Datasheet
Nickel

Osprey® K-500

Osprey® K-500 is a nickel-copper alloy, similar to Osprey® M-400, with good corrosion resistance and greater strength and toughness achieved by heat treatment.

UNS
N05500

ASTM
B865

EN Number
2.4375

DIN
2.4375

Powder designed for

- Additive Manufacturing (AM)

Product description

Osprey® K-500 is a nickel copper alloy, similar to Osprey® M-400, with good corrosion resistance and greater strength and toughness, achieved by heat treatment. Osprey® K-500 is an alloy of the same type as Monel® alloy K-500*.

This metal powder is manufactured by Inert Gas Atomization (IGA), producing a powder with a spherical morphology which provides good flow characteristics and high packing density. In addition, the powder has a low oxygen content and low impurity levels, resulting in a metallurgically clean product with enhanced mechanical performance.

* MONEL® is a trademark of Huntington Alloys Corporation.

Chemical composition (nominal), %

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Ni	Bal.
Cu	27.0-33.0
Al	2.3-3.15
Ti	0.35-0.85
Fe	≤2.0
Si	≤0.5
Mn	≤1.5
C	≤0.25
S	≤0.01

Powder characteristics and morphology

Powder for Additive Manufacturing

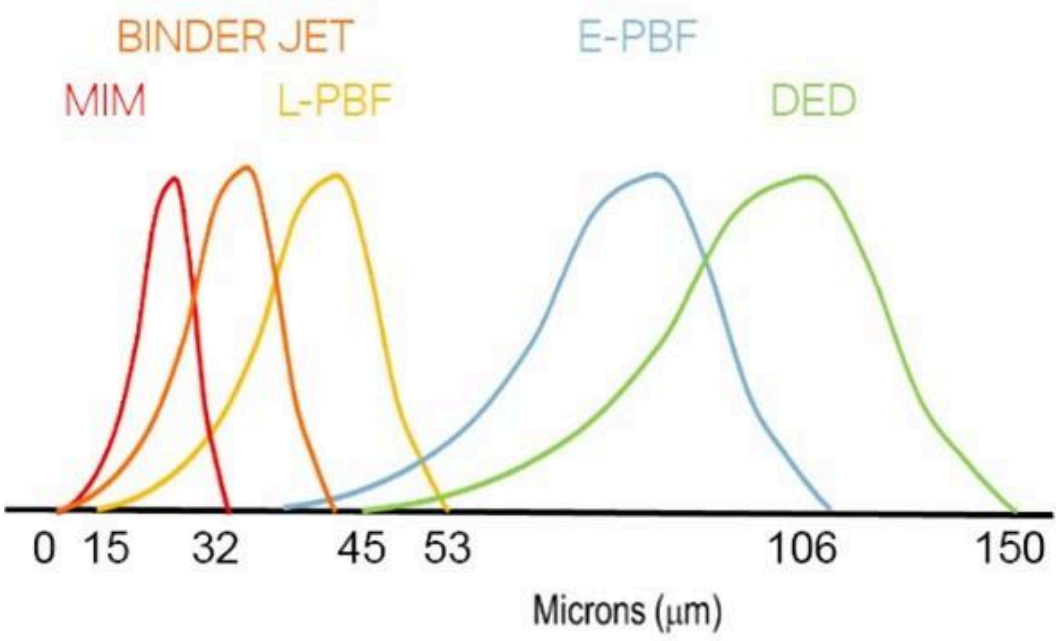
Osprey® metal powder for Additive Manufacturing is characterized by a spherical morphology and high packing density, which confer good flow properties. For powder bed processes these are essential when applying fresh powder layers to the bed to ensure uniform and consistent part build.

For blown powder processes, such as Direct Energy Deposition (DED), good flow ensures uniform build rates. Tight control of the particle size distribution also helps ensure good flowability. Low oxygen powders result in clean microstructures and low inclusion levels in the finished parts.

Particle size distribution

Powder for Additive Manufacturing

Osprey® metal powder for Additive Manufacturing is available in a wide range of particle size distributions that are tailored to the individual Additive Manufacturing systems. They can also be tailored to the particular requirements of the end application, both in terms of mechanical performance and surface finish.



Typical particle size distributions for Additive Manufacturing.

Process technology	Size (µm)
Binder jetting	≤ 16, ≤ 22, ≤ 32, ≤ 38, ≤ 45
Laser - Powder Bed Fusion (L-PBF)	15 to 53 and 10 to 45
Electron beam - Powder Bed Fusion (E-PBF)	45 to 106
Direct Energy Deposition (DED)	53 to 150

Tailor-made particle size distributions are available on request. Contact us to discuss your specific requirements.

Mechanical properties

Osprey® K-500 is suitable for laser-based DED, achieving deposited material densities of >99%. Increased micro-hardness from ~136 HV to ~254 after heat treatment and similar increases in tensile strength and elongation; 750 MPa UTS, 400 MPa Yield and >30% elongation in the heat-treated condition.1

1 Microstructure and mechanical properties of a Monel K-500 alloy fabricated by directed energy deposition. Materials Science & Engineering A 857 (2022) 144113. Z Chen et al.

Testing

All Osprey® metal powders are supplied with a certificate of analysis containing information on the chemical composition and particle size distribution. Information on other powder characteristics is available upon request.

Packaging

A wide range of packaging options is available, from 5kgs plastic bottles to 250kg metal drums.

5 kg (11 lbs) Plastic bottles
6 kg (13 lbs) Plastic bottles
10 kg (22 lbs) Plastic bottles
20 kg (44 lbs) Metal cans
100 kg (220 lbs) Steel drums
150 kg (330 lbs) Steel drums
250 kg (551 lbs) Steel drums
All packaging materials are suitable for air, sea and road freight.

Contact us for more information and to discuss your packaging requirements.

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