



SAFETY DATA SHEET

Section 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Name of the substance	Nickel
Trade name of the substance	ELECTROLYTIC NICKEL
Identification No.	028-002-00-7
Registration number	011-2119438727-29-0003
Synonyms	Nickel Squares, SUPERELECTRO TM, Full Plate Cathode, Nickel Crowns, D-Crowns, Micros, Sundry, Ribs, Starting Sheets.
SDS number	Ni-rev 0-2010
Date of first issue	01-April-2011
Version number	01
Revision date	-
Supersedes date	-

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Manufacture and use of parts and products. Other registered uses, for this product, can be found in section 15 of this eSDS.
Uses advised against	<p>Uses by workers in industrial setting</p> <p>Design and manufacture of nickel in materials or articles intended for direct and prolonged contact with the skin where the release of nickel exceeds the limit set out in Directives 94/27/EC and 2004/96/EC and REACH Regulation 1907/2006 (Annex XVII).</p> <p>Manufacture of Ni-containing food contact materials (except Ni-Cr-plated materials) for which migration into foodstuff would exceed 0.1 mg/kg of Ni (according to Council of Europe Guidelines on metals and alloys used as food contact materials, 2002).</p> <p>Manufacture of nickel-containing HIGH SULPHUR stainless steel (AISI grade 303, or ISO 7153-1 reference grade N) for surgical implant applications.</p> <p>Manufacture of nickel or chromium-nickel plated heating coils in immersion kettles.</p> <p>Uses by professional workers</p> <p>Use of nickel-containing HIGH SULPHUR stainless steel (AISI grade 303, or ISO 7153-1 reference grade N) for surgical implant applications.</p> <p>Use of nickel in materials or articles intended for direct and prolonged contact with the skin where the release of nickel exceeds the limit set out in Directives 94/27/EC and 2004/96/EC and REACH Regulation 1907/2006 (Annex XVII).</p> <p>By consumer</p> <p>Use of nickel in materials or articles intended for direct and prolonged contact with the skin where the release of nickel exceeds the limit set out in Directives 94/27/EC and 2004/96/EC and REACH Regulation 1907/2006 (Annex XVII).</p> <p>Use of Ni-containing food contact materials (with exception of Ni-Cr-plated materials) for which migration into foodstuff would exceed 0.1 mg/kg of Ni (according to Council of Europe Guidelines on metals and alloys used as food contact materials, 2002).</p> <p>The use of nickel or chromium-nickel plated heating coils in immersion kettles.</p>

Details of the supplier of the safety data sheet

Supplier

Company name	Xstrata Nikkelverk AS
Address	Vesterveien 31, N-4606 Kristiansand Norway
Telephone number:	+47 38 10 10
Contact person	Technology Director, Xstrata Nikkelverk AS
Emergency telephone number	+47 38 10 10 (during office hours 09:00 - 17:30 CET)
e-mail	post@xstratanickel.no

Section 2: Hazards identification

Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

Classification Carc. Cat. 3;R40, T;R48/23, R43

The full text for all R-phrases is displayed in section 16.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Skin sensitisation	Category 1	May cause an allergic skin reaction.
Carcinogenicity	Category 2	Suspected of causing cancer.
Specific target organ toxicity - repeated exposure	Category 1 (Lung, Respiratory system)	Causes damage to organs (Lung, Respiratory system) through prolonged or repeated exposure.

Hazard summary

Physical hazards	Not classified for physical hazards.
Health hazards	Limited evidence of a carcinogenic effect. May cause sensitisation by skin contact. Toxic: danger of serious damage to health by prolonged exposure through inhalation. Occupational exposure to the substance or mixture may cause adverse health effects.
Environmental hazards	Not classified for hazards to the environment.
Specific hazards	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. The effects might be delayed. Molten material will produce thermal burns. Mechanical processing may generate dust. High concentrations of dust may form explosive mixture with air.
Main symptoms	Irritation of nose and throat. Irritation of eyes and mucous membranes. Sensitisation.

Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains:	Nickel
Identification No.	028-002-00-7



Signal word	Danger
Hazard statements	May cause an allergic skin reaction. Suspected of causing cancer. Causes damage to organs (Lung, Respiratory system) through prolonged or repeated exposure.

Precautionary statements

Prevention	Obtain special instructions before use. Do not breathe dust/fume/gas/mist/vapors/spray. Wear protective gloves.
Response	Get medical attention/advice if you feel unwell.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information None.

Other hazards The PBT and vPvB criteria of Annex XIII to the Regulation does not apply to inorganic substances, such as nickel metal.

Section 3: Composition/information on ingredients

Substance

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Nickel	≥85-≤100	7440-02-0 231-111-4	011-2119438727-29-0003	028-002-00-7	#
Classification:	DSD:	Carc. Cat. 3;R40, T;R48/23, R43			
	CLP:	Skin Sens. 1;H317, Carc. 2;H351, STOT RE 1;H372			

#: This substance has workplace exposure limit(s).

Composition comments

This product is registered under the REACH Regulation 1907/2006 as a mono-constituent substance. The full text for all R- and H-phrases is displayed in section 16. All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. For more detailed chemical composition, refer to the certificate of analysis.

Section 4: First aid measures

General information	Get medical attention if any discomfort develops. Seek medical attention for all burns, regardless how minor they may seem. Show this safety data sheet to the doctor in attendance.
Description of first aid measures	
Inhalation	In case of exposure to fumes or particulates: Move to fresh air. Get medical attention if discomfort persists.
Skin contact	Contact with dust: Wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. In case of contact with molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.
Eye contact	Do not rub eyes. Remove any contact lenses. Flush eyes thoroughly with water, taking care to rinse under eyelids. If irritation persists, continue flushing for 15 minutes, rinsing from time to time under eyelids. If discomfort continues, consult a physician.
Ingestion	Rinse mouth thoroughly if dust is ingested. Do not induce vomiting. Get medical attention if any discomfort continues.
Most important symptoms and effects, both acute and delayed	Irritation of nose and throat. Irritation of eyes and mucous membranes. Sensitisation.
Indication of any immediate medical attention and special treatment needed	Treat symptomatically. Symptoms may be delayed.

Section 5: Firefighting measures

General fire hazards	Nickel powder or dust will support combustion and may form explosive mixtures in air. In a fire, nickel may form nickel carbonyl, a highly toxic substance and known carcinogen. Do not use water on molten metal: Explosion hazard could result.
Extinguishing media	
Suitable extinguishing media	Special powder against metal fires. Dry sand. Water spray, fog or mist.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Special hazards arising from the substance or mixture	Fire or high temperatures create: Metal oxides.
Advice for firefighters	
Special protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special firefighting procedures	Move containers from fire area if you can do so without risk.

Section 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures	
For non-emergency personnel	Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in section 8 of this safety data sheet.
For emergency responders	Keep unnecessary personnel away. Use personal protection recommended in section 8 of the SDS.
Environmental precautions	Avoid release to the environment. Avoid spreading dust or contaminated materials.
Methods and material for containment and cleaning up	Collect spillage. Allow spilled material to solidify and scrape up with shovels into a suitable container for recycle or disposal. Collect dust or particulates using a vacuum cleaner with a HEPA filter.
Reference to other sections	For waste disposal, see section 13. For personal protection, see section 8.

Section 7: Handling and storage

Precautions for safe handling	Welding, burning, sawing, brazing, grinding or machining operations may generate fumes and dusts. Provide adequate ventilation. Use appropriate tools. Avoid contact with sharp edges and hot surfaces. Avoid generation and spreading of dust. Avoid inhalation of dust and contact with skin and eyes. Wear appropriate personal protective equipment. Avoid contact with molten material. Do not use water on molten metal. Do not eat, drink or smoke when using the product. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Keep dry. Store away from incompatible materials.
Specific end use(s)	For detailed information, see section 15. Recommendations given in the exposure scenario for the uses are distributed and annexed as separate documents to this eSDS.

