

Introduction

PowderRange metal Additive Manufacturing powders from Carpenter Additive are developed with the needs of the busy AM facility in mind.

- ▶ Easy ordering
- ▶ Standard specifications
- ▶ 24-hour shipment
- ▶ Sold in easy-to-handle multiples of 10 kgs
- ▶ Easy repeat orders to optimize inventory management

This leaves you free to concentrate on the design and build of your AM parts, confident that PowderRange metal AM powders from Carpenter Additive will add reliability and consistency to your AM built parts.

Characteristics

CT PowderRange Aluminum AlSi10Mg is popular within AM, primarily because it is one of a few aluminium alloys which is readily processable by Laser Powder Bed Fusion. In the 'as processed condition' it displays room temperature tensile properties rivalling that of high performance wrought aluminum alloys.

Applications

Used throughout a number of industries for applications which require a combination of good thermal properties and low weight. Specifically used in the automotive, aerospace and electronics industry.

Chemical composition

Element		Minimum wt%	Maximum wt%
Al	Aluminum	Balance	
Cu	Copper		0.05
Fe	Iron		0.25
Mg	Magnesium	0.25	0.45
Mn	Manganese		0.10
N	Nitrogen		0.20
Ni	Nickel		0.05
O	Oxygen		0.20
Pb	Lead		0.02
Si	Silicon	9.00	11.00
Ti	Titanium		0.15
Zn	Zinc		0.1
Others	Others		0.05
All Others	All Others		0.15

Particle size distribution optimized to suit specific machine platforms and process types (i.e. SLM, LMD, etc.) Custom sizing also available.

Full powder qualification including (but not exclusive to) the following: Size Distribution, Flow Properties, Chemistry and Morphology.



For worldwide contact details please visit www.carpenteradditive.com

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Mechanical properties (indicative only)

Property		Stress Relieved
Tensile Strength [1]	Horizontal Direction (XY)	325 – 350 MPa 47 - 51 Ksi
	Vertical Direction (Z)	330 – 360 MPa 48 - 52 Ksi
Yield Strength [1]	Horizontal Direction (XY)	210 – 245 MPa 30 – 36 Ksi
	Vertical Direction (Z)	175 – 225 MPa 25 – 33 Ksi
Young's Modulus [1]	Horizontal Direction (XY)	67 – 77 GPa
	Vertical Direction (Z)	62 – 72 GPa
Elongation [1]	Horizontal Direction (XY)	9 – 14 %
	Vertical Direction (Z)	5 – 12 %
Hardness [2]	114 - 124 HBW	
Coefficient of Thermal Expansion [3]	20 - 21 x 10 ⁻⁶ m/mK	
Thermal Conductivity [3]	130 - 190 W/mK	

1. Stress relieved. Mechanical testing in accordance with ASTM E8 at room temperature

2. Stress relieved, after polishing. Hardness test in accordance with ASTM E348-11,

3. In the range of 20°C (68°F) to 100°C (212°F)

Range of mechanical properties encompasses expected values across multiple machine platforms



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Similar materials

Company	Alternative Title
LPW	AlSi10Mg
UNS	A13600/A03600
Other Generic Names	N/A
3D Systems	N/A
Concept Laser	CL 31AL
EOS	AlSi10Mg
Realizer	N/A
Renishaw	AlSi10Mg-0403
SLM Solutions	AlSi10Mg
TRUMPF	N/A

Ordering information

CT PowderRange AlSi10Mg is available from stock and dispatched within 24 hours of receipt of order. Our PowderRange metal AM powders are sold in multiples of 10 kgs giving you the flexibility to order just the volume you need to maintain efficient material stock levels.

All our PowderRange materials are supplied with a full metal powder certification to Carpenter Additive's standard material specification, reporting size distribution, flow, chemistry and morphology.

Further information

To make an enquiry, please contact powderrange@carpenteradditive.com. Alternatively, for EU/Row, call (+44) 01928 240 530 and for USA call +1-412-788-2856. You can visit us at www.carpenteradditive.com.