MATERIAL SAFETY DATA SHEET

Print date: 16-Mar-2006 Revision Number: 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product code: 2200360
Product name: LIQUID NICKEL CHLORIDE
Synonyms: No information available
Chemical characterisation: Mixture.

Supplier:

ATOTECH USA INC
1750 OVERVIEW DRIVE
ROCK HILL, SC 29730
TELEPHONE: 803-817-3500
HOURS: 9:00am - 5:00pm EST

ATOTECH CANADA LTD.
1180 CORPORATE DRIVE
BURLINGTON, ONTARIO L7L 5R6
TELEPHONE: 905-332-0111
HOURS: 9:00am - 5:00pm EST

Emergency telephone number

SPILLS AND TRANSPORT	CHEMTREC:	800-424-9300
	CANUTEC:	613-996-6666
TRANSPORT MEDICAL	ROCKY MOUNTAIN POISON CONTROL CENTER:	303-623-5716

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
WARNING
HARMFUL
IRRITANT
SENSITIZER

This material is considered to be hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
This material is a controlled product under WHMIS.

Potential health & environmental effects

Properties affecting health: Causes irritation. Harmful if swallowed. Possible carcinogen.

Principle routes of exposure: Eyes. Skin. Inhalation. Ingestion.

Skin contact: Contact causes skin irritation. May cause allergic skin reaction. May cause sensitization by skin contact.

Eye contact: Causes irritation to eyes and surrounding areas.

Inhalation: May cause irritation to the respiratory passages, including the nose, airway, and lungs. May cause allergic respiratory reaction.

Ingestion: Nickel sulfate is harmful and can cause gastro-intestinal disorders. Causes irritation of the mouth, throat, and stomach.

Potential environmental effects: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS (BY WEIGHT PERCENT)

Components	CAS-No	Weight %
Nickel(II) chloride	7718-54-9	50 - 60

This product may contain component (s) that are not listed under disclosure. All components not listed, do not contain hazardous materials above deminimus dislosure limits as defined by OSHA, NIOSH, ACGIH or Canadian WHMIS regulations and or guidelines. Please refer to other sections of the MSDS for information on safety, health and environmental guidelines and precautions.

4. FIRST AID MEASURES

General advice: If symptoms persist, call a physician.

Skin contact: Rinse immediately with plenty of water and seek medical advice. Remove and wash contaminated clothing before re-use.

Inhalation: Move to fresh air. If symptoms persist, call a physician.

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Ingestion: Call a physician or Poison Control Center immediately. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Notes to physician: Treat symptomatically.

Protection of first-aiders: Wear personal protective equipment.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Extinguishing media which must not be used for safety reasons: No information available

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA / NIOSH (approved or equivalent) and full protective gear.

Specific hazards: In the event of fire, the following can be released, nickel oxides.

Unusual hazards: None under normal use.

Specific methods: Water mist may be used to cool closed containers.

Flash Point: Not flammable
Flash point test method: Not applicable.
Autoignition temperature: Not applicable.

Flammability Limits in Air:
- **Lower:** Not applicable.
- **Upper:** Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Isolate area and deny entry to unauthorized and/or unprotected personnel. See Section 8 for complete Personal Protective Equipment (PPE) recommendations.

Environmental precautions: Do not release into the environment or public sewage without consulting local authorities and obtaining all applicable permits and notification requirements.

Methods for containment: Prevent further leakage or spillage if safe to do so.

Methods for cleaning up: Dike spilled liquid material with suitable inert absorbent (ex: sand, soil, vermiculite) and place in a clean dry container for later recycle or disposal. Flush with water. Clean contaminated surface thoroughly. Dispose of in accordance with all local, state, provincial, and federal regulations.

7. HANDLING AND STORAGE

Handling

Technical measures/precautions: Use only in area provided with appropriate exhaust ventilation.

Safe handling advice: Avoid contact with skin, eyes and clothing. Avoid breathing vapors or mists. Do not ingest.

Storage

Technical measures/storage conditions: Keep containers tightly closed in a dry, cool and well-ventilated place. Material is temperature sensitive. Do not freeze.

Incompatible products: Acids. Nitrates. Oxidizing agents.

Shelf Life (days): 730

Storage Temperature

Do not store below: 40 °F / 4 °C

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure:
Ensure adequate ventilation, especially in confined areas

Personal Protective Equipment

Respiratory protection: Use NIOSH approved respiratory equipment when airborne concentrations are equal to or may exceed exposure limits. For emergency or other conditions where exposure levels are not known or may be uncontrolled, use a positive pressure air-supplied or self-contained breathing apparatus (SCBA).

Hand protection: Consult glove manufacturer to determine the most suitable chemical resistant glove for user's application. Consideration must be given to durability and permeation resistance.

Skin and body protection: Chemical resistant apron. Long sleeved clothing. Boots.

Eye protection: Goggles. An emergency eye wash must be readily accessible to the work area.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Exposure limits	ACGIH			OSHA			NIOSH		
Components	TWA	STEL	Ceilings	TWA	STEL	Ceilings	TWA	STEL	Ceilings
Nickel(II) chloride 7718-54-9	1.5 mg/m³			1 mg/m³			0.015 mg/m³		

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid	**Color:**	Green
Odor:	None	**Specific gravity:**	1.31 - 1.35
pH:	3.5 - 4.0	**Boiling point:**	Not applicable.
Melting point:	Not applicable.	**Evaporation rate:**	Not applicable.
Vapor density:	Not applicable.	**Vapor pressure:**	Not applicable.
VOC content(%):	Not applicable.	**Solubility in water:**	Complete
Solubility in other solvents:	No information available		

Flash Point:	Not flammable	**Flash point test method:**	Not applicable.
Autoignition temperature:	Not applicable.	**Decomposition temperature:**	Not applicable.

