



High resolution SEM image of T123™ nickel powder

# T123™ Nickel Powder (CDN)

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 Copper Cliff Nickel Refinery in Sudbury, Canada.

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 7.1 t CO<sub>2</sub>e/t Ni, including scopes 1, 2, and 3 (upstream) emissions as of the most recent assessment year (2022).<sup>1</sup> Carbon intensity is reassessed on a regular basis.

T123™ is produced in compliance with the ISO 9001:2015 quality standard.

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



1 tonne bag

## Product Description

### Form

- Fisher sub sieve size: 3.5 – 4.0 µm
- Bulk density: 1.9 – 2.3 g/cm<sup>3</sup>
- Sieve test: ≤0.1 wt% +100#

### Packaging

- 1 tonne bulk bags

### Typical analysis (wt %)

	Typical	Max
Ni*	>99.8	–
Co	<0.00002	–
C	<0.0750	0.1
Fe	<0.0010	0.0014
S	<0.0001	0.0002
O	<0.0800	0.14
N	<0.0050	–

\* Nickel determined by difference.

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.

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

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