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Safety Data Sheet

1. Chemical product and company identification

Product name : Nickel(Ⅱ) sulfate heptahydrate, 3N5

Company information

Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	28627
Recommended use	:	For research use only
Restrictions on use	:	Seek expert judgment when using the product for applications other than those recommended.

2. Hazards identification

GHS classification

Health hazards	Acute toxicity (oral)	Category 3
	Respiratory sensitization	Category 1
	Skin sensitization	Category 1
	Carcinogenicity	Category 1A
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs)
	Specific target organ toxicity (repeated exposure)	Category 2 (liver, testis)
Environmental hazards	Aquatic acute	Category 2
	Aquatic chronic	Category 2

Hazard pictograms

Signal word : Danger

Hazard statements :
Toxic if swallowed
May cause an allergic skin reaction
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause cancer
Causes damage to organs (respiratory organs) through prolonged or repeated exposure
May cause damage to organs (liver, testis) through prolonged or repeated exposure
Toxic to aquatic life
Toxic to aquatic life with long lasting effects

Precautionary statements

Prevention	:	Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wash hands, forearms and face thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. [In case of inadequate ventilation] wear respiratory protection.
Response	:	IF SWALLOWED: Immediately call a POISON CENTER or doctor. IF ON SKIN: Wash with plenty of water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell. Rinse mouth. If skin irritation or rash occurs: Get medical advice/attention. If experiencing respiratory symptoms: Call a POISON CENTER or doctor. Take off contaminated clothing and wash it before reuse. Collect spillage.
Storage	:	Store locked up.
Disposal	:	Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Nickel(Ⅱ) sulfate heptahydrate	≥ 99.95	NiSO4・7H2O	Listed	232-104-9	10101-98-1

4. First aid measures

First aid measures

First-aid measures after inhalation	:	Remove the victim to fresh air, and make him blow his nose and gargle.
First-aid measures after skin contact	:	Wash the affected areas under running water.
First-aid measures after eye contact	:	Wash the affected areas under running water.
First-aid measures after ingestion	:	Give the victim water or salt water and make him vomit. Get medical attention.
Personal Protection in First Aid and Measures	:	Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

Suitable extinguishing media	:	This product is noncombustible.
Unsuitable extinguishing media	:	None
Firefighting instructions	:	Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.
Personal protection (Emergency response)	:	Firefighters should wear protective equipment.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures	:	Wear proper protective equipment and avoid contact with skin and inhalation of dust. Conduct operations from upwind and evacuate people downwind.

Environmental precautions

Environmental precautions	:	Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Methods and Equipment for Containment and Cleaning up

For containment	:	Sweep up in a chemical waste container. Neutralize residue with calcium hydroxide or sodium carbonate water solution and then flush contaminated area with copious amounts of water.

7. Handling and storage

Handling

Technical measures	:	If necessary, wear proper protective equipment to avoid contact with skin or inhalation of dust.
Precautions for safe handling	:	Avoid formation of dust and aerosols.

Storage

Storage conditions	:	Store in a dark, cool place and tightly closed.
Material used in packaging/containers	:	Glass, polyethylene, polypropylene.

8. Exposure controls / Personal protection equipment

ACGIH TWA	0.1 mg/m³ (I) (as Ni)

Appropriate engineering controls	:	Install a local ventilation system in case of dusty condition.

Protective equipment

Respiratory protection	:	If necessary, wear dust mask
Hand protection	:	Impervious protective gloves
Eye protection	:	Safety goggles
Skin and body protection	:	Protective clothing, protective boots

9. Physical and chemical properties

Physical state	:	Solid
Color	:	Green
Odor	:	Odorless
pH	:	No data available
Melting point	:	98 - 100 ° C
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	Lost 4 molecules of water at 100 ° C, lost 6 molecules of water at 103.3 ° C, lost all water at 279.4 ° C
Flammability	:	Non flammable.
Vapor pressure	:	No data available
Relative density	:	1.948 (15℃)
Density	:	No data available
Relative gas density	:	No data available
Solubility	:	Organic solvents: Slightly soluble in ethanol. Water: 38.8 % (0℃)
Partition coefficient n-octanol/water (log Pow)	:	No data available
Explosive limits (vol %)	:	No data available
Viscosity, kinematic	:	No data available
Particle characteristics	:	Particle size distribution:< 1 % (particle size <=0.1mm)

10. Stability and reactivity

Reactivity	:	Makes double salts with sulfates such as potassium, rubidium, cesium and ammonium.
Chemical stability	:	Stable under normal conditions. Efflorescence.
Possibility of hazardous reactions	:	Stable under normal conditions of use.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Alkaline substances, oxidizing substances.
Hazardous decomposition products	:	Sulfur oxides, nickel oxides.

