
Safety Data Sheet

1. Chemical product and company identification

Product name : Titanium(IV) chloride

SDS code : C8-06

Company/undertaking identification :

HAYASHI PURE CHEMICAL IND.,LTD.

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Emergency number : 06-6910-7305

2. Hazards identification

GHS classification

Physical hazards	Desensitized explosives	classification not possible	
	Explosives	classification not possible	
	Flammable gases	No classification	
	Aerosol	classification not possible	
	Oxidizing gases	No classification	
	Gases under pressure	No classification	
	Flammable liquids	classification not possible	
	Flammable solids	No classification	
	Self-reactive substances and mixtures	classification not possible	
	Pyrophoric liquids	classification not possible	
	Pyrophoric solids	No classification	
	Self-heating substances and mixtures	classification not possible	
	Substances and mixtures which in contact with water emit flammable gases	classification not possible	
	Oxidizing liquids	classification not possible	
	Oxidizing solids	No classification	
	Organic peroxides	classification not possible	
	Corrosive to metals	classification not possible	
	Health hazards	Acute toxicity (oral)	classification not possible
		Acute toxicity (dermal)	classification not possible
		Acute toxicity (inhalation:gas)	classification not possible
Acute toxicity (inhalation:vapors)		classification not possible	
Acute toxicity (inhalation:dust/mist)		classification not possible	
Skin corrosion/irritation		classification not possible	
Serious eye damage/eye irritation		classification not possible	
Respiratory sensitization		classification not possible	
Skin sensitization		classification not possible	
Germ cell mutagenicity		classification not possible	
Carcinogenicity	classification not possible		
Reproductive toxicity	classification not possible		
Specific target organ toxicity (single exposure)	classification not possible		
Specific target organ toxicity (repeated exposure)	classification not possible		
Aspiration hazard	classification not possible		

Environmental hazards	Hazardous to the aquatic environment, short-term (acute)	classification not possible
	Hazardous to the aquatic environment, long-term (chronic)	classification not possible
	Hazardous to the ozone layer	classification not possible

3. Composition/information on ingredients

Distinction of substance or mixture : Substance
Synonyms : Titanium tetrachloride

Name	Concentration or Concentration range	Formula	Kanpo number		CAS RN
			CSCL no	ISHL no	
Titanium(IV) chloride	≥95.0%、≤100%	TiCl ₄	(1)-262	Existing Chemical Substance	7550-45-0

The above concentration or concentration range are not product specification.
All percentages listed in the above concentration or concentration range are mass%, unless otherwise specified.

4. First aid measures

First aid measures

- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
Get immediate medical advice/attention.
- First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing.
Gently wash with plenty of soap and water.
Get immediate medical advice/attention.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get immediate medical advice/attention.
- First-aid measures after ingestion : Rinse mouth.
Get immediate medical advice/attention.

5. Fire fighting measures

- Suitable extinguishing media : Dry powder, Carbon dioxide.
- Unsuitable extinguishing media : Water
- Fire hazard : This product is unburnable.
- Explosion hazard : May induce explosion of containers by heating.
May induce explosion of containers by water contamination.
- Reactivity in case of fire : Reacts violently with water.
- Hazardous decomposition products in case of fire : In case of fire, product may produce irritative or toxic fumes/gases.
- Firefighting instructions : If ignited, for the initial fire-fighting, cut off combustion sources, extinguish fire at a stroke using appropriate fire-extinguishers.
In the case of peripheral fire, quickly remove movable containers to safe places.
If unable to be moved containers, sprinkle water to containers and surrounding equipment, etc. to cool.
- Protection during firefighting : Wear appropriate fire-resistant clothing including self contained-compressed air breathing apparatus.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

- General measures : Wear appropriate personal protective devices to prevent inhalation and contact with eye, skin, and clothing, and never attempt to work on the lee.

Environmental precautions

- Environmental precautions : Avoid release to the environment.
Prevent entry to sewers and public waters.

