Issue date: 7/31/2003
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Safety Data Sheet

1. Chemical product and company identification

Product name	:	Nickel(Ⅱ) oxide

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	:	28134
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	Respiratory sensitization	Category 1
	Skin sensitization	Category 1
	Carcinogenicity	Category 1A
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs)
Environmental hazards	Aquatic chronic	Category 4

Hazard pictograms

Signal word	:	Danger
Hazard statements	:	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 long lasting harmful effects to aquatic life

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 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. 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.
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
Synonyms	:	Nickel monoxide

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Nickel(Ⅱ) oxide	≥ 97	NiO	Listed	215-215-7	1313-99-1

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)	:	Wear breathing apparatus.

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 damage to the environment by flowing of spillage to rivers.

Methods and Equipment for Containment and Cleaning up

For containment : Sweep up in a chemical waste container. Flush contaminated area with copious amounts of water.

7. Handling and storage

Handling

Technical measures : Wear appropriate 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	0.2 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	: Dark yellowish green - gray
Odor	: Odorless
pH	: No data available
Melting point	: 1960 ° C
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability	: Not flammable.

Vapor pressure	:	No data available
Relative density	:	No data available
Density	:	6.96 g/cm^3
Relative gas density	:	No data available
Solubility	:	Water: Insoluble.
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:≈ 25 % (particle size ≤ 0.1 mm)

10. Stability and reactivity

Reactivity	:	When heated to 200℃ with ammonia, it is reduced to nickel. Heating with sulfur or hydrogen sulfide produces nickel(Ⅱ) sulfide.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	May react violently when in contact with oxidizing substances.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Oxidizing substances.
Hazardous decomposition products	:	fume.

11. Toxicological information

Acute toxicity (oral)	:	No classification rat LD50>5000mg/kg
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 May cause skin irritation.
Serious eye damage/irritation	:	Classification not possible May cause eye irritation.
Respiratory sensitization	:	May cause allergy or asthma symptoms or breathing difficulties if inhaled. Since nickel and its compounds are classified into group 2 for respiratory tract sensitizer in Japan Society For Occupational Health and respiratory tract sensitizer in DFG, the substance was classified into category 1.
Skin sensitization	:	May cause an allergic skin reaction Since nickel and its compounds are classified into R43 in EU classification, group 1 for skin sensitizer in Japan Society For Occupational Health and skin sensitizer in DFG, the substance was classified into category 1.

Germ cell mutagenicity	:	No classification Based on negative results in bone marrow and peripheral blood micronucleus tests by inhalation exposure to mice (in vivo somatic cell mutagenicity test) and micronucleus test by oral or intraperitoneal administration to mice and rats, the substance was classified as "No classification". As relevant information, from in vitro mutagenicity tests, there are reports of a positive CHO cell gene mutation test, a negative human peripheral lymphocyte chromosomal aberration test and a negative Ames test.
Carcinogenicity	:	May cause cancer Based on the classifications of "group 1" in IARC, "A1" in ACGIH, "Carcinogenicity. Category 1" in EU classification and "1" in Japan Society For Occupational Health, the substance was classified into category 1A.
Reproductive toxicity	:	Classification not possible In developmental toxicity tests in rats by inhalation exposure during the organogenesis period, no adverse effect except for decreased fetal weight was observed at dose levels in which reduced body weight gain was observed in parental animals. Classification was not possible due to lack of data for sexual function and fertility.
STOT-single exposure	:	Classification not possible May cause respitarory tract irritation.
STOT-repeated exposure	:	Causes damage to organs (respiratory organs) through prolonged or repeated exposure It was reported that a high risk of mortality from respiratory disease is found among workers exposed occupationally to nickel oxides and metal nickel at concentrations of 0.04 mg/m3 and higher. In addition, rhinitis, sinusitis, nasal septal perforations and dysplasia of the nasal mucosa were reported in nickel refinery and nickel plating workers. For animals, in a 13-week inhalation test with rats, lung granulomatous inflammation, lymphoid hyperplasia in bronchial and mediastinal lymph nodes were noted at a dose level of 0.004 mg Ni/L which is within the guidance value range for category 1. In a 104-week inhalation test with rats, alveolar squamous metaplasia, alveolar epithelial hyperplasia and fibrosis in the lung were present at 0.0006 mg/L which is within the guidance value range for category 1. In a 104-week inhalation test with mice, inflammation in the lung, and lymphoid hyperplasia in the bronchial lymph node were noted at dose levels within the guidance value range for category 1. Based on the data, the substance was classified into category 1 (respiratory organs).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	No classification Daphnia magna LC50>100mg/L/48h
Aquatic chronic	:	May cause long lasting harmful effects to aquatic life Classified into category 4 since it is a metal compound and its behavior in water and bioaccumulative potential are unknown though its acute toxicity has not been reported at or lower concentration than water solubility.

Persistence and degradability

No additional information available

Bioaccumulative potential

No additional information available

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. Solidification method : Solidify with cement and bury in a landfill site approved for hazardous waste disposal. Roasting method : In case of a large amount of the chemical, recover metal nickel by roast reduction method. <Note> ＊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)	:	Not applicable
Proper Shipping Name (IMDG)	:	Not applicable
Packing group (IMDG)	:	Not applicable
Transport hazard class(es) (IMDG)	:	Not applicable

Air transport(IATA)

UN-No. (IATA)	:	Not applicable
Proper Shipping Name (IATA)	:	Not applicable
Packing group (IATA)	:	Not applicable
Transport hazard class(es) (IATA)	:	Not applicable
Marine pollutant	:	Not applicable

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) .
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.