

PA 3200 GF

EOS GmbH - Electro Optical Systems

Product Texts

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PA 3200 GF is a whitish, glass-filled polyamide 12 powder, which is characterised by an excellent stiffness in combination with good elongation at break. Laser-sintered parts made from PA 3200 GF possess excellent material properties:

- high stiffness
- · high mechanical wear-resistance
- · good thermal loadability
- · excellent surface quality
- high dimensional accuracy and detail resolution
- good processability
- excellent long-term constant behaviour

A typical application for PA 3200 GF is the usage e.g. for final parts within the engine area of cars, for deep-drawing dies or any other application which requires particular stiffness, high heat distortion temperature and low abrasive wear.

Mechanical properties	Value	Unit	Test Standard
Izod notched impact strength (+23°C)	4.2	kJ/m²	ISO 180/1A
Izod impact strength (+23°C)	21	kJ/m²	ISO 180/1U
Shore D hardness	80	-	ISO 7619-1
Ball indentation hardness	98	MPa	ISO 2039-1

The properties of parts manufactured using additive manufacturing technology (e.g. laser sintering, stereolithography, Fused Deposition Modelling, 3D printing) are, due to their layer-by-layer production, to some extent direction dependent. This has to be considered when designing the part and defining the build orientation. ISO 527 X Direction 3200 MPa Y Direction 3200 MPa Z Direction 2500 MPa ISO 527 X Direction 51 MPa Y Direction 51 MPa Y Direction 51 MPa Z Direction 47 MPa Strain at break X Direction 9 % Y Direction 9 % Y Direction 9 % Charpy impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eU Charpy notched impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eA Flexural Modulus (23°C, X Direction) 73 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Flexural Strength (X Direction) 96 °C 0.45 MPa, X Direction 96 °C 0.45 MPa, X Direction	3D Data	Value	Unit	Test Standard		
Tensile Modulus						
X Direction 3200 MPa Y Direction 3200 MPa Z Direction 2500 MPa Z Direction 2500 MPa ISO 527	due to their layer-by-layer production, to some extent direction dependent. This has to be considered when designing the part and defining the build orientation.					
Y Direction 3200 MPa Z Direction 2500 MPa Tensile Strength ISO 527 X Direction 51 MPa Y Direction 47 MPa Strain at break ISO 527 X Direction 9 % Y Direction 9 % Z Direction 5.5 % Charpy impact strength (+23°C, X Direction) 35 kJ/m² ISO 179/1eU Charpy notched impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eA Flexural Modulus (23°C, X Direction) 2900 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Temp. of deflection under load ISO 75-1/-2 ISO 75-1/-2 1.80 MPa, X Direction 96 °C	Tensile Modulus			ISO 527		
Z Direction Z 500 MPa	X Direction	3200	MPa			
Tensile Strength	Y Direction	3200	MPa			
X Direction 51 MPa Y Direction 51 MPa Z Direction 47 MPa Strain at break ISO 527 X Direction 9 % Y Direction 9 % Z Direction 5.5 % Charpy impact strength (+23°C, X Direction) 35 kJ/m² ISO 179/1eU Charpy notched impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eA Flexural Modulus (23°C, X Direction) 2900 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Temp. of deflection under load ISO 75-1/-2 1.80 MPa, X Direction 96 °C	Z Direction	2500	MPa			
Y Direction 51 MPa Z Direction 47 MPa Strain at break ISO 527 X Direction 9 % Y Direction 9 % Z Direction 5.5 % Charpy impact strength (+23°C, X Direction) 35 kJ/m² ISO 179/1eU Charpy notched impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eA Flexural Modulus (23°C, X Direction) 2900 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Temp. of deflection under load ISO 75-1/-2 1.80 MPa, X Direction 96 °C	Tensile Strength			ISO 527		
Z Direction	X Direction	51	MPa			
Strain at break ISO 527	Y Direction	51	MPa			
X Direction 9 % Y Direction 9 % Z Direction 5.5 % Charpy impact strength (+23°C, X Direction) 35 kJ/m² ISO 179/1eU Charpy notched impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eA Flexural Modulus (23°C, X Direction) 2900 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Temp. of deflection under load ISO 75-1/-2 1.80 MPa, X Direction 96 °C	Z Direction	47	MPa			
Y Direction 9 % Z Direction 5.5 % Charpy impact strength (+23°C, X Direction) 35 kJ/m² ISO 179/1eU Charpy notched impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eA Flexural Modulus (23°C, X Direction) 2900 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Temp. of deflection under load ISO 75-1/-2 1.80 MPa, X Direction 96 °C	Strain at break			ISO 527		
Z Direction 5.5 % Charpy impact strength (+23°C, X Direction) 35 kJ/m² ISO 179/1eU Charpy notched impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eA Flexural Modulus (23°C, X Direction) 2900 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Temp. of deflection under load ISO 75-1/-2 1.80 MPa, X Direction 96 °C	X Direction	9	%			
Charpy impact strength (+23°C, X Direction) 35 kJ/m² ISO 179/1eU Charpy notched impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eA Flexural Modulus (23°C, X Direction) 2900 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Temp. of deflection under load ISO 75-1/-2 1.80 MPa, X Direction 96 °C	Y Direction	9	%			
Charpy notched impact strength (+23°C, X Direction) 5.4 kJ/m² ISO 179/1eA Flexural Modulus (23°C, X Direction) 2900 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Temp. of deflection under load ISO 75-1/-2 1.80 MPa, X Direction 96 °C		5.5	%			
Flexural Modulus (23°C, X Direction) 2900 MPa ISO 178 Flexural Strength (X Direction) 73 MPa ISO 178 Temp. of deflection under load ISO 75-1/-2 1.80 MPa, X Direction 96 °C	Charpy impact strength (+23°C, X Direction)	35	kJ/m²	ISO 179/1eU		
Flexural Strength (X Direction) Temp. of deflection under load 1.80 MPa, X Direction 1.80 MPa, X Direction 73 MPa ISO 178 ISO 75-1/-2	Charpy notched impact strength (+23°C, X Direction)	5.4	kJ/m²	ISO 179/1eA		
Temp. of deflection under load ISO 75-1/-2 1.80 MPa, X Direction 96 °C	Flexural Modulus (23°C, X Direction)	2900	MPa	ISO 178		
1.80 MPa, X Direction 96 °C	Flexural Strength (X Direction)	73	MPa	ISO 178		
	Temp. of deflection under load			ISO 75-1/-2		
0.45 MPa, X Direction 157 °C	1.80 MPa, X Direction	96	°C			
	0.45 MPa, X Direction	157	°C			

Thermal properties	Value	Unit	Test Standard
Melting temperature (20°C/min)	176	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.80 MPa	96	°C	
0.45 MPa	157	°C	
Vicat softening temperature			ISO 306
50°C/h 10N	179	°C	
50°C/h 50N	166	°C	

Last change: 2018-11-22 Source: www.materialdatacenter.com

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Other properties	Value	Unit	Test Standard
Density (lasersintered)	1220	kg/m³	EOS Method
Powder colour (ac. to safety data sheet)	White	-	-

Characteristics

Processing

Laser Sintering, Rapid Prototyping

Features Tribologic Grade

Delivery form

Powder