MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	Nickel chloride
Chemical formula	$NiCl_2 \cdot 6H_2O$
Manufacturer	**SUMITOMO METAL MINING CO., LTD.** NON-FERROUS METALS DIV./ADMINISTRATION DEPT. 3-5-3, NISHIBARA-CHO, NIIHAMA, EHIME, 792-8555 JAPAN TEL +81- 897-37-4817 FAX +81- 897-37-4910
Product use	This material is used for Nickel-plating.

2. HAZARDS IDENTIFICATION

GHS classification

Physical hazards:

Explosives	Outside scope of the classification
Flammable gases	Outside scope of the classification
Flammable aerosols	Outside scope of the classification
Oxidizing gases	Outside scope of the classification
Gases under pressure	Outside scope of the classification
Flammable liquids	Outside scope of the classification
Flammable solids	Not classified
Self-reactive substances and mixtures	Outside scope of the classification
Pyrophoric liquids	Outside scope of the classification
Pyrophoric solids	Not classified
Self-heating substances and mixtures	Not classified
Substances and mixtures which, in contact with water, emit flammable gases	Not classified
Oxidizing liquids	Outside scope of the classification
Oxidizing solids	Classification not possible
Organic peroxides	Outside scope of the classification
Corrosive to metals	Classification not possible

Health hazards:

Acute toxicity – oral	Category 3
Acute toxicity – dermal	Classification not possible
Acute toxicity – inhalation (gases)	Outside scope of the classification
Acute toxicity – inhalation (vapors)	Classification not possible
Acute toxicity – inhalation (dust, mist)	Classification not possible
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Classification not possible
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 1A
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 1(central nervous system)

Specific target organ toxicity (repeated exposure)	Category1 (kidney, respiratory organ, testis)
Aspiration hazard	Classification not possible
Environmental hazards:	
Hazardous to the aquatic environment - acute toxicity	Category 1
Hazardous to the aquatic environment - chronic toxicity	Classification not possible

HAZARDS EXCLUDED FROM THE GHS CLASSIFICATION CATEGORIES

HEALTH HAZARDS

- The dust may severely irritate the eyes, respiratory tract or skin. May cause damage to the membrane of respiratory system. If inhaled, cough.
- If contact with solid or melting solid or solution, may cause strong irritation and sore to eyes and skin.
- On combustion to decompose, form hazardous and corrosive chlorine gas.
- Carcinogenic to nasal cavity, paranasal sinus and lung.
- If swallowed large amount, cause gastroenteritis.

PICTOGRAM

SIGNAL WORD DANGER

HAZARD STATEMENT

- Toxic if swallowed.
- Skin irritation.
- May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- May cause an allergic skin reaction.
- Suspected of causing genetic defects.
- May cause cancer.
- Suspected of damaging fertility or the unborn child.
- Causes damage to organs <central nervous system>
- Causes damage to organs <kidney, respiratory organ, testis> through prolonged or repeated exposure.
- Very toxic to aquatic life.

PRECAUTIONARY STATEMENTS

〔Prevention〕

- Do not handle until all safety precautions have been read and understood.
- Wear personal protector or use ventilator to avoid exposure.
- In case of inadequate ventilation, wear respiratory protection.
- Avoid breathing the dust or fume.
- Do not eat, drink, or smoke during work.
- Wash hands thoroughly after handling.
- Avoid release to the environment.

〔Response〕
- If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms, get medical attention.
- Get medical attention if you feel unwell.
- If on skin：Wash with plenty of water and soap.
- If skin irritation or rash occurs, seek medical attention.
- If exposed or concerned；Get medical attention.

〔Storage〕
- Store in a cool, well-ventilated place.
- Keep container tightly closed and store in a cool, well-ventilated place.