Explosion limits:

- **Upper:** Not applicable.
- **Lower:** Not applicable.

10. STABILITY AND REACTIVITY

Stability: Stable under recommended storage conditions.

Materials to avoid: Strong acids. Oxidizing agents. Nitrates.

Conditions to avoid: Incompatible products.

Hazardous decomposition products: Thermal decomposition can lead to the release of irritating gases and vapors which may include (but are not limited to), nickel oxides, sulfur oxides, carbon oxides.

Possibility of hazardous reactions: None under normal processing.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Component Information

Components	LD50/oral/rat	LC50/inhalation/8h/rat	LD50/dermal/rabbit
Nickel(II) chloride - 7718-54-9	681 mg/kg	No information available	No information available

Product Information

LC50/inhalation/4h/rat = No information available
LD50/dermal/rabbit = No information available
LD50/oral/rat = No information available

Local effects

Skin irritation: Irritating to skin. May cause sensitization or an allergic reaction resulting in "nickel itch" or chronic eczema.

Eye irritation: Irritating to eyes.

Inhalation: Irritating to respiratory system. May cause allergic respiratory reaction.

Ingestion: Ingestion causes irritation to the mouth, throat, and stomach. Harmful if swallowed.

Sensitization: May cause sensitization by inhalation and skin contact.

Specific effects

Carcinogenic effects: NIOSH has concluded that certain nickel compounds are suspected carcinogens. Nickel and certain nickel compounds including nickel powder, nickel carbonyl, nickel oxide, and nickel carbonate are listed as carcinogens by the National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC). The Occupational Health and Safety Administration (OSHA) regulates nickel and certain nickel compounds as carcinogens.

Mutagenic effects: No information available

Reproductive toxicity: May cause heritable genetic damage

Target organ effects: Skin. Lungs. Paranasal sinus. Central nervous system.

Carcinogens

Components	NTP:	IARC:	OSHA	ACGIH
Nickel(II) chloride	Known Carcinogen	1	Present	

12. ECOLOGICAL INFORMATION

Environmental Hazards

Ecotoxicity effects: No data is available on the product itself.

Aquatic toxicity: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Mobility: This product is soluble in water.

Bioaccumulative potential: Not determined.

Components	Freshwater Algae	Freshwater Fish Species
Nickel(II) chloride - 7718-54-9	72 h EC50 freshwater algae (4 species) = 0.1 mg/L	96 h LC50 (fathead minnow) = 3.1 mg/L 96 h LC50 (rainbow trout (adults)) = 31.7 mg/L

Components	Microtoxicity	Water Flea
Nickel(II) chloride 7718-54-9		96 h LC50 = 510 µg/L

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Dispose of in accordance with federal, provincial, state, and local regulations

Contaminated packaging: Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

DOT

Proper shipping name DOT: Non Regulated
Description (DOT): Non Regulated

TDG (Canada)

Proper shipping name TDG: Non Regulated
Description (TDG): Non Regulated

IMO / IMDG

Proper shipping name (IMDG): Non Regulated
Description (IMO/iMDG): Non Regulated

IATA

Proper shipping name (IATA): Non Regulated
Description (IATA): Non Regulated

15. REGULATORY INFORMATION

International Inventories

All of the components in this product are on or exempt from the following inventories:
U.S.A. (TSCA), Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), Korea (ECL), China (IECSC), Philippines (PICCS).

International Inventory Legend
TSCA: Toxic Substance Control Act
DSL: Domestic Substance List
NDSL: Non-Domestic Substance List
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: EU List of Notified Chemical Substances
ECL: Existing Chemicals List aka Existing and Evaluated Chemical Substances
AICS: Inventory of Chemical Substances
ENCS: Existing and New Chemical Substances
PICCS: Phillipines Inventory of Chemicals and Chemical Substances

U.S. Regulations:

HAZARDOUS COMPONENTS

Components	CA PROP 65	SARA 302	SARA 313	CERCLA RQ	TSCA 12(b)	CWC	DEA
Nickel(II) chloride	X		X	100			

U.S. Regulations Legend
CA PROP 65: California Proposition 65 - Carcinogens List
TSCA 12(b): TSCA Section 12(b) - Export Notification
SARA 302: CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs and TPQs
SARA 313: CERCLA/SARA - Section 313 - Emission Reporting
CERCLA RQ: CERCLA/SARA - Hazardous Substances and Their Reportable Quantities
CWC: Chemical Weapons Convention - Annex on Chemicals
DEA LISTED: DEA (Drug Enforcement Administration) - DEA Controlled, Precursors, and / or Essential Chemicals

SARA 311	
Acute Health Hazard	YES
Chronic Health Hazard	YES
Fire Hazard	NO
Sudden Release of Pressure Hazard	NO
Reactive Hazard	NO

Canada
This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS Controlled List
HAZARDOUS COMPONENTS

Components	CAS-No	WHMIS Call out threshold
Nickel(II) chloride	7718-54-9	0.1 %

WHMIS hazard class:
- D2A Very toxic materials

16. OTHER INFORMATION

NFPA: Health: 2 Flammability: 0 Instability: 0

CAREFULLY READ THE FOLLOWING: The identification of ingredients in this document meets or exceeds the requirements set forth in 29 CFR, 40 CFR, TDG et al. at the date of publication. Ingredients present in a mixture or solution which are generically identified or not referenced in this document are not regulatorily required to be specifically identified or referenced. The information contained herein should be provided to all those who will use, handle, store, transport, or may otherwise be exposed to this product.

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Prepared by: H.E.S. Department