



High resolution SEM image of T123™ nickel powder

T123™ Nickel Powder (UK Bags)

T123™ is a high purity nickel powder composed of discrete nickel particles having a spiky morphology. T123™ is produced by a unique carbonyl gas refining process at the Clydach Nickel Refinery in the UK.

T123™ is recognized as an industry standard nickel powder for powder metallurgy applications:

- Spiky, needle-like texture designed specifically for powder metallurgy applications.
- Tight size distribution optimized for easy mixing and excellent mechanical properties of sintered parts.
- Uniform dispersion provides repeatable dimensional change of sintered parts.
- Strengthens and toughens to improve fatigue strength.
- Hardens heat-treated steels.

T123™ is also widely used as a metal binder:

- Enhances corrosion resistance and toughness of hard metals.
- Strengthens and toughens diamond tools.
- Wets and aids the densification of tungsten heavy alloys.
- Assured to the Copper Mark Joint Due Diligence Standard, in accordance with OECD Due Diligence Guidance for Responsible Supply Chains.
- Carbon intensity is 32.1 t CO₂e/t Ni, including scopes 1, 2, and 3 (upstream) emissions as of the most recent assessment year (2022)¹. Carbon intensity is reassessed on a regular basis.

T123™ is produced in compliance with the following standards: ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018.

For further information about our products, please visit our website (www.vale.com) or contact a regional sales representative.



2 tonne bag

Disclaimer: The product descriptions and specifications contained in this document are made in accordance with our analyses and the methods used to produce Vale's nickel products. While these descriptions and specifications are reflective of normal production lots, rather than each individual piece, such descriptions and specifications shall in no event be deemed or interpreted as any representation, warranty or commitment by Vale in connection with Vale's nickel products quality. Vale's nickel products quality shall be determined only in accordance with the corresponding contract terms for each transaction agreed between Vale and Vale's customer and the quality related certificate issued under such contract.

¹Independent third-party limited assurance to the general principles of ISO 14064-3 has been provided by Intertek Certification GmbH.

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Product Description

Form

- Fisher sub sieve size: 3.5 – 4.5 μm
- Bulk density: 1.6 – 2.6 g/cm³
- Sieve test: ≤0.1 wt% +200#

Packaging

- 2 tonne bulk bag

Typical analysis (wt %)

| | Typical | Max |
|-----|----------|-------|
| Ni* | >99.8 | – |
| Co | <0.00005 | – |
| C | <0.0750 | 0.12 |
| Fe | <0.0030 | 0.01 |
| S | <0.0002 | 0.001 |
| O | <0.0400 | 0.15 |
| N | <0.0050 | – |

* Nickel determined by difference.