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Safety Data Sheet

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

Product identifier:

Product name: Trichloroethylene

Reference number(SDS):49250jis_E-3

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

PHYSICAL AND CHEMICAL HAZARDS

Self-reactive substances and mixtures: Type G

HEALTH HAZARDS

Acute toxicity (Inhalation): Category 4

Skin corrosion/irritation: Category 2

Serious eye damage/eye irritation: Category 2A

Skin sensitization: Category 1

Germ cell mutagenicity: Category 2

Carcinogenicity: Category 1A

Reproductive toxicity: Category 2

Specific target organ toxicity - single exposure: Category 1 (central nervous system)

Specific target organ toxicity - single exposure: Category 3 (Respiratory tract irritation)

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

Specific target organ toxicity - repeated exposure: Category 1 (central nervous system, liver)

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment, short-term (acute): Category 2

(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
H319-Causes serious eye irritation
H317-May cause an allergic skin reaction
H341-Suspected of causing genetic defects
H350-May cause cancer
H361-Suspected of damaging fertility or the unborn child
H370-Causes damage to organs
H335-May cause respiratory irritation
H336-May cause drowsiness or dizziness
H372-Causes damage to organs through prolonged or repeated exposure
H401-Toxic to aquatic life

PRECAUTIONARY STATEMENT

Prevention

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid release to the environment.
Do not breathe vapors.
Use only outdoors or in a well-ventilated area.
Wash contaminated parts thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
Do not eat, drink or smoke when using this product.

Response

Specific treatment is required.
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 or rash 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:

Mixture

Ingredient name:Trichloroethylene
Content (%):99.5
Chemical formula:C2HCl3
ENCS:2-105
CAS No.:79-01-6
MW:131.39
EC No.:201-167-4

Ingredient name:1,2-Epoxybutane
Content (%):0.1
Chemical formula:C4H8O
ENCS:2-229
CAS No.:106-88-7
MW:72.11
EC No.:203-438-2

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

Components contributing to the hazard

Carcinogenic (Article 57a) in REACH SVHC candidate list

Trichloroethylene

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

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

Dizziness. Drowsiness. Headache. Weakness. Nausea. Unconsciousness. Sore throat. Cardiac dysrhythmia. Respiratory arrest.

※Aspiration hazard.

(Symptoms when skin and/or eye contact)

Dry skin. Redness. 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.

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.

Cool container with water spray.

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 SAFTY: 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, etc.), then place in a chemical waste container.

Collect leaking and spilled liquid in sealable containers as far as possible.

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).

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.

(Precautions)

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, Finely divided metals should not be mixed with the chemicals.

Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.

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

Contaminated work clothing should not be allowed out of the workplace.

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.

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 under ISHA

(Trichloroethylene)

Japan control value　10ppm

Occupational Exposure Limit

JSOH

(Trichloroethylene)

25ppm; 135mg/m3

ACGIH

(Trichloroethylene)

TWA: 10ppm; STEL: 25ppm (CNS impair; cognitive decrements; renal toxicity)

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 data is not available.

Melting point/Freezing point: -86℃

Boiling point or initial boiling point: 87℃

Boiling range data is not available.

Flammability data is not available.

Lower and upper explosion limit/flammability limit:

Lower explosion limit: 7.9 vol %

Upper explosion limit: 100 vol %

Flash point data is not available.

Auto-ignition temperature: 410℃

Decomposition temperature: >=110℃

Self-Accelerating Decomposition Temperature/SADT data is not available.

pH data is not available.

Dynamic viscosity: 0.58mPa･s(20℃)

Kinematic viscosity data is not available.

Solubility:

Solubility in water: 0.1 g/100 mL (20℃)

Solubility in solvent: Very soluble in ethanol and diethyl ether.

Partition coefficient n-octanol/water: log Pow2.42

Vapor pressure: 7.8 kPa （20℃）

Vapor density data is not available.

Density and/or relative density: 1.461～1.469g/mL (20℃)

Relative vapor density (Air=1): 4.5

Relative density of the Vapor/air - mixture at 20℃ (Air = 1): 1.3

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 vapour is heavier than air. As a result of flow, agitation, etc., electrostatic charges can be generated.

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

Decomposes on contact with strong alkali. This produces dichloroacetylene. This increases fire hazard.

Reacts violently with finely divided metals such as magnesium, aluminum, titanium, and barium. This generates fire and explosion hazard.

Slowly decomposed by light in the presence of moisture. This produces corrosive hydrochloric acid.

Conditions to avoid

Contact with incompatible materials.

Open flames. Heating. Sparks. Light. Moisture.

Incompatible materials

Strong bases. Strong oxidizing agents. Finely divided metals.

