Infosafe No™ 1CH4M Issue Date :November 2022 RE-ISSUED by CHEMSUPP

Product Name **NICKEL (Foil, Rounds)**

Classified as hazardous

Section 1 - Identification

Product Identifier	NICKEL (Foil, Rounds)
Company Name	CHEMSUPPLY AUSTRALIA PTY LTD (ABN 19 008 264 211)
Address	38 - 50 Bedford Street GILLMAN SA 5013 Australia
Telephone/Fax Number	Tel: (08) 8440-2000
Emergency Phone Number	CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)
E-mail Address	www.chemsupply.com.au
Recommended use of the chemical and restrictions on use	Alloying element for steel and cast iron, other alloys with high corrosion and temperature resistance, such as nickel brasses and bronzes, and alloys with copper, chromium, aluminum, lead, cobalt, silver, and gold, nonferrous alloys and super alloys, in alloys for permanent magnets, electrical resistance alloys, electronic and space applications; electrotypes; lightning rod tips; electrical contacts and electrodes, spark plugs; in manufacture of monel metal, and nickel chrome resistance wire; component of coinage; used in making desalination plants; armour plate and burglar proof vaults; in surgical and dental prostheses; as antistatic coating; used in cooling towers as anodic inhibitor electroplated protective coatings; nickel plating; electroplating; electro-formed coatings; alkaline storage battery, nickel-cadmium batteries, automotive electric vehicles batteries; fuel cell electrodes; petroleum refining, catalyst for methanation of fuel gases; catalysts in the manufacture of organic chemicals, catalyst for hydrogenation of fats and oils; transportation; chemical industry; electrical equipment, in electronic and computer equipment; construction; fabricated metal products, household appliances, machinery parts; as constituents of pigments (green tint) in the glass and ceramics industries and laboratory reagent.

Other Names

Name	Product Code
NICKEL Foil LR	NL011
NICKEL Rounds LR	NL013

Other Information

ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

Section 2 - Hazard(s) Identification

GHS Classification of the Substance/Mixture	Carcinogenicity: Category 2 Specific target organ toxicity Repeated Exposure (Inhalation): Category 1 Sensitization - Skin: Category 1
Signal Word	DANGER
Hazard Statement (s)	H317 May cause an allergic skin reaction. H351 Suspected of causing cancer. H372 Causes damage to organs through prolonged or repeated exposure.
Pictogram (s)	Health hazard, Exclamation mark

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Precautionary Statement – Prevention	P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P260 Do not breathe dust/fume/gas/mist/vapours/spray. P264 Wash thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P272 Contaminated work clothing should not be allowed out of the workplace. P280 Wear protective gloves/protective clothing/eye protection/face protection. P281 Use personal protective equipment as required.
Precautionary Statement – Response	P302+P352 IF ON SKIN: Wash with plenty of soap and water. P333+P313 If skin irritation or rash occurs: Get medical advice/attention. P363 Wash contaminated clothing before reuse. P308+P313 IF exposed or concerned: Get medical advice/attention.
Precautionary Statement – Storage	P405 Store locked up.
Precautionary Statement – Disposal	P501 Dispose of contents/container according to local, state and federal regulations.
Other Information	Adverse effects can result from parenteral routes of exposure. Parenteral exposures may occur from implanted metal prostheses, stainless steel needles or contaminated dialysate solutions. Prostheses or other surgical implants made with nickel containing alloys have been reported to cause nickel sensitization; and inflammatory reactions have occurred around nickel-containing prostheses and medical implants. 'Nickel intoxication' from dialysis exposure includes nausea, vomiting, headache, weakness and palpitations.

Section 3 - Composition and Information on Ingredients

Ingredients	Name	CAS	Proportion
	Nickel	7440-02-0	100 %

Section 4 - First Aid Measures

Inhalation	Remove from exposure, rest and keep warm. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen. If rapid recovery does not occur, obtain medical attention.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice if effects persist.
Skin	Wash affected areas with copious quantities of water immediately. Remove contaminated clothing and wash before re-use. Seek medical attention in severe cases, or if irritation develops.
Eye	If contact with the eye(s) occurs, wash with copious amounts of water for approximately 15 minutes holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. Seek medical attention.
First Aid Facilities	Normal washroom facilities are generally suitable. Ensure an eyewash station and safety shower are available and ready for use.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

Section 5 - Firefighting Measures

Hazards from Combustion Products	Toxic and/or highly flammable and/or irritating fumes, gases and vapours, including carbon monoxide, carbon dioxide, nickel oxide, hydrogen gas, and nickel carbonyl.
Specific Methods	Use extinguishing media most appropriate for the surrounding fire. No

	limitations to the type of extinguishing media.
Precautions in connection with Fire	Wear SCBA and structural firefighter's uniform.

