

## Alumide

PA12-MD(Al)

EOS GmbH - Electro Optical Systems

### 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
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	<b>3800</b>	MPa	
Y Direction	<b>3800</b>	MPa	
Tensile Strength			ISO 527-1/-2
X Direction	<b>48</b>	MPa	
Y Direction	<b>48</b>	MPa	
Strain at break (X Direction)	<b>4</b>	%	ISO 527-1/-2
Charpy impact strength (+23°C, X Direction)	<b>29</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength (+23°C, X Direction)	<b>4.6</b>	kJ/m <sup>2</sup>	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			ISO 75-1/-2
1.80 MPa, X Direction	<b>144</b>	°C	
0.45 MPa, X Direction	<b>175</b>	°C	
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
Temp. of deflection under load			ISO 75-1/-2
1.80 MPa	<b>144</b>	°C	
0.45 MPa	<b>175</b>	°C	
Vicat softening temperature (50°C/h 50N)	<b>169</b>	°C	ISO 306

Electrical properties	Value	Unit	Test Standard
Relative permittivity			IEC 60250
100Hz	<b>13</b>	-	
1MHz	<b>10</b>	-	
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

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Other properties	Value	Unit	Test Standard
Density (lasersintered)	<b>1360</b>	kg/m <sup>3</sup>	EOS Method

## Characteristics

### Processing

Laser Sintering, Rapid Prototyping