

Datasheet  
Master alloys

# Osprey® 17-4 PH/ MA

Osprey® 17-4 PH/MA is a master alloy, designed for blending with carbonyl iron powder, for Metal Injection Moulding (MIM). It creates standard 17-4 PH precipitation hardening stainless steel after sintering.

Powder designed for  
Metal Injection Moulding (MIM)  
Micro-MIM



## Product description

Osprey® 17-4 PH/MA is a master alloy, designed for blending with carbonyl iron powder, for Metal Injection Moulding (MIM). The alloy creates standard 17-4 PH precipitation hardening stainless steel after sintering.

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.

## Chemical composition (nominal), %

Last updated: Jul 18, 2023 3:30 PM CET

Blend ratio	MA 1, Carbonyl Fe 2
Fe	Bal.
C	≤0.07
Cr	50.0
Ni	13.0
Si	≤2.0
Mn	≤2.0
Cu	12.0
Nb	0.7

## Powder characteristics and morphology

### Powder for Metal Injection Moulding (MIM)

Osprey® MIM powder has a spherical morphology, resulting in high packing density. This enables the manufacture of feedstocks with high powder loading, which not only minimizes binder costs but also reduces part shrinkage during debinding and sintering. Spherical powder also has excellent flow characteristics, resulting in reduced tool wear and consistent mould filling.

Osprey® MIM powder's low oxygen content allows better control of carbon and consistency during sintering. Low oxygen levels, together with high packing density, also facilitate faster sintering.

### Powder for Micro-MIM

Osprey® Micro-MIM powder has a spherical morphology, resulting in high packing density. This enables the manufacture of feedstocks with high powder loading, which not only minimizes binder costs but also reduces part shrinkage during debinding and sintering. Spherical powder also has excellent flow characteristics, resulting in reduced tool wear and consistent mould filling.

Osprey® Micro-MIM powders' low oxygen content allows better control of carbon and consistency during sintering. Low oxygen, together with high packing density, also facilitates faster sintering

## Particle size distribution

### Powder for Metal Injection Moulding (MIM)

Osprey® metal powder for Metal Injection Moulding (MIM) is available in a wide range of particle size distributions, from under 5 µm up to 38 µm. The table shows our standard particle size distributions for MIM powders.

Size (µm)	D10 (µm)	D50 (µm)	D90 (µm)
≤ 38	5.5	13.0	31.0
≤ 32	5.0	12.0	29.0
80% ≤ 22	4.5	11.5	27.0
90% ≤ 22	4.0	10.5	22.0
90% ≤ 16	3.5	8.0	16.0

\*Particle size measurements performed using a Malvern laser particle size analyzer, typical D10, D50 and D90 provided.

### Powder for Micro-MIM

Osprey® metal powder for Micro-Metal Injection Moulding (Micro-MIM) has the following typical particle size distributions:

	D10 (%)	D50 (%)	D90 (%)
90% – 10 µm	3.0	5.7	9.8
80% – 5 µm	1.9	3.4	6.0

\*Particle size measurements performed using a Malvern laser particle size analyzer.

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

## 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.