Section 6 - Accidental Release Measures

Personal Precautions	Avoid inhalation, contact with skin, eyes and clothing.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Clean-up Methods - Small Spillages	Sweep up (avoid generating dust) and using clean non-sparking tools transfer to a clean, suitable, clearly labelled container for disposal in accordance with local regulations.

Section 7 - Handling and Storage

Precautions for Safe Handling	Avoid ingestion and inhalation. Avoid contact with skin and eyes. Minimize dust generation and accumulation. Use with adequate ventilation. Wear clean impervious clothing, gloves, and boots; change clothing daily and maintain high standard of personal hygiene. Smoking, drinking, eating, storage of food or of food and beverage containers or utensils, and the application of cosmetics should be prohibited during work. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. All personnel should remove gloves, if worn, after completion of procedures in which carcinogens have been used. The worker should immediately wash the skin when it becomes contaminated. Contaminated clothing should not be taken home at end of shift, but should remain at employee's place of work for cleaning. In cleaning labs, procedures should be used which do not produce aerosols or dispersal of dust, ie, wet mop or vacuum cleaner equipped with high-efficiency particulate filter on exhaust, which are available commercially, should be used. Sweeping, brushing and use of dry dusters or mops should be prohibited. Doors leading into areas where carcinogens are used should be marked distinctively with appropriate labels. Access limited to authorised personnel. A prominently displayed notice should give the name of the emergency officer and who can inform others (such as firemen) on the handling of carcinogenic substances.
Conditions for safe storage, including any incompatibilities	Store in original, tightly closed containers, in a cool, dry, well-ventilated area away from incompatible substances. Protect against physical damage, direct sunlight and moisture. Separate from strong acids.
Corrosiveness	Excellent resistance to corrosion by air, water, and non-oxidizing acids.
Storage Temperatures	Store at room temperature (15 to 25 °C recommended).

Section 8 - Exposure Controls and Personal Protection

Occupational Exposure Limit (OEL) Values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Nickel			1		Nickel, metal

Other Exposure Information	A time weighted average (TWA) has been established for Nickel, metal (Safe Work Australia) of 1 mg/m³. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. 'Sen' notice - sensitiser. The substance can cause a specific immune response in some people. An affected individual may subsequently react to minute levels of that substance.
Engineering Controls	In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In

	event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.
Eye and Face Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: PVC, neoprene or nitrile rubber gloves.
Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
Body Protection	Clean clothing or protective clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Section 9 - Physical and Chemical Properties

Form	Solid
Appearance	Lustrous, silvery-white to dark gray, or silvery with a gold tinge, hard, malleable metal chunks, powder or face centred cubic crystals.
Odour	Odourless.
Melting Point	1455 °C
Boiling Point	2730 °C; 2913 °C.
Solubility in Water	Insoluble.
Solubility in Organic Solvents	Insoluble in ammonia; soluble in dilute nitric acid; slightly soluble in hydrochloric acid and sulfuric acid.
Specific Gravity	8.908
Vapour Pressure	1 Pa (@ 1783 K); 10 Pa (@ 1950 K); 100 Pa (@ 2154 K), 1 mmHg (@ 1810 °C); 1 kPa (@ 2410 K), 10 kPa (@ 2741 K), 100 kPa (@ 3184 K).
Density	Liquid density at m.p.: 7.81 g/cm³.
Flammability	Non combustible material. Very finely divided metal in the fully reduced state can smoulder in the presence of oxygen or air.
Explosion Properties	Dusts at sufficient concentrations can form explosive mixtures with air. Dust can be an explosion hazard when exposed to heat or flame. Metals in contact with acids give off hydrogen gas which may explode in a fire.
Molecular Weight	58.69
Other Information	Electrical resistivity: 6.844 microohms/cm @ 20 °C. Thermal conductivity (300 K): 90.9 W/m·K. Thermal expansion (25 °C): 13.4 µm/m·K. Mohs' hardness 3.8. Latent Heat of Fusion 73 cal/g. Magnetic ordering: ferromagnetic.

Section 10 - Stability and Reactivity

Chemical Stability	Stable in air under normal conditions, temperatures and pressures. Not affected by water. Heat contributes to instability.
Possibility of Hazardous Reactions	Burns in oxygen, forming nickel oxide. Nickel in reducing atmosphere furnace can react with carbon monoxide forming highly toxic nickel carbonyl gas. Mixtures containing potassium perchlorate with nickel and titanium powders and infusorial earth can be ignited giving severe explosions by friction and/or sparks--less than those available from static electricity on the human body. Reacts vigorously or explosively with aniline, hydrogen sulfide, flammable solvents, hydrazine, and metal powders (especially zinc, aluminium, and magnesium). If nickel powder comes into contact with bromine pentafluoride at

