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Safety Data Sheet

1. Chemical product and company identification

Product name : Titanium(IV) oxide, Rutile form

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	:	40982
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	Carcinogenicity	Category 2
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs)
Environmental hazards	Aquatic chronic	Category 4

Hazard pictograms

Signal word : Danger

Hazard statements : Suspected of causing 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.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.

Response : IF exposed or concerned: Get medical advice/attention.
Get medical advice/attention if you feel unwell.

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 : Titanium dioxide, Rutile form

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Titanium(IV) oxide, Rutile form	≥ 99	TiO2	Listed	215-280-1	1317-80-2

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 milk and induce vomiting. 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 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	10 mg/m³

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	:	1840 ° C
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	≥ 3000 ° C
Flammability	:	Non flammable.
Vapor pressure	:	No data available
Relative density	:	4.23
Density	:	No data available
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	:	No data available

10. Stability and reactivity

Reactivity	:	It dissolves in hot concentrated sulfuric acid to become TiOSO4 and melts with alkali to become alkali titanate.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	When reduced with lithium, magnesium, and zinc, it is accompanied by significant heat generation.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Reducing substances.
Hazardous decomposition products	:	fume.

11. Toxicological information

Acute toxicity (oral)	:	No classification rat LD50>2000mg/kg
Acute toxicity (dermal)	:	No classification hamster LD50>10000mg/kg
Acute toxicity (inhalation)	:	No classification (gas) No classification (vapor) No classification (dust, mist) rat LC50>5.09mg/L/4h
Skin corrosion/irritation	:	No classification From descriptions of slight or no irritation in skin irritation tests using rabbits, it was classified as "Not classified".
Serious eye damage/irritation	:	Classification not possible There is a report that in an eye irritation test (OECD TG 405) using rabbits, mild conjunctival redness was observed in 2 out of 3 animals 24 hours after the application, but disappeared within 48 hours, and there is a report that slight irritation was observed 24 hours after the application, but no irritation was observed after 48 and 72 hours. The irritation observed in these tests may be thought to be due to physical stimulation, however, since the particle shape could not be confirmed, it was classified as "Classification not possible."
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	No classification Both a skin sensitization test using the guinea pigs (Buehler method, OECD TG 406) and a skin sensitization test using mice (LLNA method, OECD TG 429) were negative, and it was judged that this substance doesn't have skin sensitizing potential. Therefore, it was classified as "Not classified."
Germ cell mutagenicity	:	Classification not possible As for in vivo, it was reported that micronucleus tests using peripheral erythrocytes or bone marrow cells of mice were negative, an hprt gene mutation assay using alveolar cells of rats was positive, a chromosomal aberration test using mouse bone marrow cells and a DNA damage test in rat lungs were negative. As for in vitro, negative results were reported in all of bacterial reverse mutation tests, micronucleus tests, chromosome aberration tests, and mouse lymphoma assays using cultured mammalian cells. In addition, it is evaluated in SIDS that it is not possible to conclude on the genotoxicity of this substance because positive in vivo findings are not by standard tests. From the above, it was classified as "Classification not possible."
Carcinogenicity	:	Suspected of causing cancer IARC classifies it as group 2B (possibly carcinogenic to humans).

Reproductive toxicity	:	Classification not possible In a reproduction/developmental toxicity screening test (OECD TG 421) using rats, no adverse effects on fertility of parental animals, survival and development up to 4 days after delivery of offspring were observed even up to at a dose of 1000 mg/kg/day administered by gavage. However, because this test is a screening test, it was not possible to classify this substance as "Not classified" only from this result, and there is no other data available for classification. Therefore, the classification was not possible due to lack of data.
STOT-single exposure	:	Classification not possible
STOT-repeated exposure	:	Causes damage to organs (respiratory organs) through prolonged or repeated exposure There is no information on humans. As for experimental animals, in a 2-year inhalation toxicity test using rats, increases in leukocyte and neutrophil counts, and increase in pneumonia, tracheitis, and rhinitis with squamous metaplasia in the anterior nasal cavity were observed at 10 mg/m3 which is in the range of Category 1, and in a 24-month inhalation toxicity study using rats, lung fibrosis, minor changes in cytologic pattern in bronchoalveolar lavage fluid, a slight increase in polymorphonuclear leukocyte count, increase in macrophage and hyperplasia of the lung-associated lymph nodes were observed at 5 mg/m3. Besides, as for oral route, no effects were observed even at doses corresponding to "Not classified" in 13-week or 103-week repeated dose toxicity tests using rats or mice dosed by feeding. Therefore, it was classified intro category 1 (respiratory organs).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	No classification Pseudokirchneriella subcapitata EL50>100mg/L/72h
Aquatic chronic	:	May cause long lasting harmful effects to aquatic life Reliable chronic toxicity data were not obtained. It is poorly water-soluble, and classified as "Not classified" for acute toxicity, but due to the unknown environmental behavior of the inorganic compound, it was classified into category 4.

Persistence and degradability

No additional information available

Bioaccumulative potential

Low bioconcentration
BCF : ≥1.1-9.6 (2.0mg/L), ≥10 (0.2mg/L)

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.

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

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollutant category	:	Z

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.