Methods and Equipment for Containment and Cleaning up

- Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it.
Collect leaking and spilled liquid in sealable containers as far as possible.
Wash out the spilled area with large amounts of water.

7. Handling and storage**Handling**

- Technical measures : Work with appropriate personal protective equipment to prevent inhalation or contact to eyes, skin, and clothing.
Handle with care to prevent leakage, overflowing, or scattering, minimize generation of mist or vapor, and thoroughly ventilate.
- Precautions for safe handling : Do not eat, drink or smoke when using this product.
Thoroughly wash your hands and gargle after handling.
Ensure good ventilation of the work station.
Do not contact, breathe or swallow.
- Prevents handling of incompatible substances or mixtures : Avoid prolonged or repeated exposure.

Storage

- Storage conditions : Store in a well-ventilated place, away from direct sunlight. Keep container tightly closed and keep away from fire and heat sources.
- Material used in packaging/containers : Airtight container.
- Technical measures : Comply with applicable regulations.
- Storage temperature : Cool and dark place

8. Exposure controls / Personal protection equipment

- Appropriate engineering controls : Cover up tightly the generation source at the handling place or install local exhaust equipment or overall ventilation equipment. Install safety showers and eye-fountains near a handling place. Clearly indicate the location.

Protective equipment

- Respiratory protection : Gas mask for acid gases
- Hand protection : Impervious protective gloves
- Eye protection : Protective glasses (general glasses, glasses with side-shields, goggles)
- Skin and body protection : Impervious aprons, Impervious work clothing, Protective long boots

9. Physical and chemical properties

- Physical state : Liquid
- Appearance : Liquid
- Color : colorless ~ very pale yellow
- Odor : Irritating odor
- pH : No data available
- Melting point : -25 °C
- Freezing point : No data available
- Boiling point : 136 °C
- Flash point : Not inflammable
- Auto-ignition temperature : No data available
- Decomposition temperature : No data available
- Flammability (solid, gas) : No data available
- Vapor pressure : 1.28 kPa (20°C)
- Relative density : No data available
- Density : 1.73 g/cm³ (15-20°C)
- Relative gas density : 6.55 (air=1)
- Solubility : Soluble in cold water. Soluble in dilute hydrochloric acid. Soluble in ethanol.
- 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 : No data available
 Chemical stability : Non flammable, but highly corrosive and highly reactive liquid. It produces white smoke which is hydrogen chloride by the moist in the air.
 Possibility of hazardous reactions : It reacts violently with moisture and when contact with water. Then it generates heat and produces strong corrosive hydrogen chloride. It produces highly corrosive vapors that are heavier than air and diffuse to the surface of the earth. When heated to the point where decomposition occurs, highly corrosive hydrogen chloride gas is produced. It produces hydrogen when contact with metals.
 Conditions to avoid : Sunlight, heat, moisture. Contact with water and metals.
 Incompatible materials : Water, Metals
 Hazardous decomposition products : Hydrogen chloride, Chlorine

11. Toxicological information

The information in this section is based on the "GHS Classification Results" by NITE.

Titanium(IV) chloride	
Acute toxicity (oral)	No data available
Acute toxicity (dermal)	No data available
Acute toxicity (gas)	No data available
Acute toxicity (vapour)	No data available
Acute toxicity (inhalation:dust/mist)	No data available
Skin corrosion/irritation	No data available
Serious eye damage/irritation	No data available
Respiratory sensitization	No data available
Skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
STOT-single exposure	No data available
STOT-repeated exposure	No data available
Aspiration hazard	No data available

12. Ecological information

The information in this section is based on the "GHS Classification Results" by NITE.

