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Safety Data Sheet

1. Chemical product and company identification

Product name : Indium(Ⅲ) chloride tetrahydrate, 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 : 20286
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	Germ cell mutagenicity	Category 2
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 2
	Specific target organ toxicity (single exposure)	Category 1 (lung)

Hazard pictograms

Signal word : Danger

Hazard statements : Suspected of causing genetic defects
Suspected of causing cancer
Suspected of damaging fertility or the unborn child
Causes damage to organs (lung)

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.
Wear protective gloves/protective clothing/eye protection/face protection.

Response : IF exposed or concerned: Call a POISON CENTER or doctor.
IF exposed or concerned: 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
Indium(Ⅲ) chloride tetrahydrate	≥ 99.95	InCl3・4H2O	Listed	233-043-0	22519-64-8

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 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. 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	0.1 mg/m³ (as In)

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	:	White
Odor	:	Odorless
pH	:	No data available
Melting point	:	No data available
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	:	Non flammable.
Vapor pressure	:	No data available
Relative density	:	No data available
Density	:	No data available
Relative gas density	:	No data available
Solubility	:	Water: Readily soluble.
Partition coefficient n-octanol/water (log Pow)	:	No data available
Explosive limits (vol %)	:	No data available
Viscosity, kinematic	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	It dissolves in liquid ammonia to form a chloroammine complex salt.
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	:	Chlorine, hydrogen chloride, indium oxides.

11. Toxicological information

Acute toxicity (oral)	:	Classification not possible
Acute toxicity (dermal)	:	Classification not possible
Acute toxicity (inhalation)	:	No classification (gas) Classification not possible (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	Classification not possible There is a statement that no evidence of irritation was obtained in the test applied to human skin, but the details of the test were unknown, so it was "classification not possible".
Serious eye damage/irritation	:	Classification not possible May cause eye irritation.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	Classification not possible In humans, it is stated that skin sensitization was not observed as a result of applying this substance in a patch test by volunteers, but it was classified as "classification not possible" because the details of the test such as the test method and positive rate are unknown.
Germ cell mutagenicity	:	Suspected of causing genetic defects Based on the positive results in the micronucleus test (somatic cell in vivo mutagenicity test) using bone marrow cells administered intraperitoneally in mice, it was classified into category 2. Although there is a description suggesting a positive result in the dominant lethality test, the details of the test such as the animal used and the route of administration are unknown. In addition, in the in vitro test, a positive result was reported in the micronucleus test using chinese hamster CHO cells.
Carcinogenicity	:	Suspected of causing cancer Since this substance is the subject matter in "The Technical Guidline for Preventing Health Impairment of Workers Engaged in the Indium Tin Oxide Handling Prosesses", it was classified into category 2.

Reproductive toxicity	:	Suspected of damaging fertility or the unborn child Studies of intravenous administration in gestation day 9 of rat, occurrence of malformations of fingers and tail were significantly increased mainly, in addition to fetal death, however, the occurrence of malformations was not observed in the oral administration. Furthermore, administrate dose of less 250 mg/kg/day to male and female rats by orally, and in the test which is mated to administration during the period of 21 days, no effect to fertile and liver function of male, although no effect on fertility in females, fetal intrauterine death, which is believed to be due to weight loss is increased. From the above result, teratogenesis which was not observed by oral administration for rats was increased by intravenous administration, and while the maternal showing weight loss by oral administration, and increasing intrauterine fetal death, it was classified into category 2.
STOT-single exposure	:	Causes damage to organs (lung) In 1-hour inhalation exposure test (dosage : 0.2, 2.0, 20 mg/m3), of aerosol of this substance using rats, restrictive lung lesions and increased airway sensitivity to acetylcholine were observed in proportion with lung injury after 7 days of exposure, furthermore, lung collagen concentration after 42 days had increased depending on the exposure concentration. Based on the report that the exposure of this substance is the cause of acute lung inflammation, since test dosage (4 hours converted value : 0.00005, 0.0005, 0.005 mg/L) is corresponding to guidance values of category 1, it was classified into category 1 (lung).
STOT-repeated exposure	:	Classification not possible In a test in which this substance was mixed with food and fed for 3 months, it was reported that growth was delayed with 2.4% and 4% mixed food. In addition, in a study in which this substance (1.5 mg / kg, 0.78 mg In / kg) was subcutaneously administered to male hamsters three times a week for 4 weeks, there was a report of "decreased erythrocyte ALAD and renal ALDA activity" and "Increased excretion of urinary ALA and protoporphyrin fractions". However, due to lack of data, it was classified as "classification not possible".
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	No classification Oryzias latipes LC50=353mg In/L
Aquatic chronic	:	No classification

Persistence and degradability

No additional information available

Bioaccumulative potential

Low bioconcentration
BCF : 14-18 (0.2mg/L), <23-91 (0.02mg/L) (as anhydrous salt)

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone	:	Classification not possible

13. Disposal considerations

Ecological waste information	:	Roasting method : Recover metal indium by roast reduction method. Or entrust approved waste disposal companies with the disposal. <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.