

## Alumide

PA12-MD(AI)

EOS GmbH - Electro Optical Systems

Other properties	Value	Unit	Test Standard
Density (lasersintered)	<b>1360</b>	kg/m	EOS Method

## Characteristics

### Processing

Laser Sintering, Rapid Prototyping

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### Product Texts

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Alumide is a metallic grey, aluminium-filled polyamide 12 powder, which is characterised by its high stiffness, metallic appearance and good postprocessing possibilities.

Laser-sintered parts made from Alumide possess excellent material properties:

- excellent dimensional accuracy
- well-balanced ratio of density and stiffness
- increased thermal conductivity
- good machinability

The surfaces of Alumide parts can be refined very easily by grinding, polishing or coating. The machining of Alumide laser-sintered parts is simplified through the cut breaking effect of the aluminium filling.

A typical application for Alumide is the manufacture of stiff parts of metallic appearance for applications in automotive manufacture (e.g. wind tunnel tests or parts that are not safety-relevant), for tool inserts for injecting and moulding small production runs, for illustrative models (metallic appearance), for education and jig manufacture et al.

Mechanical properties	Value	Unit	Test Standard
Shore D hardness (15s)	<b>76</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>3800</b>	MPa	ISO 527-1/-2
Tensile Modulus (Y Direction)	<b>3800</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
Strain at break (X Direction)	<b>4</b>	%	ISO 527-1/-2
Charpy impact strength (+23°C, X Direction)	<b>29</b>	kJ/m	ISO 179/1eU
Charpy notched impact strength (+23°C, X Direction)	<b>4.6</b>	kJ/m	ISO 179/1eA
Flexural Modulus (23°C, X Direction)	<b>3600</b>	MPa	ISO 178
Flexural Strength (X Direction)	<b>72</b>	MPa	ISO 178
Temp. of deflection under load (1.80 MPa, X Direction)	<b>144</b>	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa, X Direction)	<b>175</b>	°C	ISO 75-1/-2
Volume resistivity (X Direction)	<b>3E12</b>	Ohm*m	IEC 60093

Thermal properties	Value	Unit	Test Standard
Melting temperature (20°C/min)	<b>176</b>	°C	ISO 11357-1/-3
Vicat softening temperature (50°C/h 50N)	<b>169</b>	°C	ISO 306

Electrical properties	Value	Unit	Test Standard
Relative permittivity (100Hz)	<b>13</b>	-	IEC 60250
Relative permittivity (1MHz)	<b>10</b>	-	IEC 60250
Dissipation factor (1MHz)	<b>180</b>	E-4	IEC 60250
Surface resistivity	<b>5E14</b>	Ohm	IEC 60093
Electric strength	<b>0.1</b>	kV/mm	IEC 60243-1