11. Toxicological information

Acute toxicity (oral)	:	Toxic if swallowed rat LD50=275mg/kg (as hexahydrate)
Acute toxicity (dermal)	:	Classification not possible
Acute toxicity (inhalation)	:	No classification (gas) No classification (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	Classification not possible
Serious eye damage/irritation	:	Classification not possible
Respiratory sensitization	:	May cause allergy or asthma symptoms or breathing difficulties if inhaled. The Japan Society for Occupational Health classifies nickel or its compounds into "airway sensitizing substances group 2".

Skin sensitization	:	May cause an allergic skin reaction The Japan Society for Occupational Health classifies nickel and its compounds into "skin sensitizing substances group 1".
Germ cell mutagenicity	:	No classification Hexahydrate : As for in vivo, there are negative data on micronucleus assay in mouse bone marrow. As for in vitro, there are negative data on reverse mutation test in bacteria, positive data on gene mutation examination in cultured mammalian cells.
Carcinogenicity	:	May cause cancer IARC classifies nickel compounds as group 1(carcinogenic to humans).
Reproductive toxicity	:	Classification not possible Hexahydrate : No effects on reproductive toxicity or developmental toxicity were observed in the "2nd generation reproductive toxicity test" and "3rd generation reproductive toxicity test" by the oral route using rats. However, sufficient data on teratogenicity are not available.
STOT-single exposure	:	Classification not possible
STOT-repeated exposure	:	Causes damage to organs (respiratory organs) through prolonged or repeated exposure May cause damage to organs (liver, testis) through prolonged or repeated exposure Hexahydrate : In 90-days or 2-years inhalation exposure test to rat or mouse, there is the description that inflammatory changes in the lung and bronchus, and atrophy of the olfactory epithelium were observed at concentration of the range of category 1, it was classified into category 1(respiratory organs). In addition, 30-days dermal exposure test to rat, in addition to the skin of the application site, liver and testis were observed toxic changes at dose of corresponds to category 2, it was classified into category 2(liver, testis).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Toxic to aquatic life Daphnia magna EC50=2mg Ni/L/48h
Aquatic chronic	:	Toxic to aquatic life with long lasting effects Danio rerio NOEC=0.04mg Ni/L/14-day

Persistence and degradability

No additional information available

Bioaccumulative potential

Low bioconcentration
BCF : ≤3.0 (1mg/L nickel(Ⅱ) sulfate), ≤31 (0.1mg/L nickel(Ⅱ) sulfate)

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone	:	Classification not possible

13. Disposal considerations

Ecological waste information	:	Disposal should be made by one of following methods. Or entrust approved waste disposal companies with the disposal. Precipitation method : Dissolve in water and add calcium hydroxide or sodium carbonate solution to precipitate. Filter the precipitation and bury in a landfill site approved for hazardous waste disposal. The supernatant liquid is flushed in a drain after neutralizing. Roasting method : In case of a large amount of the chemical, recover metal nickel by roast reduction method. <Note> ＊The pH of the neutralization should be above 8.5. The precipitation does not form completely below pH 8.5. ＊In case of disposal by roasting method, it is desirable to entrust to disposal companies.
Contaminated container and packaging	:	In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG)	:	3288
Proper Shipping Name (IMDG)	:	TOXIC SOLID, INORGANIC, N.O.S.
Packing group (IMDG)	:	III
Transport hazard class(es) (IMDG)	:	6.1

Air transport(IATA)

UN-No. (IATA)	:	3288
Proper Shipping Name (IATA)	:	Toxic solid, inorganic, n.o.s.
Packing group (IATA)	:	III
Transport hazard class(es) (IATA)	:	6.1
Marine pollutant	:	Applicable
MFAG-No	:	151

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources	:	Encyclopaedia Chimica, Kyoritsu Shuppan Co, Ltd. (1963) . Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) . NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the

product carefully.The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements.The information herein is only provision of information, and it does not represent a guarantee the properties of the product.The Safety Data Sheet(SDS) is prepared based on JIS Z7253.