Section 8: Exposure controls/personal protection

Control parameters

Occupational exposure limits	No exposure limits noted for the ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Recommended monitoring procedures	Follow the schedule for work place measurements.

DNEL

Material	Type	Route	Value	Form
Nickel (7440-02-0)	General Population Workers	Oral	1.2 mg/kg/day	Acute Systemic effects
		Inhalation	816 mg/m ³	Acute Systemic effects
		Dermal	0.015 mg/m ³	Long term Local effects
		Inhalation	0.05 mg/m ³	Long term Local effects
		Oral	1.1 mg/kg/day	Long term Systemic effects
		Inhalation	0.05 mg/m ³	Long term Systemic effects
		Inhalation	1.6 mg/m ³	Acute Local effects

PNEC

Material	Type	Route	Value	Form	
Nickel (7440-02-0)	Aqua (freshwater)	Not applicable	3.6 µg/l	Dissolved Ni	
	Aqua (marine water)	Not applicable	8.6 µg/l	Dissolved Ni	
	Not applicable	Not applicable	Not applicable	12.3 mg/kg	Bivalve-eating bird
		Not applicable	Not applicable	4.6 mg/kg	Harbor seal
		Not applicable	Not applicable	12.3 mg/kg	Oystercatcher
	Sewage Treatment Plant	Not applicable	0.33 mg/l	Nickel	
Soil	Not applicable	29.9 mmol/mol	Nickel		

Exposure controls

Appropriate engineering controls	Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment if high dust/air concentrations are possible.
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Individual protection measures, such as personal protective equipment

General information	Wear suitable protective equipment.
Eye/face protection	Wear dust-resistant safety goggles where there is danger of eye contact. In addition to safety glasses or goggles, a welding helmet with appropriate shaded shield is required during welding, burning, or brazing. A face shield is recommended, in addition to safety glasses or goggles, during sawing, grinding, or machining.
Skin protection	
- Hand protection	Wear suitable protective gloves to prevent cuts and abrasions. When material is heated, wear gloves to protect against thermal burns. Suitable gloves can be recommended by the glove supplier.
- Other	Wear suitable protective clothing.
Respiratory protection	In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter (type P2). Seek advice from local supervisor.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

Hygiene measures	Wash hands after handling. Do not eat, drink or smoke when using the product. Routinely wash work clothing and protective equipment to remove contaminants. Private clothes and working clothes should be kept separately. Handle in accordance with good industrial hygiene and safety practices. Follow up on any medical surveillance requirements.
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Environmental exposure controls	Contain spills and prevent releases and observe national regulations on emissions. Notify relevant authorities if this material is released to the environment.
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Section 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Massive, solid metal.
Physical state	Solid.

Form	Solid forms such as: Pellets, Offcuts, Briquettes, S sheet, Caths, Cuts, Uncuts and Crowns.
Colour	Silver-grey.
Odour	Odourless.
Odour threshold	Not applicable.
pH	Not applicable.
Melting point/freezing point	1,455 °C (2,651 °F)
Boiling point, initial boiling point, and boiling range	2,730 °C (4,946 °F)
Flash point	Not applicable.
Auto-ignition temperature	Not available.
Flammability (solid, gas)	Non flammable.
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Oxidising properties	Not oxidizing.
Explosive properties	Not explosive.
Explosive limit	Not applicable.
Vapour pressure	1 mm Hg at 1810°C
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Relative density	8.9
Relative density temperature	25 °C (77 °F)
Solubility (water)	Insoluble
Partition coefficient (n-octanol/water)	Not applicable.
Decomposition temperature	Toxic gases and vapors (such as nickel carbonyl) may be released in the decomp of nickel compd.
Viscosity	Not applicable.
Viscosity temperature	Not applicable.
VOC (Weight%)	Not applicable.
Percent volatile	Not applicable.
Other information	No relevant additional information available.

