



Material Safety Data Sheet

ELECTROLYTIC NICKEL

Classification

R40- Possible risks of irreversible effects.
 R43- May cause sensitisation by skin contact.
 S22- Do not breathe dusts
 S36- Wear suitable protective clothing

Pictograms



HARMFUL

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name Electrolytic Nickel
Product Code None
Manufacturer Falconbridge Nikkelverk A/S, Serviceboks 604, N-4606 Kristiansand South, Norway
Supplier Falconbridge Limited, Suite 800, 207 Queen's Quay West, Toronto, Ontario Canada M5J 1A7
Information Contact Falconbridge Limited, Environmental Services (See also Section 17 for other contacts)
Phone Number (Business hours) (416) 982-3950
Phone Number (Emergency) 47-38 10 10 10
Synonyms Falconbridge Nickel Squares, Nickel Crowns, D-Crowns, SUPERELECTRO™, Microcrowns, D- Microcrowns, Alloy Grade
Name / Chemical Formula Ni
Chemical Family Metal
Utilization Electroplating, electroforming, alloy additions, chemical and powder production

SECTION 2. COMPOSITION AND INFORMATION ON INGREDIENTS

Name	CAS #	Content (%)	Exposure Limits		
			ACGIH (U.S.A.) TLV-TWA (mg/m ³)	OSHA (U.S.A.) PEL - TWA (mg/m ³)	EEC (Europe) TWA _{EV} (mg/m ³)
Nickel	7440-02-0	> 99.9	1.5 (metal) 0.1 (soluble compounds) 0.2 (insoluble compounds)	1 (metal, insoluble compounds) 1 (soluble compounds)	0.5 (Max. Exp. Limit)

ACGIH : American Conference of Governmental Industrial Hygienists. OSHA : Occupational Safety and Health Administration.

Note : See section 14 for explanations to R-phrases.

Nickel : ACGIH TLV (Ni) : Values for inhalable fraction. NIOSH REL (10 hr) : 0.015 mg Ni/m³ (Metal ; Compounds Ni) ; IDLH : 10 mg Ni/m³ (Metal ; Compounds Ni). LD50 > 9 000 mg/kg (Rat). LC50 > 10 mg/l (Rat).

TRK (Germany) : 0.5 mg/m³ (as Ni)

MEL (UK) : 0.5 mg/m³ (as Ni)

Consult local authorities for acceptable exposure limits.

SECTION 3. RISK IDENTIFICATION FOR HUMAN HEALTH

Routes of Entry Ingestion. Inhalation. Skin contact.

Carcinogenicity **Nickel (Metal and alloys) :** POSSIBLE (Group 2B, IARC) ; SUSPECTED (NTP) ; NOT SUSPECTED (Human, A5, ACGIH).

Acute Effects Possible allergic reaction.

Eye : Particles may cause slight irritation arising from mechanical abrasion.

Skin : Massive forms and particles may cause either contact dermatitis or skin irritation in sensitive individuals following prolonged exposure.

Inhalation : Rare cases of asthma have been reported in individuals exposed to some forms of particles containing nickel, particularly the nickel sulfate form. Respiratory sensitization is possible in susceptible individuals.

SECTION 4. FIRST AID MEASURES

Eye Contact Promptly wash eyes with plenty of water while lifting the eyelids. Continue to rinse for at least 15 minutes. Contact physician if irritation persists.

Skin Contact Wash the skin immediately with soap and water. Remove contaminated clothing. Contact physician if irritation continues. Avoid prolonged or repeated contact with the skin.

Inhalation Remove the exposed person from source of exposure. Provide rest, warmth and fresh air. When breathing is difficult, properly trained personnel may assist affected person by administering 100% oxygen. Get medical attention.

Ingestion **Conscious and alert person :** Induce vomiting. **Spontaneous vomiting :** Keep head below hips to prevent aspiration ; rinse mouth and give ½ to 1 cup of water or milk. **UNCONSCIOUS person :** **DO NOT** induce vomiting or give any liquid. **Immediately** obtain medical attention.