Titanium(IV) chloride	
Hazardous to Aquatic Environment - Acute Hazard	No data available
Hazardous to Aquatic Environment - Chronic Hazard	No data available
Persistence and degradability	No data available
Bioaccumulative potential	No data available
Mobility in soil	No data available
Hazardous to the ozone layer	No data available

13. Disposal considerations

Ecology - waste materials : With the detail information of the waste, subcontract its disposal to a waste disposer authorized by a Prefectural Governor.
 Contaminated container and packaging : Empty the packaging completely prior to disposal.
 Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG)	: 1838
Proper Shipping Name (IMDG)	: TITANIUM TETRACHLORIDE
Packing group (IMDG)	: I
Transport hazard class(es) (IMDG)	: 6.1 (8)
Hazard labels (IMDG)	: 6.1,8
Class (IMDG)	: 6.1
Subsidiary risks (IMDG)	: 8
Division (IMDG)	: 6.1
Special provision (IMDG)	: 354
Limited quantities (IMDG)	: 0
Excepted quantities (IMDG)	: E0
Packing instructions (IMDG)	: P602
Tank instructions (IMDG)	: T20
Tank special provisions (IMDG)	: TP2, TP13, TP37
Stowage category (IMDG)	: D
Properties and observations (IMDG)	: Colourless liquid. Reacts violently with water, evolving hydrogen chloride, an irritating and corrosive gas apparent as white fumes. In the presence of moisture, highly corrosive to most metals. Highly toxic if swallowed, by skin contact or by inhalation. Causes burns to skin, eyes and mucous membranes.
MFAG-No	: 137

Air transport(IATA)

UN-No. (IATA)	: 1838
Proper Shipping Name (IATA)	: Titanium tetrachloride
Packing group (IATA)	: Not applicable
Transport hazard class(es) (IATA)	: 6.1 (8)
Class (IATA)	: 6.1
Subsidiary hazards (IATA)	: 8
Division (IATA)	: 6.1
PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: Forbidden
PCA max net quantity (IATA)	: Forbidden
CAO packing instructions (IATA)	: Forbidden
CAO max net quantity (IATA)	: Forbidden
Special provision (IATA)	: A2
ERG code (IATA)	: 6C

Marine pollutant : Not applicable

Regulations in Japan

Regulatory information by sea	: Conform to the provisions of the Ship Safety Law.
Regulatory information by air	: Transport ban
MFAG-No	: 137

Special transport precautions : When transporting, load containers so that they do not tip over, damage, drop or collapse. Make sure there is no leak in containers.

15. Regulatory information

National law

Industrial Safety and Health Law	: Not applicable
Japanese Poisonous and Deleterious Substances Control Law	: Not applicable
Fire Service Law	: Not applicable
Foreign Exchange and Foreign Trade Control Act	: Export Trade Control Ordinance appendix 1-16
Ship Safety Act	: Toxic and infectious substances/Toxic substances (Dangerous Goods Notification Schedule first second and third Article Dangerous Goods Regulations)
Port Regulation Law	: Toxic and infectious substances/Toxic substances (Article 21, Paragraph 2 of Law, Article 12 rule, notice attached table that defines the type of dangerous goods)

Japanese Pollutant Release and Transfer Register Law (PRTR Law) : Not applicable

16. Other information

Data sources : Handbook of 17120 Chemical Products, The Chemical Daily Co, Ltd.
International Chemical Safety Cards.
National Institute of Technology and Evaluation (NITE).
2016 Emergency Response Guidebook (ERG 2016).

Other information : The SDS is copyrighted material of Hayashi Pure Chemical Ind, Ltd. This Safety Data Sheet is intended to be provided for business operators who handle chemical substance products of the relevant product and is not intended to assure safety in any way. The Safety Data Sheet does not verify all the information on the applicable chemical substance in the present time. With the recognition in that unknown danger constantly exists in the relevant chemical substance, the product shall be used in the principle of self-responsibility of the user with the highest priority to safety from transport and unpacking to disposal. When the relevant chemical substance is used, the user him/herself shall collect safety information and shall investigate laws and regulations at the place, organizations, countries, etc. where the substance is actually used and give the highest priority to them. The Company shall take no responsibility for investigating state and local regulations and the user shall handle this problem on his/her own responsibility. In the event that SDS in Japanese and SDS translated into other languages exist, the document described in Japanese is prior to all other documents whether or not there is any difference in contents, and documents in other languages shall be references.