

# INCO<sup>®</sup> Nickel Powder Type 100

\*\* THIS DATA SHEET IS PREPARED IN COMPLIANCE WITH EU DIRECTIVE 2001/58/EC\*\*

## 1. Substance and Company Identification

Identification of Product:

**Inco Nickel Powder Type 100:** used in dissolving and production of nickel salts.

Company identification:

**INCO Europe Ltd.**

Clydach Refinery, Clydach, Swansea,  
Wales, UK. SA6 5QR

Emergency Tel. No.: 24 hr: 44(0)1792-842501 FAX: 44(0)1792 841357

## 2. Composition

Hazardous Ingredients	Typical Composition	C.A.S. Number	EINECS/ EC Label No.	TRK <sup>(1)</sup> mg/m <sup>3</sup> *	TLV <sup>(2)</sup> mg/m <sup>3</sup> *	MEL <sup>(3)</sup> mg/m <sup>3</sup> *
Nickel Metal (Ni)	100%	7440-02-0	231-111-4	0.5	1.5	0.5

\* Expressed as Ni in inhalable size fraction

## 3. Hazards Identification

**Xn – Harmful - Category 3 carcinogen**

R40 – Limited evidence of a carcinogenic effect

R20 – Harmful by inhalation

R43 - May cause sensitization by skin contact.

**If user operations change the substance to other chemical forms, whether as end products, intermediates or fugitive emissions, the user must determine the possible health hazards of such forms.**

## 4. First Aid Measures

<i>Ingestion:</i>	No specific first aid required.
<i>Inhalation:</i>	No specific first aid required.
<i>Skin:</i>	Wash thoroughly with water. For rashes seek medical advice. Show label if possible.
<i>Eyes:</i>	Irrigate eyeball thoroughly with water for at least 10 minutes. If discomfort persists seek medical attention.
<i>Wounds:</i>	Cleanse thoroughly to remove any nickel particles.

## 5. Fire Fighting Measures

<i>Suitable extinguishing media:</i>	Drums intact - Any, type to be selected according to materials stored in the immediate neighborhood. Spilled Powder – Use water mist or fine spray - pressurized exstinguishants may disperse the powder and spread the fire.
<i>Special risks:</i>	Not classified as flammable for transport purposes.
<i>Special protective equipment for fire fighting:</i>	None needed. Wear protective equipment if required for other materials within the immediate vicinity.

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## 6. Accidental Release Measures

*Person related precautionary measures:*

Avoid generation of dusty atmospheres. Do not inhale dusts.

*Environmental Protection measures:*

No specific measures needed.

*Procedures for cleaning/absorption:*

Collect spills by wet sweeping or vacuuming with the vacuum exhaust passing through a high efficiency particulate arresting (HEPA) filter if exhaust is discharged into the work place. Wear appropriate nationally approved respirators if collection and disposal of spills is likely to cause the concentration limits of airborne nickel to exceed the locally prescribed exposure limits.

## 7. Handling and Storage

*Handling:*

Prevent the generation of inhaleable dusts e.g. by the use of suitable ventilation. Do not inhale dust. Wear appropriate nationally approved respirators if handling is likely to cause the concentration limits of airborne nickel to exceed the locally prescribed exposure limits. Wear suitable protective clothing and gloves. As packed nickel powder may constitute a manual handling risk.

*Storage:*

Keep in the container supplied, in dry conditions and keep container tightly closed when not in use. Nickel metal is no longer subject to the Control of Major Accident Hazards Directives 82/501EEC, 96/82/EC & 98/433/EC (The Seveso Directive). Local regulations should be followed regarding the storage of this product.

## 8. Exposure Controls / Personal Protection

*Exposure limit values:*

See Section 2 for values. Maintain airborne nickel levels as low as possible.

*Occupational exposure controls:*

Ventilation is normally required when handling or using this product to keep airborne nickel below the nationally authorized limits. If ventilation alone cannot control exposure, respiratory protection must be used.

*a. Respiratory protection:*

Do not inhale dust. If ventilation alone cannot control exposure, respiratory protection (selected specifically for the working place, depending on concentration and quantity of the hazardous material) must be used.