SECTION 5. FIRE AND EXPLOSION DATA

Flash Point Not available

Flammable Limits Not available

Auto-Ignition Temperature Not available

Products of Combustion Toxic gas, fume (Fire or high temperatures)

Fire Hazard	Not combustible. Not regarded as a fire hazard or an environmental hazard under current legislation.
Explosion Hazard	Not explosive
Fire Fighting (Instructions)	Massive form : May be extinguished by any means consistent with other substances involved. Water, foam, carbon dioxide (CO ₂) or dry chemical are suitable extinguishing media. Very fine powders : Use dry chemical, carbon dioxide or foam extinguishers. However, water may also be used.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill	Massive material : Not dusty and does not present spillage or leakage problems. Powder : Use appropriate tools to minimize dusts generation : Vacuuming (Wear appropriate respiratory protection) ; Wet sweeping (Masks should be worn).
Personal Protection	Gloves and respirator as required (See above).

SECTION 7. HANDLING AND STORAGE

Handling	Always use gloves to avoid prolonged or repeated direct skin contact. Particles : Approved respirators are recommended. Wash promptly if skin becomes contaminated. Promptly remove any clothing that becomes contaminated. Wash at the end of each work shift and before eating, smoking and using the toilet.
Storage	In covered containers to avoid contamination because of dampness and dust. Partly used containers should be recovered. Otherwise, no special precautions are required.

SECTION 8. ENGINEERING CONTROLS AND PERSONAL PROTECTION

Engineering Controls	Use engineering controls to reduce air contamination to permissible exposure level. If solid forms of nickel are converted to particulates, maintain the working environment below the recommended exposure limits by use of adequate ventilation.
Personal Protection	Wear approved safety goggles or face shields in processes which generate airborne particulates and avoid contact with nickel-bearing solutions. Eye wash equipment should be available at the workplace. Use protective gloves (Rubber or plastic). Wear coveralls (Should be used for one day if exposed to particulates, then washed before reuse. Particles : Use of NIOSH approved respirators or European Standard EN 149. Other jurisdictions : Consult the appropriate occupational exposure regulations.



SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance	Solid (Metal)	Odour	None
Molecular Weight	58.69	Taste	Not available
pH (1% soln/water)	Not applicable	Colour	Silver grey
Boiling Point	2730°C	Volatility	Not available
Melting Point	1453°C	% Moisture	Not available
Critical Temperature	Not available	Odour Threshold	Not available
Specific Gravity	Not available	Vapour Pressure	Not available
Density	8.9 g/cm ³	Water/Oil Dist. Coeff.	Not available
Vapour Density	Not available	Ionicity (in Water)	Not available
Dispersion	Not available	Hardness (Mob)	Not available
Solubility (Conc. Solution)	No (Water)		

SECTION 10. STABILITY AND REACTIVITY DATA

Stability	Yes
Conditions of Instability	None
Incompatibilities	Reactive with : Acids. Nickel : Violent reactions with : Fluoride, hydrazine, NH ₃ , NH ₄ NO ₃ , H ₂ +dioxine, titanium+KClO ₃ ; Phosphorous, selenium, sulfur. Other reactions with : Oxidants (Bromine pentafluoride, chlorine). Raney-nickel catalysts may initiate hazardous reactions with : Ethylene+aluminum chloride, p-dioxane, hydrogen, hydrogen+oxygen, magnesium silicate, methanol, organic solvents + heat, sulfur compounds.
Corrosivity	Not applicable

SECTION 11. TOXICOLOGICAL INFORMATION

Chronic Effects	Nickel : Carcinogen : This evaluation applies to the group of chemicals as a whole and not necessarily to all individual chemicals within the group. The exposure to metallic nickel or concentrate dusts did not indicate an increased risk of cancer. Possible skin sensitivity. Target organs for acute and chronic overexposure (NIOSH 90-117) : Nasal cavities, lungs, skin. Possible symptoms : Skin allergies, allergic asthma.
Toxicity	Persons with the following pre-existing conditions warrant particular attention : Nickel : Cancer and allergy. Preferred method for biological monitoring : Urinary nickel measurement.