〔Disposal〕
- Please consult us about the possibility of recycling.
- Disposal should be in accordance with applicable regional, national and local laws and regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS No.	TSCA	EINECS	%w/w
Nickel chloride	7791-20-0	Listed	231-743-0	$NiCl_2 \cdot 6H_2O$:97.2< Ni:24.0<

4. FIRST AID MEASURES

Eye contact	Immediately rinse cautiously with plenty of water for several minutes. Get medical attention.
Skin contact	Wash with plenty of water and soap. Get medical attention if you feel unwell. Wash contaminated clothing before reuse.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately get medical attention. Get medical attention.
Ingestion	Rinse mouth. Get medical attention.

5. FIRE FIGHTING MEASURES

Flammable properties	
Flash point	No data available.
Extinguishing media	
Suitable extinguishing media	This substance is nonflammable. Use adequate extinguishing agents for surrounding fire.
Unsuitable extinguishing media	Use adequate extinguishing agents for surrounding fire.

Protection of firefighters	Wear adequate respiratory protection and chemical-resistant clothing. (heat resistance)
Specific hazards arising from the chemical	On combustion to decompose, form hazardous and corrosive chlorine gas.
Protective equipment and precautions for firefighters	Move container to safe area, if possible with low risk.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Immediately isolate the spilled area with adequate distance for all directions. Wear adequate protector refer to Section 8 and avoid contact with eyes and skin or inhaling. Keep unnecessary and unprotected personnel from entering.
Environmental precautions	Do not let this substance enter the environment. Avoid entering the river or affecting to the environment.
Method for clean-up	Sweep diffused spillage and place in an empty container. Residual substances are collected completely with care and moved to a safe place. Sweep up spillage and place in a sealable empty container for later disposal. Solved in water and add the Calcium hydroxide or Sodium carbonate solution, then filter the precipitates and dike the residues. Prevent the spillage release to the river.

7. HANDLING AND STORAGE

Handling	Wear protective equipment and set the engineering controls refer to Section 8. Local exhaust or general ventilation may be necessary. (Refer to Section 8) Wear protective gloves when handling. Use only outdoors or in a well-ventilated area. Avoid breathing the dust or fume. Wash hands thoroughly after handling.. Avoid to contact: Water, hot surface. Refer to Section 10.
Storage	In case of powder; provide adequate engineering control for treating hazardous material as lighting or ventilation. Keep away from acids and store in a cool, well-ventilated place. Keep container tightly closed and store in a cool, well-ventilated place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines	ACGIH has established the following exposure limit. <ACGIH> 0.1mg/m3 (TWA)(as Ni, Soluble inorganic compounds (NOS))(2007) <JSOH> Not established （2007）. <OSHA> 1mg/m3 (PEL-TWA) （as Ni)
Engineering controls	Store in a cool, well-ventilated place. Keep container tightly closed to avoid contact with water. In case of dust; Provide local exhaust.
Personal protective equipments	
Respiratory protection	Wear respiratory protection.
Skin protection	Wear protective gloves.
Eye / face protection	Wear eye protection. (e.g. A pair of goggles) Wear protective clothing or face protection if necessary.
General hygiene considerations	Do not eat, drink, or smoke during work. Wash hands thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Crystal, deliquescence
Color	Green
Odor	Odorless
Melting point	No data available.
Boiling point	No data available.
Flash point	No data available.
Explosive range	No data available.
Vapor pressure	No data available.
Vapor density	No data available.
Specific gravity	1.92
Solubility in water	67.8g/100g(26℃)
Solubility in other solvents	Soluble in alcohol.
Partition Coefficient: n-octanol/water	No data available.
Auto-ignition point	No data available.
Decomposition temperature	No data available.
Odor threshold	No data available.
Evaporation rate	No data available.
Flammability (solid, gas)	No data available.
Viscosity	No data available.

10. STABILITY AND REACTIVITY

Chemical stability	Stable under normal condition.
Conditions to avoid	No information available.

Incompatible materials	No information available.
Hazardous decomposition products	On combustion to decompose, form hazardous and corrosive chlorine gas.
Possibility of hazardous reactions	No information available.

