

Safety Data Sheet

Section 1. Identification of the substance/mixture and of the company/undertaking

Product identifier:

Product name: Tetrachloroethylene

Reference number(SDS):48035jis_J_E1-2

Product type:

Reagent

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses of the product: Research and Development

Uses advised against: Do not use for other purposes.

Details of the supplier of the safety data sheet

Manufacturer/Supplier: JUNSEI CHEMICAL CO., LTD.

Address: 1-6, Ohmano-cho, Koshigaya-shi, Saitama 343-0844, Japan

Division: Quality Assurance Department

Telephone number: +81-48-986-6161

FAX: +81-48-989-2787

e-mail address: shiyaku-t@junsei.co.jp

Section 2. Hazards identification

GHS classification and label elements of the product**Classification of the substance or mixture****HEALTH HAZARDS**

Acute toxicity (Inhalation): Category 4

Skin corrosion/irritation: Category 2

Serious eye damage/eye irritation: Category 2B

Carcinogenicity: Category 1B

Reproductive toxicity: Category 2

Reproductive toxicity – effects on or via lactation: Additional category

Specific target organ toxicity – single exposure: Category 1 (central nervous system, respiratory system, liver)

Specific target organ toxicity – single exposure: Category 3 (Narcotic effects)

Specific target organ toxicity – repeated exposure: Category 1 (nervous system, liver, respiratory system)

Specific target organ toxicity – repeated exposure: Category 2 (kidney)

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment, short-term (acute): Category 1

Hazardous to the aquatic environment, long-term (chronic): Category 1

(Note) GHS classification without description: Not classified/Classification not possible

Label elements

Signal word: Danger

HAZARD STATEMENT

H332–Harmful if inhaled

H315–Causes skin irritation

H320–Causes eye irritation

H350–May cause cancer

H361–Suspected of damaging fertility or the unborn child

H362-May cause harm to breast-fed children

H370-Causes damage to organs

H336-May cause drowsiness or dizziness

H372-Causes damage to organs through prolonged or repeated exposure

H373-May cause damage to organs through prolonged or repeated exposure

H400-Very toxic to aquatic life

H410-Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENT

Prevention

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Avoid contact during pregnancy and while nursing.

Avoid release to the environment.

Do not breathe vapors.

Use only outdoors or in a well-ventilated area.

Wash contaminated parts thoroughly after handling.

Wear protective gloves.

Use personal protective equipment as required.

Do not eat, drink or smoke when using this product.

Response

Collect spillage.

Get medical advice/attention if you feel unwell.

IF exposed or concerned: Get medical advice/attention.

Call a POISON CENTER/doctor/physician if you feel unwell.

IF exposed or concerned: Call a POISON CENTER/doctor/physician.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF ON SKIN: Wash with plenty of soap and water.

If skin irritation occurs: Get medical advice/attention.

Take off contaminated clothing and wash it before reuse.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

Storage

Store in a well-ventilated place. Keep container tightly closed.

Store locked up.

Disposal

Dispose of contents/container in accordance with local/national regulation.

Section 3. Composition/information on ingredients

Mixture/Substance selection:

Substance

Common name, synonyms: Ethylene tetrachloride, Perchloroethylene

Ingredient name:Tetrachloroethylene

Content (%):100

Chemical formula:C2Cl4

Chemicals No, Japan:2-114

CAS No.:127-18-4

MW:165.83

EC No.:204-825-9

Note : The figures shown above are not the specifications of the product.

Section 4. First-aid measures

Descriptions of first-aid measures

General measures

Get medical advice/attention if you feel unwell.

Keep victim warm and quiet.

Call emergency medical service.

IF INHALED

Remove person to fresh air and keep comfortable for breathing.

Give artificial respiration if victim is not breathing.

Administer oxygen if breathing is difficult.

Call a POISON CENTER/doctor/physician if you feel unwell.