Eating, drinking and smoking must be prohibited in areas where this material is handled and processed. Wash hands and face before eating, drinking and smoking.

SECTION 12. ECOTOXICOLOGICAL INFORMATION

Ecotoxicity	Not available
Toxicity to Animals	Nickel : INTRAPERITONEAL (LD50) : 763 mg/kg (Rat)
Biodegradation Products	Not biodegradable
Biodegradation Products (Toxicity)	Not applicable
Remarks on Environment	Not available
BOD5 and COD	Not available


SECTION 13. DISPOSAL ARRANGEMENTS

Waste Disposal	Recover and recycle if uncontaminated. Final disposal, if unavoidable, must be done on a registered land-fill site.
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SECTION 14. TRANSPORT INFORMATION

Transport	Sealed containers poses no problems.
DOT (USA)/ TDG (Canada)	The US Department of Transportation and Transport Canada have not listed nickel as hazardous cargo. Falconbridge Ltd. does not consider nickel in massive forms as hazardous.
Classifications DSCL (EEC)	Massive forms : Exempt from hazard labelling in the EU (Do not present a danger to health by inhalation or skin contact) (12th adaptation to EU labeling legislation). Particulate nickel : Particles less than 3 mm exceeding 0.1 % requires labeling. EEC (90C276/01) European Inventory or Existing Commercial Substances (EINECS). EU (Directive 67/548/EEC) : Nickel : Xn Harmful (Pictogram) Annex I Index number 028-002-00-7 ; EU Consolidated Inventories : EC number 2311114 R-40 Limited evidence of a carcinogenic effect. R-43 May cause sensitisation by skin contact. S22- Do not breathe dusts S36- Wear suitable protective clothing

SECTION 15. OTHER REGULATIONS

WHMIS (Classification)	D2A – Very toxic material causing other toxic effects 
Other Regulations	CERCLA Section 103 Hazardous substances (40 CFR 302.4) ; SARA 110 ATSDR CERCLA Priority List : listed. SARA Section 313, Toxic Chemicals (40 CFR 372.65) : Nickel (final RQ) : *100 pounds (45.4 kg) If you are unsure if you must report or require more information, call the EPA Emergency Planning and Community Right-To-Know Hotline : (800) 535-0202 or (202) 479-2449 (in Washington, DC or Alaska). Note : If you package or otherwise redistribute this product to industrial customers, a notice similar to this one should be sent to those customers.

NFPA (National Fire Protection Association) (U.S.A.)

Fire Hazard 0 **Reactivity** 0 **Health** 0 **Special Hazard**

SECTION 16. OTHER INFORMATION

References	- ACGIH, TLVs and BEIs. 2004 - IARC, Monographs on the Evaluation of Carcinogenic Risks to Humans (collection) - Merck Index. Merck & CO., Inc, 12th edition, 1999 - NIOSH U.S. - Pocket Guide to Chemical Hazards - WWW database, 2004 - Patty's Industrial Hygiene and Toxicology, 3rd Revised Edition - Toxicologie industrielle & intoxication professionnelle, 3e édition, Lauwerys - Mastromateo, E., Nickel. American Industrial Hygiene Association, 47 (10) 589-601, 1986 - Food and Drug Research Laboratories Inc., P.O. Box 107, Waverly, N.Y. 14892-0107 Acute Inhalation Toxicity Study of Nickel Powder in Sprague-Dawley Rats.
Glossary	IARC : International Agency for Research on Cancer. NIOSH : National Institute of Occupational Safety and Health. NTP : U.S. National Toxicology Program.

Note No application-specific studies have been performed on this mixture. For your protection, we suggest that you test it before using in your process.

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