*b. Eye protection:*

Avoid contact with eyes. Wear goggles or face shield.

*c. Hand & Skin Protection:*

Avoid repeated skin contact. Wear suitable protective clothing and gloves, which should be selected specifically for the working place, depending on concentration and quantity of the hazardous material (overalls and leather/rubber gloves). Wash skin thoroughly after handling and before eating, drinking or smoking. Change contaminated clothing frequently. Launder clothing and gloves as needed. Use of skin-protective barrier cream advised.

## 9. Physical and Chemical Properties

Grey, odorless, solid (powder).

Ingredient	Mol. Wt.
Nickel	58.71

pH	Not Applicable (N/A)
Boiling point/ boiling range	2732 °C
Freezing point / freezing range	1453 °C
Flash Point	N/A
Auto flammability	N/A
Explosive properties	Not explosive
Explosion Classification	St.0
Oxidizing properties	Not oxidizing
Vapor pressure	N/A
Solubility cold water	Insoluble
Solubility hot water	Insoluble
Partition coefficient	N/A
Viscosity	N/A
Bulk density	1.0 – 3.0 g/cm <sup>3</sup> (4)
Particle size	2.5 - 8µm <sup>(5)</sup>
Magnetic properties	Ferromagnetic

## 10. Stability and Reactivity

*Conditions to be avoided:* Hazardous exothermic reaction improbable. Not classified as flammable.

*Substances to be avoided:* This product can react vigorously with acids to liberate hydrogen, which can form explosive mixtures with air. Under special conditions nickel can react with carbon monoxide in reducing atmospheres to form nickel carbonyl, Ni(CO)<sub>4</sub>, a toxic gas. Metal powders when heated in reducing atmospheres may become pyrophoric.

*Hazardous decomposition products:* None.

## 11. Toxicological Information

*Acute toxicity:*

Ingredient	Formula	Oral LD <sub>50</sub> rat (mg/kg) <sup>(6)</sup>	Inhalation LC rat (mg / ¼ h)	Dermal LD <sub>50</sub> rat (mg/kg)
Nickel Metal	Ni	>9000	Unknown	Unknown

*Ingestion:* The U.S. Food and Drug Administration (FDA) has affirmed that nickel is generally regarded as safe (GRAS) as a direct human food ingredient<sup>(7)</sup>.

*Corrosivity / Irritation:*

*Respiratory Tract:* None

*Skin:* Allergic skin rashes have been reported after repeated contact. Allergic contact dermatitis has been reported from different types of industries using nickel products. May cause sensitization by skin contact.

*Eyes:* Mechanical irritation may be expected.

*Sensitization:*

*Respiratory tract:* None

*Skin:* Nickel metal is a potent skin sensitizer. Repeated /prolonged contact with metallic nickel may cause nickel sensitivity resulting in skin allergy. Persons with a known history of eczema or nickel dermatitis should avoid such contact.

*Repeated dose toxicity:* Repeated /prolonged contact with nickel metal may cause nickel sensitivity resulting in skin allergy.

*Mutagenicity /*

*Reproductive toxicity:* There is no evidence of mutagenesis or reproductive toxicity.

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*Carcinogenicity:*  
*Ingestion:*

The U.S. National Institute for Occupational Safety and Health (NIOSH) concluded that there is no evidence that nickel and its inorganic compounds are carcinogenic when ingested.

*Inhalation:*

The U.S. National Toxicology Program has listed nickel as reasonably anticipated to be a carcinogen based on the production of injection site tumors. The International Agency for Research on Cancer (IARC) found there was inadequate evidence that metallic nickel is carcinogenic to humans but since there was sufficient evidence that it is carcinogenic to animals, IARC concluded that metallic nickel is possibly carcinogenic to humans. In 1997, the ACGIH categorized elemental nickel as: A5 "Not Suspected as a Human Carcinogen". Epidemiological studies of workers exposed to nickel powder and to dust and fume generated in the production of nickel alloys and of stainless steel have not indicated the presence of a significant respiratory cancer hazard.

Evidence for the association of nickel compound exposures and cancer risk comes mainly from workers in now obsolete nickel refining operations where very high concentrations of airborne nickel, mostly present as oxidic or sub-sulphidic species at up to 100mg/m<sup>3</sup> or more, were associated with excess nasal and lung cancers.

