

m4p AlSi9Cu3

Metal powder for laser-based powder bed fusion

Description and properties

m4p™ AlSi9Cu3 is an aluminum alloy with a favorable combination of high thermal conductivity and good strength and corrosion properties.

Due to the high copper content, the material also has a good strength level at elevated temperatures. In addition to the copper content, silicon (Si) and magnesium (Mg) also affect the strength properties of the alloy. Silicon increases the strength level of the material in general and magnesium allows the hardening through heat treatment.

Described material properties predestine the material for applications in engine and transmission construction.

Powder characteristics



Chemical analysis [wt%]

Element	Min	Max
Si	8,00	11,00
Cu	2,00	3,50
Mg	0,10	0,50
Al	Base	

Particle size Laser PBF

Images:
 Microsection (Courtesy of AM Metals GmbH)
 Steering knuckle (Courtesy of AM Metals GmbH)

Material characteristics

(rel. density > 99,9%; volume rate 29,0 cm³/h; layer thickness 50µm; EOS M290)

Mechanical & physical properties

	Tensile strength Rm [N/mm ²]	Yield strength Rp0.2 [N/mm ²]	Elongation at break A ₅ [%]	Electric conductivity σ [MS/m]	Surface roughness Ra [µm]
As-built - Z & XY	430 - 480	250 - 290	3,0 - 5,5	14 - 16	6 - 10
Heat-treated - Z & XY	390 - 415	280 - 305	5,0 - 7,0	20 - 22	

INTERNATIONAL

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