
	Charpy impact notched (@ 3 mm, 23°C), XY		3.3 kJ/ m ²	ISO 179-1/1eA
	Charpy impact notched (@ 3 mm, 23°C), Z		3.0 kJ/ m ²	ISO 179-1/1eA
	Izod impact notched (@ 3 mm, 23°C), XY		3.8 kJ/ m ²	ASTM D256 Test Method A
	Izod impact notched (@ 3 mm, 23°C), Z		3.8 kJ/ m ²	ASTM D256 Test Method A
Izod impact notched (@ 10 mm, 23°C), XY		2.6 kJ/ m ²	ASTM D256 Test Method A	
Izod impact notched (@10 mm, 23°C), Z		2.6 kJ/ m ²	ASTM D256 Test Method A	
Thermal properties	Heat deflection temperature (@ 0.45 MPa, 66 psi), XY		175 °C/347 °F	ASTM D648 Test Method A
	Heat deflection temperature (@ 0.45 MPa, 66 psi), Z		177 °C/351 °F	ASTM D648 Test Method A
	Heat deflection temperature (@ 1.82 MPa, 264 psi), XY		80 °C/176 °F	ASTM D648 Test Method A
	Heat deflection temperature (@1.82 MPa, 264psi), Z		85 °C/185 °F	ASTM D648 Test Method A

Fast print mode

Technical specifications¹

Category	Measurement	Specimen	Value	Method
Mechanical properties	Tensile strength, max load ² , XY	Type V	48 MPa/6960 psi	ASTM D638
		Type I	48 MPa/6960 psi	ASTM D638
	Tensile strength, max load ² , Z	Type V	40 MPa/5800 psi	ASTM D638
		Type I	48 MPa/6960 psi	ASTM D638
	Tensile modulus ² , XY	Type V	1700 MPa/247 ksi	ASTM D638
		Type I	1700 MPa/247 ksi	ASTM D638
	Tensile modulus ² , Z	Type V	1700 MPa/247 ksi	ASTM D638
		Type I	1800 MPa/261 ksi	ASTM D638
	Elongation at break ² , XY	Type V	17%	ASTM D638
		Type I	12%	ASTM D638
	Elongation at break ² , Z	Type V	5%	ASTM D638
		Type I	5%	ASTM D638
	Flexural modulus ³ , XY		1730 MPa/251 ksi	ASTM D790
	Flexural modulus ³ , Z		1730 MPa/251 ksi	ASTM D790
	Flexural strength (@ 5%) ³ , XY		65 MPa/9425 psi	ASTM D790
	Flexural strength (@ 5%) ³ , Z		70 MPa/10150 psi	ASTM D790
	Charpy impact notched (@ 3 mm, 23°C), XY		3.6 kJ/ m ²	ISO 179-1/1eA
	Charpy impact notched (@ 3 mm, 23°C), Z		2.4 kJ/ m ²	ISO 179-1/1eA
	Izod impact notched (@ 3 mm, 23°C), XY		3.9 kJ/ m ²	ASTM D256 Test Method A
	Izod impact notched (@ 3 mm, 23°C), Z		2.9 kJ/ m ²	ASTM D256 Test Method A
Izod impact notched (@ 10 mm, 23°C), XY		3.6 kJ/ m ²	ASTM D256 Test Method A	
Izod impact notched (@ 10 mm, 23°C), Z		2.4 kJ/ m ²	ASTM D256 Test Method A	
Thermal properties	Heat deflection temperature (@ 0.45 MPa, 66 psi), XY		173°C/343°F	ASTM D648 Test Method A
	Heat deflection temperature (@ 0.45 MPa, 66 psi), Z		177°C/351°F	ASTM D648 Test Method A
	Heat deflection temperature (@ 1.82 MPa, 264 psi), XY		99°C/210°F	ASTM D648 Test Method A
	Heat deflection temperature (@ 1.82 MPa, 264 psi), Z		105°C/221°F	ASTM D648 Test Method A

