e-Manufacturing Solutions

PA 1101

PA11 EOS GmbH - Electro Optical Systems

Product Texts

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PA 1101 is a whitish polyamide 11 powder, which is optimised for the use as a laser sintering material. PA 1101 is made out of renewable raw materials (castor oil). The material is characterised by elasticity and high impact resistance.

Properties
• high elongation at break
• elasticity
• high impact resistance
• excellent resistance to chemicals, especially hydrocarbons, aldehydes, ketones, mineral bases and salts, alcohols, fuels, detergents, oils and fats

Acceptance criteria
• cytotoxicity according to DIN EN ISO 10993-5

Typical applications
• mechanically loaded functional prototypes and series parts with long-term moving elements (e.g. hinges)
• in the automotive industry, it is mainly used for interior components for crash relevant parts (PA 1101 components do not splinter)
• especially suited for small to medium sized parts, thin walls and lattice structures

Mechanical properties	Value	Unit	Test Standard
Shore D hardness (15s)	**75**	-	ISO 868

3D Data	Value	Unit	Test Standard
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.			
Tensile Modulus			ISO 527-1/-2
X Direction	**1600**	MPa	
Y Direction	**1600**	MPa	
Z Direction	**1600**	MPa	
Tensile Strength			ISO 527-1/-2
X Direction	**48**	MPa	
Y Direction	**48**	MPa	
Z Direction	**48**	MPa	
Strain at break			ISO 527-1/-2
X Direction	**45**	%	
Y Direction	**45**	%	
Z Direction	**30**	%	
Charpy impact strength			ISO 179/1eU
+23°C, X Direction	**N**	kJ/m²	
+23°C, Y Direction	**N**	kJ/m²	
Charpy notched impact strength			ISO 179/1eA
+23°C, X Direction	**7.8**	kJ/m²	
+23°C, Y Direction	**7.8**	kJ/m²	
+23°C, Z Direction	**6.5**	kJ/m²	
Temp. of deflection under load			ISO 75-1/-2
1.80 MPa, X Direction	**46**	°C	
1.80 MPa, Y Direction	**46**	°C	
1.80 MPa, Z Direction	**47**	°C	
0.45 MPa, X Direction	**180**	°C	
0.45 MPa, Y Direction	**180**	°C	
0.45 MPa, Z Direction	**181**	°C	

Thermal properties	Value	Unit	Test Standard
Melting temperature (20°C/min)	**201**	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.80 MPa	**46**	°C	
0.45 MPa	**180**	°C	

Other properties	Value	Unit	Test Standard
Density (lasersintered)	**990**	kg/m³	EOS Method
Powder colour (ac. to safety data sheet)	**White**	-	-

Characteristics

Processing
3D Printing, Additive Manufacturing, Laser Sintering, Rapid Prototyping

Delivery form
Powder

Special Characteristics
High impact or impact modified

Features
Homopolymer

Chemical Resistance
General Chemical Resistance, Solvent Resistance, Grease Resistance, Oil Resistance

Ecological valuation
Contains renewable resources

Applications
Automotive, Sports Equipment