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Safety Data Sheet

1. Chemical product and company identification

Product name	:	Manganese, lump, 4N

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	:	26172
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	Serious eye damage/eye irritation	Category 2B
	Reproductive toxicity	Category 1B
	Specific target organ toxicity (single exposure)	Category 1 (respiratory organs)
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs、nerve system)
Environmental hazards	Aquatic chronic	Category 4

Hazard pictograms

Signal word	:	Danger
Hazard statements	:	Causes eye irritation May damage fertility or the unborn child Causes damage to organs (respiratory organs) Causes damage to organs (respiratory organs、nerve system) 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. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response	:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Call a POISON CENTER or doctor. IF exposed or concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell. If eye irritation persists: Get medical advice/attention.
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
Manganese	≥ 99.99	Mn	Listed	231-105-6	7439-96-5

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 for at least 15 minutes. If necessary, get medical treatment.
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 the chemical and place in a chemical waste container.

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	0.02 mg/m³ (R), 0.1mg/m³ (I)

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	:	Silver gray
Odor	:	Odorless
pH	:	No data available
Melting point	:	1244 ° C
Freezing point	:	No data available
Boiling point	:	2095 ° C
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	:	7.21 - 7.44
Density	:	No data available
Relative gas density	:	No data available
Solubility	:	Water: Insoluble.
Partition coefficient n-	:	No data available

octanol/water (log Pow)		
Explosive limits (vol %)	:	No data available
Viscosity, kinematic	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	It reacts directly with phosphorus, sulfur, carbon, silicon and boron to form compounds such as Mn3P2, MnP, MnS, MnC3, MnSi, Mn2Si and MnB.
Chemical stability	:	Stable under normal conditions. The surface is oxidized in the air.
Possibility of hazardous reactions	:	When made into a fine powder, it is easily oxidized and may spontaneously ignite. Burns in chlorine to produce manganese(Ⅱ) chloride. It reacts violently with fluorine to produce manganese(Ⅱ) and (Ⅲ) fluoride. It easily dissolves in dilute acid to generate hydrogen and produce manganese(Ⅱ) salt. The fine powder reacts with water to generate hydrogen.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Acids, oxidizing substances.
Hazardous decomposition products	:	Manganese oxides.

11. Toxicological information

Acute toxicity (oral)	:	No classification rat LD50=9000mg/kg
Acute toxicity (dermal)	:	Classification not possible
Acute toxicity (inhalation)	:	No classification (gas) No classification (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	No classification Based on the description in the report on rabbit skin irritation tests: "mild irritation after 24 hour patch" (though the results are not those of 4 hour application).
Serious eye damage/irritation	:	Causes eye irritation Based on the description in the report on rabbit eye irritation tests: "mild irritation."
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	Classification not possible
Germ cell mutagenicity	:	Classification not possible Based on the absence of data on multi-generation mutagenicity tests, germ/somatic cell mutagenicity tests in vivo and germ/somatic cell genotoxicity tests in vivo, and no positive data on mutagenicity tests in vitro (several indices), described.
Carcinogenicity	:	No classification EPA classifies it as group D (not classifiable as to human carcinogenicity).
Reproductive toxicity	:	May damage fertility or the unborn child Based on expert judgment, given the evidence of embryo lethality and fetal malformation (exencephaly) observed in mouse teratogenicity studies using intraperitoneal injection, described (though no data are available on parental toxicity).

STOT-single exposure	:	Causes damage to organs (respiratory organs) "Acute exposure to manganese dusts (in particular, MnO2 and Mn3O4) induces pulmonary inflammation which progresses to pulmonary impairment with time. Pulmonary effects increase the infectiousness of bronchitis etc., resulting in manganese pneumonia".
STOT-repeated exposure	:	Causes damage to organs (respiratory organs、nerve system) through prolonged or repeated exposure The most commonly occurring manganese-bearing minerals include manganese dioxide, manganese carbonate, manganese silicate and manganese trioxide. In general, the available data indicate that exposure to excess manganese for 14 days or less (acute duration) or up to a year (intermediate duration) has an effect on the respiratory system and the nervous system, with little to no effect on other organ systems.
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Classification not possible
Aquatic chronic	:	May cause long lasting harmful effects to aquatic life Although L(E) C50 ≤100 mg/L data existed, since it was metal and the behavior in the water was unknown, it classified into category 4.

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	:	Bury in a landfill site approved for the disposal of chemical and hazardous wastes. Or entrust approved waste disposal companies with the disposal.
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) .
Handbook of dangeroous and hazardous chemicals, Japan Industrial Safety & Health Association. (2000-2001) .
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.