IF ON SKIN (or hair)

Take off immediately all contaminated clothing. Rinse skin with water or shower.

Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

Remove and isolate contaminated clothing and shoes.

For minor skin contact, avoid spreading material on unaffected skin.

IF IN EYES

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

IF SWALLOWED

Rinse mouth. Do NOT induce vomiting.

Call a POISON CENTER/doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

Nausea. Headache. Drowsiness. Cough. Dizziness. Unconsciousness. Sore throat. Cardiac dysrhythmia.

Respiratory arrest.

※Aspiration hazard!

(Symptoms when skin and/or eye contact)

Dry skin. Conjunctival redness of the eyes. Redness of the skin. Burning sensation. Pain of the eyes.

Indication of any immediate medical attention and special treatment needed

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.

The product is non-flammable.

Unsuitable extinguishing media

Unsuitable extinguishing media data is not available.

Specific hazards arising from the substance or mixture

Containers may explode when heated.

Fire may produce irritating, corrosive and/or toxic gases.

Runoff from fire control or dilution water may cause pollution.

Advice for firefighters

Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame retardant clothing.

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

Firefighters should wear self-contained breathing apparatus with a full facepiece operated in the positive pressure mode.

Section 6. Accidental release measures

Personnel precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.

In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Ventilate area until material pick up is complete.

Wear proper protective equipment.

PUBLIC SAFETY: Ventilate closed spaces before entering.

Environmental precautions

Avoid release to headsprings, rivers, lakes, ocean and groundwater.

Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.

Preventive measures for secondary accident

Collect spillage.

Stop leak if you can do it without risk.

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

PUBLIC SAFETY : The gas is heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).

Keep out of low areas.

Section 7. Handling and storage

Precautions for safe handling

Preventive measures

(Exposure Control for handling personnel)

Do not breathe vapors.

(Protective measures against fire and explosion)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

Safety Measures

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Use only outdoors or in a well-ventilated area.

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

Use personal protective equipment as required.

When using do not eat, drink or smoke.

Any incompatibilities

Strong bases, Strong oxidizing agents, Metal powders should not be mixed with the chemicals.

Advice on general occupational hygiene

Avoid contact during pregnancy and while nursing.

Wash contaminated parts thoroughly after handling.

Do not eat, drink or smoke when using this product.

Take off contaminated clothing and wash it before reuse.

Storage**Conditions for safe storage**

Store in a well-ventilated place. Keep container tightly closed.

Keep cool. Protect from sunlight.

Store in accordance with local/national regulation.

Store locked up.

Container and packaging materials for safe handling data is not available.

Specific end use(s)

See information in Section 7.1 and 7.2 for handling and storage recommendations. See

Section 8 for exposure controls and personal protection recommendations.

Section 8. Exposure controls/personal protection**Control parameters****Control value and Concentration standard value**

Japan control value 25ppm

Adopted value

JSOH(1972) pending (skin)

ACGIH(2001) TWA: 25ppm;

STEL: 100ppm (CNS impair)

Exposure controls**Appropriate engineering controls**

Do not use in areas without adequate ventilation.

Eye wash station should be available.

Washing facilities should be available.

Individual protection measures**Respiratory protection**

Select and wear respiratory protection in accordance with approved standards (e.g. JIS T8150).

Recommended respiratory protection: Gas mask

Hand protection

Wear protective gloves. Recommended material(s): viton

Inspect before use and replace worn or damaged gloves.

Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions.

Chemical-resistant, impervious gloves complying with an approved standard (e.g. JIS T8116) should be used.

Eye protection

Wear safety glasses with side-shields.

Wear eye/face protection in accordance with approved standards (e.g. JIS T8147).

Skin and body protection

Wear impervious clothing and boots in case of repeated or prolonged treatment.

Personal protective equipment for the body and skin should be selected based on the task being performed and the risks involved.