Print modes comparison table

Based on average XYZ values

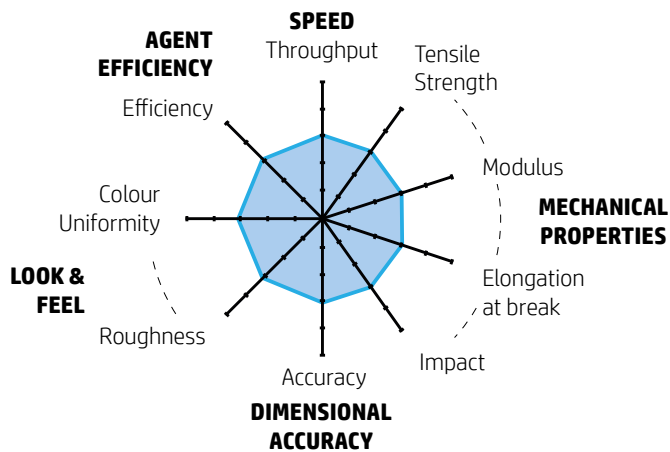
	Speed	Mechanical properties	Dimensional accuracy	Look & feel	Agent efficiency
Balanced	=	=	=	=	=
Fast	↑	↓	=	↓	↑
Mechanical	=	↑	↓	↓	=

Print mode profiles

Profiles based on average XYZ values

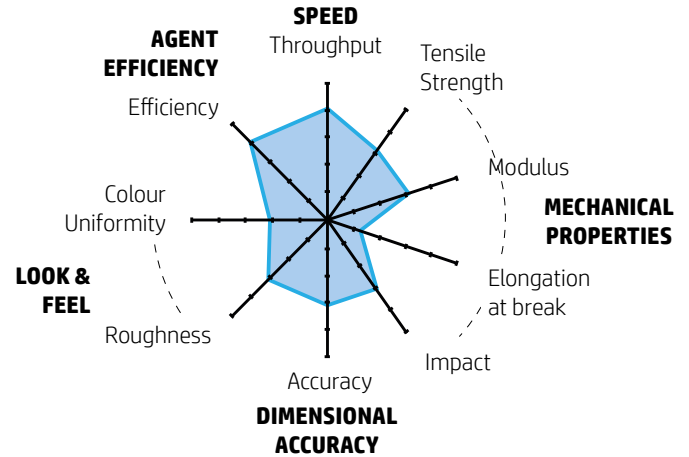
BALANCED PA 12

Default mode delivering balanced properties



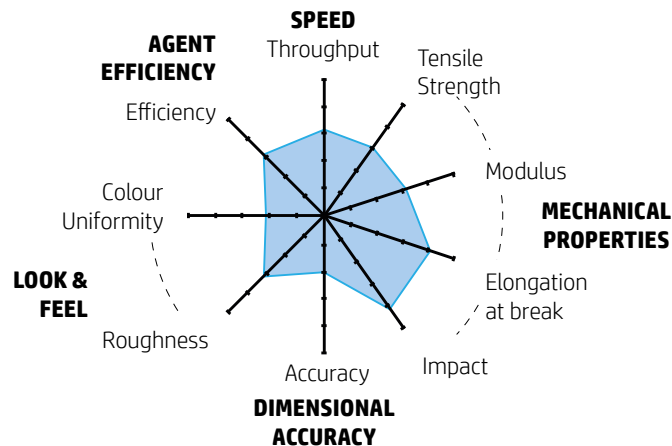
FAST PA 12

Increased speed for any job



MECHANICAL PA 12

Superior strain in mechanical properties



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.
2. Test results realized under the ASTM D638 with a test rate of 50 mm/min and 10 mm/min for type I and type V, respectively.
3. Test results realized under ASTM D790 Procedure B at a test rate of 13.55 mm/min.

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