Section 10: Stability and reactivity

Reactivity	Massive metal is stable and non reactive under normal conditions of use, storage and transport.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Hazardous polymerisation does not occur. Hazardous reactions do not occur.
Conditions to avoid	Contact with incompatible materials. Contact with acids will release flammable hydrogen gas.
Incompatible materials	This product is incompatible with nitrates. Fluoride. Oxidising materials. Phosphorus. Ammonia. Halogens. Sulphur. Acids.
Hazardous decomposition products	Welding, burning, sawing, brazing, grinding or machining operations may generate dusts and fumes of metal oxides.

Section 11: Toxicological information

General information	Occupational exposure to the substance or mixture may cause adverse effects.
Information on likely routes of exposure	
Ingestion	May be ingested by accident.
Inhalation	Dust may irritate respiratory system.
Skin contact	May cause sensitization by skin contact.
Eye contact	Eye contact is possible and should be avoided.
Symptoms	Irritation of eyes and mucous membranes. Irritation of nose and throat. Sensitizing.
Information on toxicological effects	

Acute toxicity	The acute oral toxicity of nickel metal has been determined in a well-performed animal study which concluded the acute oral LD50 was greater than >9000 mg/kg bw. High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. Data on acute toxicity in animals via dermal exposure have not been found. Dermal acute toxicity is expected to be low in view of the low oral toxicity and the negligible absorption via the skin.
Product	Test results
Nickel (7440-02-0)	Acute Oral LD50 Rat: > 9000 mg/kg
Skin corrosion/irritation	Not irritant in skin irritation study using the rabbit (animal number: 2, dose: 500mg/animal's ear, exposure period: 24 hours, observation period: 7 days).
Serious eye damage/eye irritation	No studies of eye irritation by metallic nickel have been found. Toxicity data from water-soluble nickel compounds can be used to estimate the potential of nickel metal to cause eye irritation. No classification for eye irritation is proposed.
Respiratory sensitisation	Not classified.
Skin sensitisation	Sufficient data from human studies exists to warrant classification of Ni metal as a dermal sensitizer.
Germ cell mutagenicity	Test data conclusive but not sufficient for classification.
Carcinogenicity	Suspected as carcinogen for human by inhalation.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Nickel (CAS 7440-02-0)	2B Possibly carcinogenic to humans.
Reproductive toxicity	Test data conclusive but not sufficient for classification.
Specific target organ toxicity - single exposure	Test data conclusive but not sufficient for classification.
Specific target organ toxicity - repeated exposure	Causes damage to organs through prolonged or repeated exposure: Lungs. Respiratory system.
Aspiration hazard	Not classified.
Mixture versus substance information	Not available.
Other information	Welding or plasma arc cutting of metal and alloys can generate ozone, nitric oxides and ultraviolet radiation. Ozone overexposure may result in mucous membrane irritation or pulmonary discomfort. UV radiation can cause skin erythema and welders flash.

Section 12: Ecological information

Toxicity

Product	Test results
Nickel (7440-02-0)	EC50 Pseudokirchneriella subcapitata: 81.5 - 148 µg/l 72 Hours (Nickel dichloride) EC50 Water flea (Ceriodaphnia dubia): 121.6 µg/l 48 Hours (Nickel dichloride, hexahydrate) LC50 Oncorhynchus mykiss: 15.3 mg/l 96 Hours (Nickel dichloride)
Persistence and degradability	The product is not biodegradable.
Bioaccumulative potential	Accumulates in soil and sediment. Aquatic organism: BCF= 270 mg/L. Potential to bioaccumulate is low.
Mobility	Nickel in massive forms is not mobile in the environment.
Environmental fate - Partition coefficient	Not applicable.
Mobility in soil	Nickel in massive forms is not mobile in the environment.
Results of PBT and vPvB assessment	Not a PBT or vPvB substance or mixture.
Other adverse effects	Not expected to be harmful to aquatic organisms. However in case of accidental release of large amounts a hazardous effect cannot be excluded.