Section 9. Physical and Chemical Properties**Information on basic physical and chemical properties**

Physical state: Liquid

Color: Colorless

Odor: Characteristic odor

Odor threshold: 4.68 ppm (recognition in air); 32mg/m³

Melting point/Freezing point: -22°C

Boiling point or initial boiling point: 121°C

Boiling range data is not available.

Flammability (gases, liquids and solids): Non-flammable
Lower and upper explosion limit/flammability limit data is not available.
Flash point: Non-flammable
Auto-ignition temperature: >650°C
Decomposition temperature: >=140°C
Self-Accelerating Decomposition Temperature/SADT data is not available.
pH data is not available.
Dynamic viscosity data is not available.
Kinematic viscosity data is not available.
Solubility:
 Solubility in water: 0.015 g/100 ml (20°C)
 Solubility in solvent: Miscible with ethanol, diethyl ether, benzene.
n-Octanol/water partition coefficient: log Pow3.4
Vapor pressure: 1.9 kPa (20°C)
Density and/or relative density: 1.618~1.627g/ml (20°C)
Relative vapor density (Air=1): 5.7
Relative density of the Vapor/air – mixture at 20°C (Air = 1): 1.09
Particle characteristics data is not available.
Other information
 Critical temperature data is not available.
 Evaporation rate data is not available.
 VOC data is not available.

Section 10. Stability and Reactivity

Reactivity

Runaway polymerization will not occur.

Chemical stability

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

The vapor is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen.

Decomposes on contact with hot surfaces or flames. This produces toxic and corrosive fumes.

Decomposes slowly on contact with moisture. This produces trichloroacetic acid and hydrochloric acid.

Reacts violently with finely divided metals. This generates fire and explosion hazard.

Conditions to avoid

Contact with incompatible materials.

Open flames. Heating. Sparks. Moisture. Light.

Incompatible materials

Strong bases, Strong oxidizing agents, Metal powders.

Hazardous decomposition products

Carbon oxides, Chlorides

Section 11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[Product]

Based on available data, the classification criteria are not met.

[Data for components of the product]

[GHS Cat. Japan, base data]

rat LD50=2400~13000 mg/kg (CERI/NITE Hazard Assessment Report No.65, 2006)

Acute toxicity (Dermal)

[Product]

Based on available data, the classification criteria are not met.

[Data for components of the product]

[GHS Cat. Japan, base data]

mouse LD50=5000mg/kg (IUCALID, 2000)

Acute toxicity (Inhalation)

[Product]

Category 4, Harmful if inhaled

[Data for components of the product]

[GHS Cat. Japan, base data]

vapor: rat LD50=5013ppm/4hr (EHC 31, 1984)

Irritant properties

Skin corrosion/irritation

[Product]

Category 2, Causes skin irritation

[Data for components of the product]

[GHS Cat. Japan, base data]

human/rabbit : blistering et al. (CICAD No.68, 2006)

Serious eye damage/irritation

[Product]

Category 2B, Causes eye irritation

[Data for components of the product]

[GHS Cat. Japan, base data]

rabbit : minimal irritation (CICAD No.68, 2006)

Sensitization

Respiratory sensitization

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Skin sensitization

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Germ cell mutagenicity

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Carcinogenicity

[Product]

Category 1B, May cause cancer

[Data for components of the product]

[GHS Cat. Japan, base data]

cat.1B; IARC Gr. 2A (IARC 63, 1995)

[IARC]

Group 2A : Probably carcinogenic to humans

[ACGIH]

A3(2001) : Confirmed Animal Carcinogen with Unknown Relevance to Humans

[EPA]

L; Likely to be carcinogenic to humans(2005)

[JSOH]

Group 2B: The agents which are probably or possibly carcinogenic to humans

[NTP]

RAHC : Reasonably Anticipated to be Human Carcinogens

[EU]

Category 2; Substances suspected human carcinogens

Reproductive toxicity

[Product]

