

L-PBF PROCESS

Layer thickness	30 µm
Hatch distance	60 µm
Laser power	200 W
Scanning speed	700 mm/s
Theoretical build-up rate	4,5 cm³/h

POWDER MATERIAL

AZ91D is normally used to manufacture housings for the computer, communication and consumer electronics industry and various products for lightweight construction in the aerospace and automotive industry. Therefore, AZ91D is the most commonly used magnesium die casting alloy, as AZ91D has one of the best property combinations of castability, strength and ductility. The main alloying elements are aluminum, zinc and manganese. By alloying with aluminum, an increase in strength is achieved compared to pure magnesium.

PHYSICAL PROPERTIES

Particle Size	20 µm – 63 µm
Density	1,857 g/cm³
Thermal conductivity	65,4 W/mK
Melting range	533 °C – 680 °C
Thermal expansion	26 µm/m K

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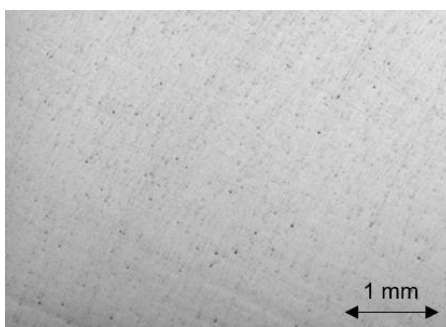
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CHEMICAL COMPOSITION

Element -	Mass fraction
Mg	Balance
Al	8%
Zn	0,97%
Mn	0,2%
Cr	0,0063%
S	0,0014%
Fe	0,009%
Pb	0,0035%

COMPONENT DENSITY



Absolute Density
(Archimedes principle) 1,82 g/cm³

Relative Density
(Optical measurement) 99,66%

MECHANICAL DATA

As built

Tensile strength	R _m	287,1 MPa – 297,0 MPa
Yield strength	R _{p0,2}	237,6 MPa – 255,6 MPa
Elongation at break	A	1,53% – 3,42%
Young's modulus	E	40,5 GPa – 45 GPa

All values are subject to natural volatilities depending on applied powder material, process parameters and surrounding conditions.

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