

Datasheet

Duplex stainless steels

# Osprey® 2205

Osprey® 2205 is a duplex stainless steel with high resistance to SCC, pitting, crevice and general corrosion and very high mechanical strength.

UNS

S31803, S32205

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EN Name

X2CrNiMoN 22-5-3

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EN Number

1.4462

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DIN

X2CrNiMoN 22 5 3

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AFNOR

Z2.CND22.05.03

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SS

2377

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Powder designed for

Additive Manufacturing (AM)

Hot Isostatic Pressing (HIP)



## Product description

Osprey® 2205 is a duplex (austenitic-ferritic) stainless steel characterized by high resistance to stress corrosion cracking (SCC), pitting, crevice and general corrosion and very high mechanical strength.

### **Main characteristics of Osprey® 2205**

High resistance to stress corrosion cracking (SCC) in chloride-bearing environments and in environments containing hydrogen sulfide

High resistance to general corrosion, pitting, crevice corrosion, erosion and corrosion fatigue

High mechanical strength – roughly twice the proof strength of austenitic stainless steel

Good weldability

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), %

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Fe	Bal.
Cr	22
Ni	5
Mo	3.2
C	≤0.030
Si	≤1.0
Mn	≤2.0
P	≤0.030
S	≤0.015
N	0.18

## 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.

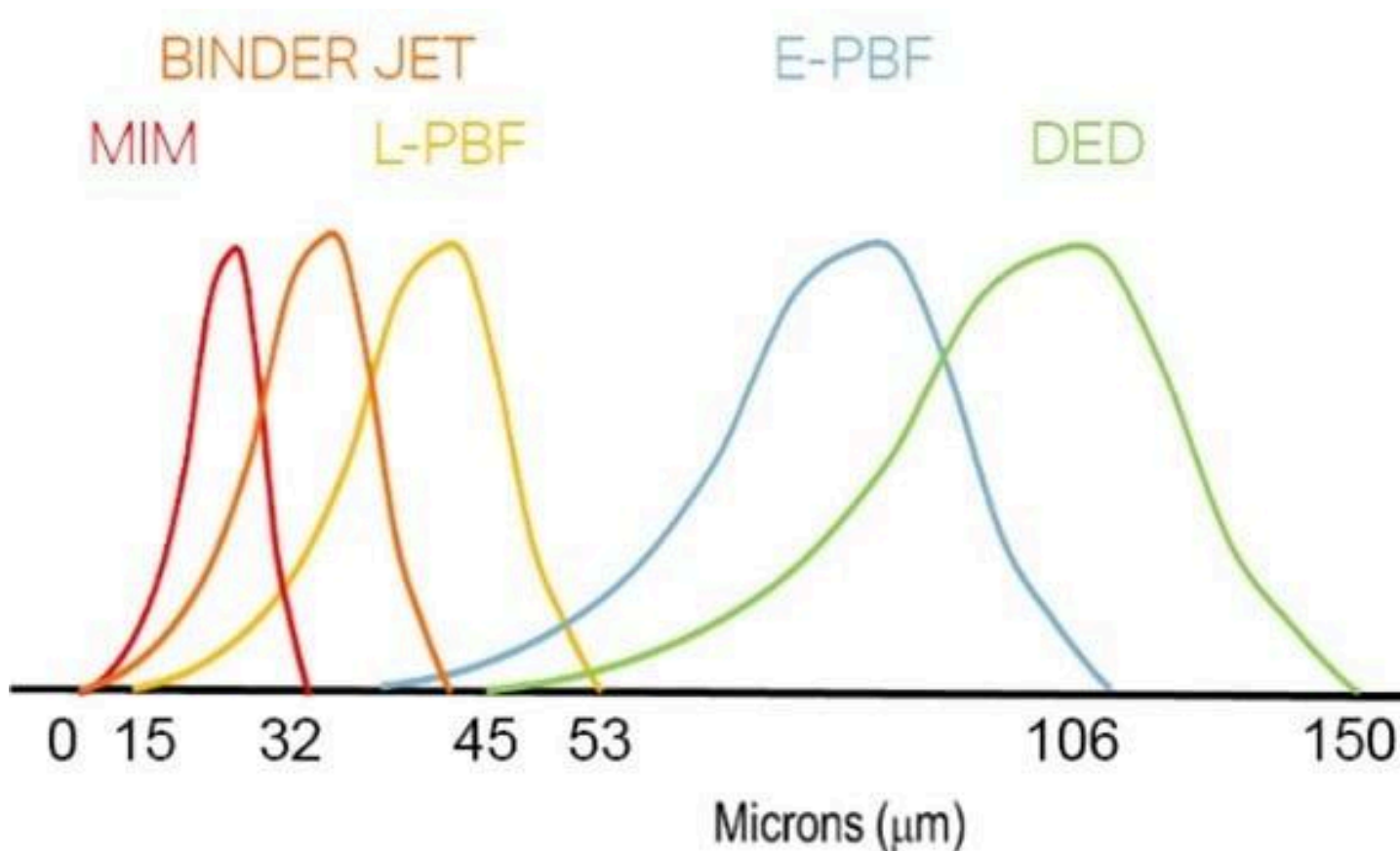
### **Powder for Hot Isostatic Pressing (HIP)**

Osprey® HIP powder has a spherical morphology, resulting in 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.

## 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.



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

### Powder for Hot Isostatic Pressing (HIP)

Osprey® powder for Hot Isostatic Pressing (HIP) is available in a broad size range, typically <250 microns, resulting in a high packing density and tap density. Low oxygen levels, together with high packing density, also facilitate faster sintering.

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

## Mechanical properties

Typical mechanical properties of material produced by Laser - Powder Bed Fusion (L-PBF) in as-built and heat-treated conditions (solution annealing 1,000°C/1,832°F for 5 minutes followed by air or water cooling) evaluated at room temperature, as measured in independent research.

Condition	Direction	Temperature (T), °C	Yield strength (Rp0.2), MPa	Tensile strength (Rm), MPa	E-modulus, GPa	Elongation (A), %
As built	Vertical	20	950	1,071	7.0	16.0
Heat treated	Vertical	20	549	848	23.9	45.8
Condition	Direction	Temperature (T), °C	Yield strength (Rp0.2), ksi	Tensile strength (Rm), ksi	E-modulus, GPa	Elongation (A), %
As built	Vertical	20	138	155	7.0	16.0
Heat treated	Vertical	20	79	123	23.9	45.8

### Hardness

Typical Vickers Hardness levels (ASTM E92, ISO 6507-1, JIS Z2244, GB/T 4340.1) as well as HRC values in the Laser - Powder Bed Fusion (L-PBF) heat-treated condition.

Condition	HV	HRC
As built	337	33
Heat treated	280	26

## Typical application areas

**Osprey® 2205 powder is typically used in the following areas**

Oil and gas industry

Pulp and paper industry

Chemical industry

Refineries and petrochemical plants

On-shore and off-shore industry

## 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.