11. TOXICOLOGICAL INFORMATION

Acute toxicity – oral	LD_{50} 175～529 mg/kg (rat)
Acute toxicity – dermal	No data available
Acute toxicity–inhalation	No data available
Skin corrosion/irritation	Irritant to human skin
Serious eye damage/eye irritation	No data available
Respiratory sensitization	Respiratory sensitizer. As nickel compounds including this substance are listed as respiratory sensitization substances by DFG and listed as Group 2 by the Japan Society of Occupational Health.
Skin sensitization	Skin sensitizer. As nickel compounds including this substance are listed as skin sensitization substances by DFG and listed as Group 1 by the Japan Society of Occupational Health.
Germ cell mutagenicity	Dominant lethal test; Negative. Somatic cell in vivo mutagenicity study of Cytogenetic Test ; Positive.
Carcinogenicity	As nickel compound : IARC : Group 1 (Carcinogenic to humans)(1990) ACGIH : A1(Confirmed Human Carcinogen)(2001) NTP : K(Known to be a Human Carcinogen)(2005)
Reproductive toxicity	Effects on parent fertility and development of pups are observed in animal studies.

Specific target organ toxicity (single exposure)	Acute symptoms, such as nausea, an abdominal spasm, diarrhea, vomiting, headache, giddiness, a sense of exhaustion or muscular pain were observed. In addition, as acute intoxication of a nickel compound, nausea, diarrhea, giddiness, and headache were seen in human.
Specific target organ toxicity (repeated exposure)	Repeated exposure of nickel or nickel compounds may damage the membrane of respiratory system at the established level. Prolonged exposure at high concentration may cause pulmonary fibrosis.
Aspiration hazard	No data available

12. ECOLOGICAL INFORMATION

Hazardous to the aquatic environment - acute toxicity	LC_{50} (48h) 0.013mg/L (Ceriodaphnia quadrangula)
Hazardous to the aquatic environment - chronic toxicity	No data available This substance is metal. No data is available about the behavior in the water.

13. DISPOSAL CONSIDERATIONS

- Please consult us about the possibility of recycling.
- Disposal should be in accordance with applicable regional, national and local laws and regulations.
- When order to dispose the remainder to the private or public waste disposer, inform the physico-chemical and health hazards of this substance.
- Container should be cleaned up prior to recycling or dispose in accordance with applicable regional, national and local standard method.
- Empty container should be cleaned up prior to disposal.

14. TRANSPORT INFORMATION (not meant to be all-inclusive)

Proper Shipping Name	TOXIC SOLID INORGANIC.N.O.S.
UN Number	3288
Class	6.1
Sub Risk	None
Packing Group	Ⅲ

15. REGULATORY INFORMATION (not meant to be all-inclusive)

TSCA Inventory Listed

This product is followed by the competent regulations in an applicable country or region.

16. OTHER INFORMATION

Reference

1 USNLM ; Hazardous Substance Data Bank.(HSDB) (2006)
2 European Center of Ecotoxicology and Toxicology of Chemicals(ECETOC) ; Technical Report No. 33 (1989)
3 WHO/IPCS：Environmental Health Criteria（EHC） No.108 (1991)
4 JSOH ; Recommendation of Occupational Exposure Limits. J. Occup. Health. (2006) <Japanese>
5 IARC ; IARC Monographs on the Evaluation of Carcinogenic Risk to Humans. Vol. 49 (1990)
6 USDHHS ; The Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profiles. (2005)
7 US NTP ; NTP Database Search (2005)
8 European Center of Ecotoxicology and Toxicology of Chemicals(ECETOC) ; Technical Report No. 91 (2003)
9 "Biodegradation and Bioaccumulation Data of Existing Chemicals based on the CSCL Japan." ed by Chemicals Inspection & Testing Institute Japan (1992)
10 GHS Classification of Nickel (Chemical Management Center, National Institute of Technology and Evaluation ; http://www.safe.nite.go.jp/english/dbi.html , 2007)
11 15170 Chemical commodities. The Chemical Daily Co. Ltd. <Japanese>
12 化学物質の危険・有害性便覧 中央災害防止協会 1993
13 "2004 Emergency Response Guidebook. 2nd revised ed." Japanese ed. Japa Chemical Industries Association (2005)

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