Section 13: Disposal considerations

Waste treatment methods

Residual waste	Dispose of in accordance with local regulations. Recover and recycle, if practical. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.
Contaminated packaging	Since emptied containers retain product residue, follow label warnings even after container is emptied.

EU waste code 06 04 99

Disposal methods/information Dispose in accordance with all applicable regulations.

Section 14: Transport information

ADR

The product is not covered by international regulation on the transport of dangerous goods.

RID

The product is not covered by international regulation on the transport of dangerous goods.

ADN

The product is not covered by international regulation on the transport of dangerous goods.

IATA

The product is not covered by international regulation on the transport of dangerous goods.

IMDG

The product is not covered by international regulation on the transport of dangerous goods.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable. However, this product is a solid. When transported in bulk, it is not covered under Appendix I of the IMSBC Code.

Section 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulations

Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex I

Not listed.

Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex II

Not listed.

Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V

Not listed.

Directive 96/61/EC concerning integrated pollution prevention and control (IPPC): Article 15, European Pollution Emission Registry (EPER)

Nickel (CAS 7440-02-0)

Regulation (EC) No. 1907/2006, REACH Article 59(1). Candidate List

Not listed.

Other regulations

The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended and respective national laws implementing EC directives. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006. 96/82/EC (Seveso II) Directive; Part 2 (Classified Substances) - Toxic

National regulations

Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work. Pregnant women should not work with the product, if there is the least risk of exposure. Follow national regulation for work with chemical agents.

Chemical safety assessment

For this substance a chemical safety assessment has been carried out.

Exposure scenarios relevant for this material are annexed and distributed as separate document to this eSDS.

Identified Uses:

Uses by workers in industrial settings
Production of nickel metal.
S4A: Stainless, special steels and special alloys manufacturing.
Integrated steel and iron manufacturing.
EAF carbon steel.
Powder Metallurgy.
Metal surface treatment (nickel electroplating and nickel electroforming technologies).
Production of nickel salts from nickel metal.
Manufacturing of batteries using positive nickel electrodes.
Production of catalyst.
Use pre-reduced nickel containing catalyst.
Production of magnets.
Production of nickel-containing products (e.g. electronics).
Production of brazing alloys.
Use of brazing alloys.
Production of silver-nickel contact material.
Use of silver-nickel contact material.
Sputter Deposition.
Thin film deposition by evaporation technique.

Uses by professional workers
Use of brazing alloys.
Use of silver-nickel contact material.

Uses by consumers.
Drinking water from nickel-containing kettles.
Coinage.
Direct and prolonged contact with skin.
Drinking water from nickel containing pipes and taps.
Food contact materials containing nickel.
Piercings post containing nickel.
Tools and other release surfaces containing nickel.

Section 16: Other information**List of abbreviations**

DNEL: Derived No-Effect Level.
PNEC: Predicted No-Effect Concentration.
PBT: Persistent, bioaccumulative and toxic.
vPvB: Very Persistent and very Bioaccumulative.
DSD: Directive 67/548/EEC.
CLP: Regulation No. 1272/2008.
LD50: Lethal Dose, 50%.
N/A: Not applicable.

References

IUCLID
IARC Monographs. Overall Evaluation of Carcinogenicity (Volumes 1-100A)

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available. For details, refer to Sections 9, 11 and 12.

Full text of any statements or R-phrases and H-phrases under Sections 2 to 15

R40 Limited evidence of a carcinogenic effect.
R43 May cause sensitisation by skin contact.
R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation.
H317 - May cause an allergic skin reaction.
H351 - Suspected of causing cancer.
H372 - Causes damage to organs through prolonged or repeated exposure.

Training information

Follow training instructions when handling this material.

Disclaimer

This Safety Data Sheet is specifically designed to comply with the requirements of the EU Regulation called REACH - Registration, Evaluation and Authorisation of Chemicals (EC No. 1907/2006 of the European Parliament and of the Council of 18 December 2006) and the corresponding country law, and may not comply with the requirements of any other regulations for safe product handling.

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