	ambient or slightly elevated temperatures, ignition will probably occur. Adding 2-3 drops of approximately 90% peroxyformic acid to powdered nickel will result in an explosion. A mixture of nickel and nitryl fluoride or sulfur or selenium will become incandescent if slightly warmed. Avoid reaction with sulfur compounds. Nickel dust reacts violently with hydrazoic acid. Reacts with dilute oxidizing agents. Reacts violently, in powder form, with oxidants such as ammonium nitrate, causing fire and explosion hazard. Reacts slowly with non-oxidizing acids (dilute hydrochloric or sulfuric acid) and more rapidly with oxidizing acids (nitric acid).
Conditions to Avoid	Incompatible materials, heating, exposure to air, dust generation, wood and other combustibles.
Incompatible Materials	Oxidising agents, acids, hydrochloric acid, sulfuric acid, nitric acid, nitrates, sulfur, and sulfur compounds, selenium, halogens, interhalogens, nitriles (eg. acetonitrile, methyl cyanide), organic solvents, ammonia, hydrazine, phosphorus, aluminium, aluminium trichloride, ethylene, p-dioxan, hydrogen, methanol, non-metals, bromine pentafluoride, ethylene + aluminium, hydrazoic acid, nitryl fluoride, and potassium perchlorate.
Hazardous Decomposition Products	Toxic and highly flammable gases and vapours (such as nickel carbonyl).
Hazardous Polymerization	Will not occur.

Section 11 - Toxicological Information

Acute Toxicity - Oral	LD50 (rat): >9000 mg/kg.
Acute Toxicity - Inhalation	(rat): ~ 0.015 mg/l, Remarks: Nickel Powder caused respiratory irritation.
Ingestion	May be harmful if swallowed. Ingestion of large doses may cause gastrointestinal irritation with nausea, vomiting, diarrhoea, tremor, respiratory problems, and death. May cause liver and kidney damage. Hyperbilirubinemia and elevated SGPT have been reported. It binds to the anionic glycosaminoglycan sites of the glomerular basement membrane, leading to the loss of selectivity in the filtration of albumin. Changes found in the kidneys of one case included vacuolization of the proximal convoluted tubules, but no tubular necrosis. Blood effects (leukocytosis, reticulocytosis, and erthrocytosis) have been reported. May cause sensitization.
Inhalation	The substance can be absorbed into the body by inhalation of the dust. Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed. At high temperatures, nickel oxide fumes will be formed. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. Early symptoms after inhalation are dizziness, giddiness, and weakness. EEG abnormalities have been reported. Inhalation of powders, dusts, aerosols and mists of this material may cause respiratory tract irritation. Exposure to excessive levels of airborne nickel may produce eye, nose, and throat irritation plus skin rashes and a burning sensation on the lips. Exposure to nickel aerosols, vapours and dust is associated with damage to the nasal mucosa. Breathing nickel (dust and fume) can cause a sore or hole in the 'bone' (septum) dividing the inner nose. Gingivitis, stomatitis, bitter metallic taste, nasal irritation, hyposmia/anosmia, sore throat, hoarseness cough and shortness of breath are sometimes reported. Inhalation of nickel alloys or dust has been linked to pulmonary irritation, asthma, pneumoconiosis, pulmonary fibrosis and pulmonary oedema. Exposure to nickel containing vapours has been reported to be associated with asthma. Symptoms were attributed to hypersensitivity to nickel of non-occupational origin. The symptoms of asthma often do not become manifest until a few hours have passed and they are aggravated by physical effort. Inhalation of fumes may cause pneumonitis. Death from adult respiratory distress syndrome has occurred.
Skin	May cause mechanical to severe irritation, possible burns and dermatitis (eczema). Exposure to excessive levels of airborne nickel may produce skin

