

AlSi10Mg

Al-based Alloy Powder for Additive Manufacturing 90/45 µm, Gas Atomized Designed for LMD

Chemical composition according to AlSi10Mg, DIN 1706, AC-43000

DESCRIPTION

MA-AlSi10Mg-3-GA is a gas-atomized alloy powder engineered for additive manufacturing (AM). This material is an aluminium-silicon-magnesium alloy that features lightweight properties, good mechanical strength, thermal and electrical conductivity, and good corrosion resistance.

MA-AlSi10Mg-3-GA is suitable for functional components requiring reduced weight, and high dynamic strength requirements in aerospace and automotive industries. The material can also be heat treated to further enhance its properties.

KEY PROPERTIES

- Lightweight
- Good strength and dynamic properties
- Good thermal conductivity
- Good corrosion resistance
- Modifiable with heat treatment

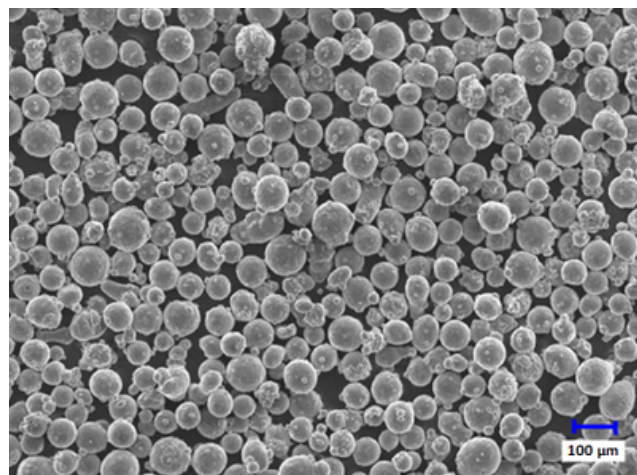
APPLICATIONS

- General engineering applications
- Automotive structural parts
- Aerospace housings and brackets
- Heat exchangers and thermal components

POWDER CHEMICAL COMPOSITION

Element	Min. (wt%)	Max. (wt%)
Al	Bal.	Bal.
Si	9.0	11.0
Mg	0.2	0.45
Zn	-	0.10
Cu	-	0.03
Ni	-	0.05
Fe	-	0.40
Ti	-	0.15
Mn	-	0.10
O	-	0.08
H	-	0.05

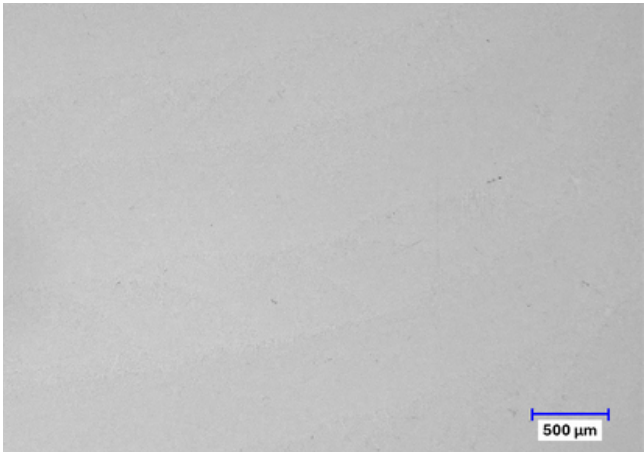
SEM IMAGE



POWDER PROPERTIES (ISO 4490, ISO 3923-1)

Particle Size Distribution (µm)	Hall Flow (s/50g)	Apparent Density (g/cm3)
45 - 90	60.0	1.33

MICROGRAPHS



Polished Surface



Microstructure

PHYSICAL PROPERTIES (ISO 3369)

Average Defect Percentage (%)	Density (g/cm3)
< 0.10	> 2.66

MECHANICAL PROPERTIES (ISO 6892-1)

Orientation	Ultimate Tension Strength (MPa)	0.2% Yield Stress (MPa)	Elongation at break(%)
Horizontal	302 ± 7	177 ± 1	5.8 ± 0.6
Vertical	266 ± 7	130 ± 7	7.0 ± 0.4

HARDNESS (ISO 6507-1)

HV0.5
76 ± 5

MELTING POINT

Celsius (°C)	Fahrenheit (°F)
550 - 600	1022 - 1112

PROCESS INFORMATION:

The properties reported in this Technical DataSheet are applicable to Makino AM powders tested and distributed by Makino and processed on Makino LMD machine utilizing parameters in accordance with relevant operating guidelines (inclusive of setup conditions and maintenance). The properties are obtained by following recommended protocols. Further information regarding the methods used by Makino can be provided upon inquiry.

DISCLAIMER:

The data and information provided represent, to the best of our knowledge, standard or average values and do not constitute guarantees for upper and lower limit parameters. The recommended applications for the material disclosed are exclusively for illustrative purposes that help the reader to conduct their independent assessments These suggestions are not intended to be expressed or implied warranties of suitability for the specific applications or any other purposes. The information included may be subject to change at any time without prior notification.

CONTACT US:

Our Safety Datasheet (SDS) is available upon request. For more information or support please contact Makino at sales-am@makino.com.sg or visit www.makino.com.sg