Category 2, Suspected of damaging fertility or the unborn child

Additional category, May cause harm to breast-fed children

[Data for components of the product]

[GHS Cat. Japan, base data]

cat. 2; rat : CERI/NITE Hazard Assessment Report No.65, 2005

cat. add; IARC vol.63, 1995

Specific target organ toxicity (STOT)

STOT-single exposure

[Product]

Category 1, Causes damage to organs

Category 3, May cause drowsiness or dizziness

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

liver, central nervous system, respiratory system (IARC 63, 1995)

[cat.3 (narcotic effects)]

[GHS Cat. Japan, base data]

(Tetrachloroethylene)

narcotic effect (EHC 31, 1984)

STOT-repeated exposure

[Product]

Category 1, Causes damage to organs through prolonged or repeated exposure

Category 2, May cause damage to organs through prolonged or repeated exposure

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

liver, nervous system, respiratory system (CERI/NITE Hazard Assessment Report, 2005)

[cat.2]

[GHS Cat. Japan, base data]

kidneys (CERI/NITE Hazard Assessment Report, 2005)

Aspiration hazard

[Product]

Classification not possible (Insufficient data available or no data available).

[Data for components of the product]

No data available.

Section 12. Ecological Information

Toxicity

Aquatic toxicity

[Product]

Category 1, Very toxic to aquatic life

Category 1, Very toxic to aquatic life with long lasting effects

[Data for components of the product]

Hazardous to the aquatic environment, short-term (acute)

[GHS Cat. Japan, base data]

Crustacea (Daphnia magna) EC50=0.602mg/L/48hr (NITE Initial Risk Assessment Report, 2006)

Water solubility

[Data for components of the product]

0.015 g/100 ml (20°C) (ICSC, 2013)

Persistence and degradability

[Data for components of the product]

BOD_Degradation : 11% (METI existing chemical safety inspections)

Bioaccumulative potential

[Data for components of the product]

log Pow=3.4 (ICSC, 2013); BCF=77.1 (METI existing chemical safety inspections)

Mobility in soil

Mobility in soil data is not available.

Other adverse effects

Ozone depleting chemical data is not available.

Section 13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging

Waste treatment methods

Avoid release to the environment.

Dispose of contents/container in accordance with local/national regulation.

Section 14. Transport Information

UN No., UN CLASS

UN Number or ID Number : 1897

UN Proper Shipping Name : TETRACHLOROETHYLENE

Class or division (Transport hazard class) : 6.1

Packing group : III

ERG GUIDE No.: 160

IMDG Code (International Maritime Dangerous Goods Regulations)

UN Number or ID Number : 1897

UN Proper Shipping Name : TETRACHLOROETHYLENE

Class or division (Transport hazard class) : 6.1

Packing group : III

IATA (Dangerous Goods Regulations)

UN Number or ID Number : 1897

UN Proper Shipping Name : TETRACHLOROETHYLENE

Class or division (Transport hazard class) : 6.1

Hazard labels : Toxic

Packing group : III

Environmental hazards

Marine pollutants (yes/no) : yes

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

Noxious Liquid Substances ; Cat. Y

Tetrachloroethylene

MARPOL Annex V – HME (Harmful to the Marine Environment)

Carcinogenicity: cat.1, 1A, 1B

Tetrachloroethylene

Specific target organ toxicity – repeated exposure: cat.1

Tetrachloroethylene

Hazardous to the aquatic environment – short-term (acute): cat.1

Tetrachloroethylene

Hazardous to the aquatic environment – long-term (chronic): cat.1, 2

Tetrachloroethylene

Section 15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Labor Standards Act, Japan

Chemical substances or compounds (including alloys) causing disease (Regulation, Appended Table 1-2-4-1)

Tetrachloroethylene

U.S. Toxic Substances Control Act (TSCA) Inventory

Chemicals listed in TSCA Inventory

127-18-4

All components are listed or exempted.

