

VDM® Powder X

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VDM® Powder X is the powder variant of a nickel-chromium-molybdenum-iron alloy with cobalt and tungsten additions.

VDM® Powder X is characterized by:

- Spherical particles
- High purity
- Low oxygen content
- Excellent oxidation resistance up to 1,200 °C (2,190 °F)
- High-temperature strength
- Good resistance to stress corrosion cracking

Designations and standards (based on VDM® Alloy X)

| Standard | Material designation |
|----------|-----------------------|
| EN | 2.4665 – NiCr22Fe18Mo |
| ISO | NiCr21Fe18Mo9 |
| UNS | N06002 |
| AFNOR | NC22FeD |

Table 1 – Designations and standards

Chemical composition

| | Ni | Cr | Fe | Mo | Co | W | C | Si | Mn | P | S |
|-----|------|------|------|------|-----|-----|------|-----|-----|------|------|
| Min | | 20.5 | 17.0 | 8.0 | 0.5 | 0.2 | 0.05 | | | | |
| Max | bal. | 23.0 | 20.0 | 10.0 | 2.5 | 1.0 | 0.15 | 1.0 | 1.0 | 0.04 | 0.03 |

Table 2 – Chemical composition (%)

VDM® Powder X contains low amounts of oxygen of up to 0.03%.

Physical properties

| Density | Melting range |
|---------------------------------|------------------|
| 8.3 g/cm ³ at 20 °C | 1.260 – 1.355 °C |
| 0.3 lb/in ³ at 68 °F | 2,300 – 2,470 °F |

Microstructural properties

VDM® Powder X has a face-centered cubic structure.

Corrosion resistance

The corrosion resistance depends on the processing and heat treatment of the material. The conventionally produced VDM® Alloy X usually shows excellent oxidation resistance up to 1,200 °C (2,190 °F) and can be used in neutral as well as in reducing atmospheres. VDM® Alloy X is resistant in carburizing and nitriding atmospheres.

Applications

Due to its corrosion resistance in various atmospheres up to very high temperatures, and excellent high-temperature strength, VDM® Powder X finds wide application in high-temperature services.

Typical applications include:

- Components for industrial and aircraft gas turbines (combustion chambers, honeycombs, housings etc.)
- Industrial furnace parts, support rolls, grids, wire belts and radiant tubes
- Pigtails in petrochemical furnaces
- High-temperature gas cooled nuclear reactors

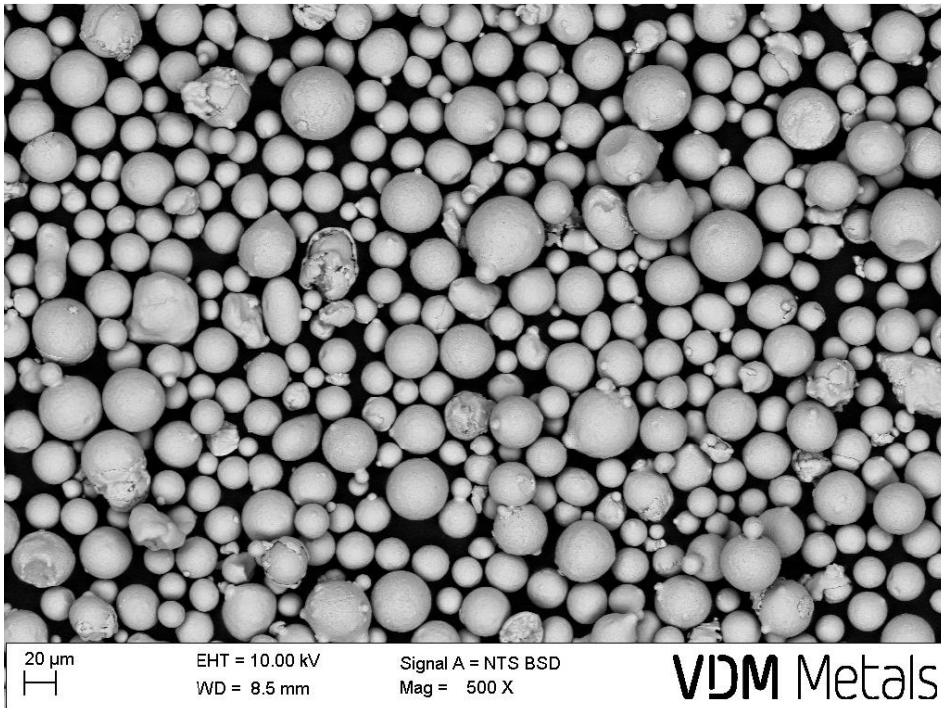
Availability

According to the AM process requirements of our customers, VDM® Powder X is available in a wide range of particle fractions from 15 to 250 µm.

Standard particle fractions

| Particle size distribution µm | Oxygen content % | Porosity < 10µ (pore area) % |
|----------------------------------|---------------------|---------------------------------|
| 15-53 | < 0,03 | < 0,5 |
| 53-150 | | |

Additional particle fractions are available on request. Please contact us.



The picture shows a typical micrograph of VDM® Powder X as an example.

Legal notice

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Disclaimer

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