The inhalation of nickel powder has not resulted in an increased incidence of malignant lung tumors in rodents. Repeated intratracheal instillation of nickel powder produced an increased incidence of malignant lung tumors in rats. Repeated intratracheal instillation of nickel powder did not produce an increased incidence of malignant lung tumors in hamsters when administered at the maximum tolerated dose. Single intratracheal instillations of nickel powder in hamsters at doses near the LD50 produced an increased incidence of fibrosarcomas, mesotheliomas and rhabdomyosarcomas.

Nickel powder has caused tumors at the site of injection in rodents. However, studies of nickel-containing prostheses do not suggest a significant risk for humans.

## 12. Ecological Information

Biologic degradation: methods for the determination of biodegradability are not applicable to inorganic substances.

Ecotoxic effects:

Biological effects: Fish toxicity Br. rerio LC<sub>50</sub>>100mg/1/96h;  
Daphnia Toxicity: Daphnia magna EC<sub>50</sub>:>100mg/1/48h;  
Algeal Toxicity: Selenastrum capricornatum IC<sub>50</sub>: 100mg/1/72 (suspension);  
Bacterial toxicity: Pseudomonas fluorescens EC<sub>50</sub>: 250mg/1/48h

Further Ecological Data: Due to poor solubility of the product, no harmful effects on aquatic organisms are to be expected when handled and used with due care and attention.

## 13. Disposal Considerations

Nickel-containing material is normally collected to recover nickel values. Should disposal be deemed necessary, follow local regulations.

## 14. Transport Information

International Maritime Dangerous Goods Code	Not regulated.
International Civil Aviation Organization Technical Instructions for the Carriage of Dangerous Goods by Air	Not regulated.
U.S. Dept. of Transportation Regulations	Apply to nickel powders if they are less than 100 micron in particle size and if they are packaged in quantities greater than 100 pounds.
Canadian Transportation of Dangerous Goods Act	Not regulated.
European Agreement Concerning the International Carriage of Dangerous Goods by Road	Not regulated.

## 15. Regulatory Information

Nickel metal is classified as a Category 3 carcinogen, (a substance which causes concern for man owing to the possible carcinogenic effect, but in respect of which, the available information is not adequate for making a satisfactory assessment), by the EU in Directive 67/548/EEC (Classification, Packaging and Labelling Directive) and in the UK in the Chemicals Hazard Information and Packaging for Supply Regulations 2002 (CHIP3). As such it requires to be labelled with the following risk and safety phrases.

### **Xn – Harmful - Category 3 carcinogen**

R40 – Possible risk of cancer

R20 – Harmful by inhalation

R43 - May cause sensitisation by skin contact.

S22 - Do not breathe dust.

S36 - Wear suitable protective clothing.

## 16. Other Information

Medical staff should note that this data sheet has been lodged with the following Poisons Information Centers:  
National Poison Centre Phonenumber: 44 (0) 870-6006266

E- Mail: [wnpu@compuserve.com](mailto:wnpu@compuserve.com)

Fax: 44(0) 2920-704357

## 17. Notes and Bibliography

This MSDS has been updated generally, incorporating re-formatting and addition of ecological hazards and toxicity. **INCO** is the Trademark of the **INCO** family of companies.

**Disclaimer:** The information in this Data Sheet is provided in good faith and is accurate to INCO's best knowledge and belief but except as implied by law, no representation or warranty is given in relation to the information and INCO accepts no liability.

1. T.R.K. is Technische Richtkonzentrationen as defined in the Deutsche Forschungsgemeinschaft, List of MAK & BAT values. 2000
2. Threshold Limit Values of the American Conference of Governmental Industrial Hygienists. 2000.
3. Maximum Exposure Limit of the Health and Safety Executive in the UK in EH40/00.
4. Bulk density of Inco material as measured using a Scott Volumeter.
5. Fisher Sub Sieve Sizer
6. Mastromatteo E. Nickel. Am. Ind. Hyg. Assoc. 47(10)589-601. 1986.
7. NIPERA/NIDI. Safe use of nickel in the workplace guide. 1998.