

**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)	<b>75</b>	-	ISO 868

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

Thermal properties	Value	Unit	Test Standard
Melting temperature (20°C/min)	<b>201</b>	°C	ISO 11357-1/-3

Other properties	Value	Unit	Test Standard
Density (lasersintered)	<b>990</b>	kg/m <sup>3</sup>	EOS Method
Powder colour (ac. to safety data sheet)	<b>White</b>	-	-

### Characteristics

#### Processing

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

#### Delivery form

Powder

#### Special Characteristics

High impact or impact modified

#### Features

Ductile, Homopolymer

#### Chemical Resistance

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

#### Ecological valuation

Contains renewable resources

#### Applications

Automotive, Sports Equipment