

OSPREY® ALSi10MG POWDER FOR ADDITIVE MANUFACTURING

DATASHEET

GENERAL DESCRIPTION

Osprey® AlSi10Mg & AlSi7Mg aluminium alloy powders are manufactured by inert gas atomization, based on composition specifications of casting alloys are particularly suited for automotive, with thin walls, complex geometries and light weight aerospace applications. This grade of metal powder is designed for processing by Additive Manufacturing including Laser - Powder Bed Fusion, achieving material densities greater than 99.5%.

- Light weight
- Suitable for applications in Automotive and Aerospace industries.

CHEMICAL COMPOSITION (wt %)

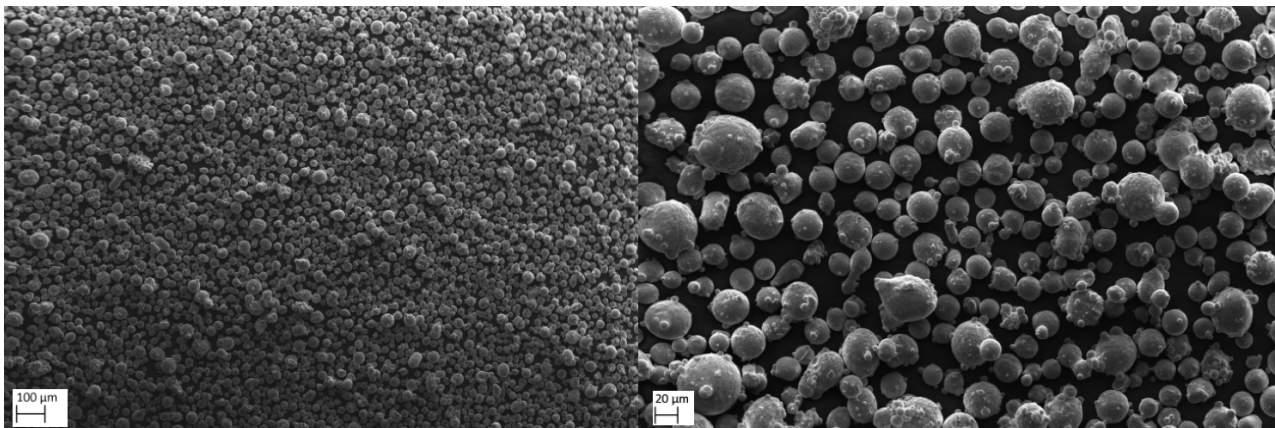
Osprey® AlSi10Mg

Al	Si	Mg	Fe	Ti	Mn	Cu	Ni	O
Balance	9 - 11	0.2 - 0.4	≤0.5 5	≤0.15	≤0.45	≤0.03	≤0.04	Reported

Osprey® AlSi7Mg

Al	Si	Mg	Fe	Ti	Mn	Cu	Ni	O
Balance	6 - 8	0.4 - 0.6	≤0.5 5	≤0.15	≤0.45	≤0.03	≤0.04	Reported

POWDER MORPHOLOGY



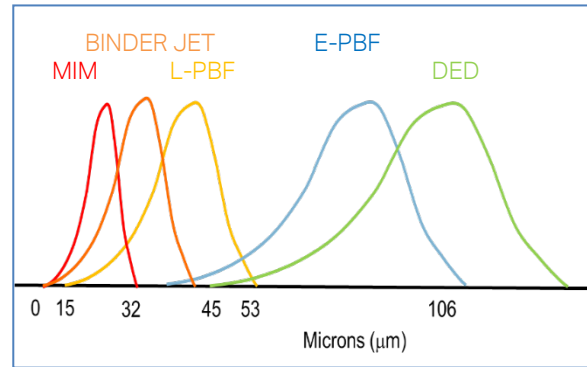
SEM micrographs of Osprey® AlSi10MG a) -63 +20 µm powder with a spherical morphology, b) smooth surface and low level of powder satellites.

POWDER SIZE DISTRIBUTION

Available in a range of customised powder sizes suitable for different AM platforms:

- Laser beam - Powder Bed Fusion, (L-PBF)
e.g. 63 to 20 μm & 53 to 15 μm
- Electron Beam - Powder Bed Fusion, (E-PBF)
106 to 45 μm
- Direct Energy Deposition (DED)
150 to 53 μm & 90 to 45 μm

Other powder size range distributions are available by request.



MECHANICAL PROPERTIES

Typical mechanical properties of as-built Osprey® ALSi10MG alloy powders L-PBF in the as-built condition, evaluated at room temperature.

Metric units

Alloy	Direction	Proof strength	Tensile strength	Elongation
		$R_{p0.2}$	R_m	A
		MPa	MPa	%
AlSi10Mg	Horizontal	220 – 280	390 – 440	5 – 6
	Vertical	220 – 300	400 – 440	4 – 5
AlSi7Mg	Horizontal	225 - 235	380 – 390	8 – 9
	Vertical	225 - 235	380 – 390	8 – 9

Imperial units

Condition	Direction	Proof strength	Tensile strength	Elongation
		$R_{p0.2}$	R_m	A
		ksi	ksi	%
AlSi10Mg	Horizontal	32 - 41	57 - 64	5 – 6
	Vertical	32 - 44	57 - 64	4 – 5
AlSi7Mg	Horizontal	33 - 34	55 - 57	8 – 9
	Vertical	33 - 34	55 - 57	8 – 9

PHYSICAL PROPERTIES

Osprey® AlSi10Mg; Tap Density; 1.54 g/cm³

Pycnometric Density; 2.70 g/cm³

Osprey® AlSi7Mg; Tap Density; 1.59 g/cm³

Pycnometric Density; 2.75 g/cm³

Disclaimer: Data and recommendations are provided for information and guidance only, and the performance or suitability of the material for specific applications are not warranted or guaranteed. Continuous development may necessitate changes in technical data without notice. This datasheet is only valid for Sandvik materials.