	rashes and a burning sensation on the lips. May cause Contact dermatitis or hypersensitivity, possibly severe, an allergic reaction, which becomes evident upon re-exposure to this material and which occurs in sensitized individuals. Nickel hypersensitivity dermatitis may be initiated by contact with nickel on the skin. Divalent nickel ions can penetrate skin at sweat-duct and hair follicle ostia, and bind with keratin. Contact dermatitis thus results from permeability of dermis and epidermis to nickel. Exposure can result in localized pruritus ('nickel itch'), burning and itching sensation, erythema, papules, eczema and possibly vesicles (nodular eruptions) after 1 to 2 days of continuous contact, and may also be linked to conjunctivitis, asthma, urticaria, erythema multiforme, and hand eczema. Once acquired, nickel sensitivity usually persists. Delayed type hypersensitivity to nickel is one of the most common allergies. About 4.5% of the general population in Europe and 5.8% in the United States are allergic to this metal. Patch test clinics throughout the world have a high prevalence of nickel sensitivity, in the range of 10% with a significantly rising prevalence in some European countries approaching 20% to 30%. This is undoubtedly related to ear piercing. Nickel and its inorganic compounds can be absorbed through the skin but not in amounts sufficient to cause intoxication.
Eye	Dust and aerosols may cause eye irritation. High levels of airborne nickel may cause conjunctivitis and epiphora.
Carcinogenicity	Nickel, metallic [7440-02-0] and alloys is evaluated in the IARC Monographs (Vol. 49; 1990) as Group 2B: Possibly carcinogenic to humans. R40(3) Carcinogen Category 3, Harmful - Limited evidence of a carcinogenic effect. - Worksafe Aust. Listed as a carcinogen, category 3 in List of Designated Hazardous Substances, - NOHSC. Category 3 - Substances that cause concern for man owing to possible carcinogenic effects but in respect of which the available information is not adequate for making a satisfactory assessment. There is some evidence from appropriate animal studies, but this is insufficient to place the substance in Category 2.
Reproductive Toxicity	Suspected Developmental Toxicant: US EPA. Roadmaps to Sources of Information on Chemicals Listed in the Emergency Planning Community and Community Right-to-Know Act (Also Known as SARA Title 3), Section 313 Toxic Release Inventory (for Microcomputers). (Report Number EPADFDK92040). 1991. Nickel salts are reported to be animal teratogens. Increased incidence of stillbirth and neonatal mortality of rat offspring were associated with maternal consumption of nickel chloride solutions prior to mating and during gestation. Nickel has been found in breast milk. Oral administration of nickel sulfate to rats caused decreased testicular, prostate, and seminal vesicle size as well as abnormalities of sperm and decreased sperm count.
Mutagenicity	Nickel [resp/oral]: human-mutagen, decline in semen parameters, animal-embryolethal, increased rate of fetal growth retardation and skeletal anomalies (From: ôReproductive Hazards of the Workplace” by Linda M. Frazier, MD, MPH & Marvin L. Hage, MD).
Chronic Effects	Prolonged or repeated skin contact may cause sensitization dermatitis (eczema) and possible destruction and/or ulceration. Repeated or prolonged inhalation exposure may cause chronic irritation of upper respiratory tract, rhinitis, sinusitis, nasal septal perforations, loss of sense of smell, a general low resistance to chest infection leading to more serious lung disorders, bronchial asthma, pulmonary fibrosis, and pneumoconiosis. Lungs may be affected by repeated or prolonged exposure. Longterm inhalation exposure to metallic nickel caused mucosal damage and inflammatory reaction, sometimes accompanied by slight fibrosis, was observed in rabbits after high level exposure to nickel graphite dust. May cause respiratory tract cancer and increased risk of nasal and lung cancer.
Other Information	HUMAN HEALTH TIER II ASSESSMENT FOR Nickel - NICNAS https://www.nicnas.gov.au/chemical-information/imap-assessments/imap-assessment-details?assessment_id=945#risk

Section 12 - Ecological Information

Ecological Information	Due to the poor solubility of the product, no harmful effects on plants and/or aquatic organisms are to be expected when handled and used with due care and

	attention. No ecological problems are to be expected when the product is handled and used with due care and attention.
Ecotoxicity	Quantitative data on the ecological effect of this product are not available.
Persistence and Degradability	No data was found to suggest that nickel is involved in any biological transformation in the aquatic environment.
Bioaccumulative Potential	This material is not expected to significantly bioaccumulate.
Environmental Protection	Do not allow to enter waters, waste water, or soil!

Section 13 - Disposal Considerations

Disposal Considerations	Dispose of according to relevant local, state and federal government regulations.
Waste Disposal	Recycle, if possible; otherwise use hazardous waste disposal site; highly toxic nickel salts, e.g., arsenide, antimonide, selenide, should be encapsulated before disposal.
Other Information	Precipitation is the preferred treatment process for removing toxic heavy metals from electroplating waters. Precipitation processes include hydroxide, lime and/or sulfide treatment. Chemical reduction is used to treat complex metals such as nickel, copper, hexavalent chromium waste, soluble lead, silver, metal containing cyanide, and mercury. Adsorption has shown potential for treating and polishing aqueous metal bearing wastes. Activated carbon, activated alumina, and iron filings are all applicable adsorbents. Evaporation, ion-exchange, reverse osmosis, electrodialysis, and electrolytic recovery are waste reduction and recovery techniques applicable to metal bearing hazardous streams.

Section 14 - Transport Information

Transport Information	Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

Section 15 - Regulatory Information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS). Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.
Poisons Schedule	Not Scheduled

Section 16 - Any Other Relevant Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'. Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals'. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand. Safe Work Australia, 'Hazardous Chemical Information System'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. ChemSupply Australia Pty Ltd accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical

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Empirical Formula & Structural Formula

Ni.

...End Of MSDS...