Superfund Amendments and Reauthorizations Act (SARA), Title III

SARA 313 (TRI)

Tetrachloroethylene

Other regulatory information

We are not able to check up the regulatory information with regard to the substances in your country or region, therefore, we request this matter would be filled by your responsibility.

Regulatory information with regard to this substance in your country or in your region should be examined by your own responsibility.

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

Regulatory information in this section are limited to intentional ingredient(s), but does not contain information on non-intentional ingredients or impurities which are not informed by supplier(s).

Chemical safety assessment

Advice on safe handling for this product can be found in sections 7 and 8 of this SDS.

Section 16. Other information

GHS classification and labelling

H332-Acute toxicity, Category 4: H332 Harmful if inhaled

H315-Skin corrosion/irritation, Category 2: H315 Causes skin irritation

H320-Serious eye damage/eye irritation, Category 2B: H320 Causes eye irritation

H350-Carcinogenicity, Category 1B: H350 May cause cancer

H361-Reproductive toxicity, Category 2: H361 Suspected of damaging fertility or the unborn child

H362-Reproductive toxicity – effects on or via lactation, Additional category : H362 May cause harm to breast-fed children

H370-STOT – single exposure, Category 1: H370 Causes damage to organs

H336-STOT – single exposure, Category 3, Narcotic effects: H336 May cause drowsiness or dizziness.

H372-STOT – Repeated exposure, Category 1: H372 Causes damage to organs through prolonged or repeated exposure

H373-STOT – Repeated exposure, Category 2: H373 May cause damage to organs through prolonged or repeated exposure

H400-Hazardous to the aquatic environment, short-term (acute), Category 1: H400 Very toxic to aquatic life

H410-Hazardous to the aquatic environment, long-term (chronic), Category 1: H410 Very toxic

to aquatic life with long lasting effects

References and sources for data

Globally Harmonized System of classification and labelling of chemicals, UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 22nd edit., 2021 UN
IMDG Code, 2022 Edition (Incorporating Amendment 41-22)
IATA Dangerous Goods Regulations (65th Edition) 2024
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2024 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2019
JIS Z 7253 : 2019
2023 Recommendation on TLVs (JSOH)
Notification No. 0111-1 (January 11, 2022), Chemical Hazards Control Division, Industrial
Safety and Health Department, Labour Standards Bureau, MHLW in Japan
Supplier's data/information
Chemicals safety data management system "GHS Assistant" Version 4.29 (<https://www.asahi-ghs.com/>)
NITE Chemical Risk Information Platform "NITE-CHRIIP"
(https://www.chem-info.nite.go.jp/chem/chrip/chrip_search/systemTop)
GHS Classification Guidance for Enterprises 2019 Revised Edition (Ver. 2.1) (May. 2024, METI)

Abbreviations and acronyms

SDS (Safety Data Sheet)
LD50 (Lethal Dose, 50%)
LC50 (Lethal Concentration, 50%)
IARC (International Agency for Research on Cancer)
ACGIH (American Conference of Governmental Industrial Hygienists)
EPA (US Environmental Protection Agency)
NTP (US National Toxicology Program)
METI (Ministry of Economy, Trade and Industry in Japan)
MHLW (Ministry of Health, Labour and Welfare in Japan)
MOE (Ministry of the Environment in Japan)
JSOH (Japan Society for Occupational Health)
ISHA (Industrial Safety and Health Act in Japan)
CSCL (Chemical Substances Control Law in Japan)
EU (European Union)
EC50 (Effective Concentration, 50%)
NOEC (No Observed Effect Concentration)
BOD (Biochemical Oxygen Demand)
COD (Chemical Oxygen Demand)
BCF (Bioconcentration Factor)
anh (anhydride)

General Disclaimer

This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety.

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.

The GHS classification data given here is based on current Japan official data (NITE published in 2022).