Hazardous decomposition products

Carbon oxides. Chlorides.

Section 11. Toxicological Information

The product has not been subjected to toxicological testing. Refer to the available data on the constituents.

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[Product]

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

[Data for components of the product]

[NITE-CHRIP]

(Trichloroethylene)

rat LD50: 5400 - 7200 mg/kg (source: NITE)

(1,2-Epoxybutane)

rat LD50: 500 mg/kg (source: NITE)

Acute toxicity (Dermal)

[Product]

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

[Data for components of the product]

[NITE-CHRIP]

(Trichloroethylene)

rabbit LD50: 29000 mg/kg (source: NITE)

(1,2-Epoxybutane)

rabbit LD50: 1.77 mL/kg (a converted value: 1469 mg/kg) (source: NITE)

Acute toxicity (Inhalation)

[Product]

Category 4, Harmful if inhaled

[Data for components of the product]

[NITE-CHRIP]

(Trichloroethylene)

vapor: rat LC50: 4800 ppm (4-hour) (source: NITE)

(1,2-Epoxybutane)

vapor: rat LC50: 2050 - 6550 ppm (4-hour) (no dead animals at 2050 ppm, all rats died at 6550 ppm) (source: NITE)

Irritant properties

Skin corrosion/irritation

[Product]

Category 2, Causes skin irritation

[Data for components of the product]

[NITE-CHRIP]

(Trichloroethylene)

Category 2 (source: NITE)

(1,2-Epoxybutane)

Category 1B (source: NITE)

Serious eye damage/irritation

[Product]

Category 2A, Causes serious eye irritation

[Data for components of the product]

[NITE-CHRIP]

(Trichloroethylene)

Category 2A (source: NITE)

(1,2-Epoxybutane)

Category 1 (source: NITE)

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]

Category 1, May cause an allergic skin reaction

[Data for components of the product]

[NITE-CHRIP]

(Trichloroethylene)

Category 1 (source: NITE)

Germ cell mutagenicity

[Product]

Category 2, Suspected of causing genetic defects

[Data for components of the product]

[NITE-CHRIP]

(Trichloroethylene)

Category 2 (source: NITE)

Carcinogenicity

[Product]

Category 1A, May cause cancer

[Data for components of the product]

[NITE-CHRIP]

(Trichloroethylene)

Category 1A (source: NITE)

(1,2-Epoxybutane)

Category 2 (source: NITE)

[IARC]

(Trichloroethylene)

Group 1 : Carcinogenic to humans

(1,2-Epoxybutane)

Group 2B : Possibly carcinogenic to humans

[ACGIH]

(Trichloroethylene)

A2: Suspected Human Carcinogen

[JSOH]

(Trichloroethylene)

Group 1: The agents which are carcinogenic to humans

(1,2-Epoxybutane)

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

[NTP]

(Trichloroethylene)

Known : Known to be Human Carcinogens

[EU]

(Trichloroethylene)

Category 1B; Substances presumed to have carcinogenic potential for humans

(1,2-Epoxybutane)

Category 2; Substances suspected human carcinogens

Reproductive toxicity

[Product]

Category 2, Suspected of damaging fertility or the unborn child

[Data for components of the product]

[NITE-CHRIP]

(Trichloroethylene)
Category 2 (source: NITE)

Specific target organ toxicity (STOT)

STOT-single exposure

[Product]

Category 1, Causes damage to organs
Category 3, May cause respiratory irritation
Category 3, May cause drowsiness or dizziness

[Data for components of the product]

[NITE-CHRIP]
(Trichloroethylene)
Category 1 (central nervous system), Category 3 (Respiratory tract irritation), Category 3 (Narcotic effects) (source: NITE)
(1,2-Epoxybutane)
Category 3 (Respiratory tract irritation), Category 3 (Narcotic effects) (source: NITE)

STOT-repeated exposure

[Product]

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

[Data for components of the product]

[NITE-CHRIP]
(Trichloroethylene)
Category 1 (central nervous system, liver) (source: NITE)

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

The product has not been subjected to ecotoxicological testing. Refer to the available data on the constituents.

Ecotoxicity

Aquatic toxicity

[Product]

Category 2, Toxic to aquatic life

[Data for components of the product]

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

[NITE-CHRIP]
(Trichloroethylene)
Crustacea (Daphnia magna) 48-hour EC50: 7.75 mg/L (source: NITE)
(1,2-Epoxybutane)
Crustacea (Daphnia magna) 48-hour EC50 (immobile): 69.8 mg/L (source: NITE)

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

[NITE-CHRIP]
(Trichloroethylene)
Crustacea (Daphnia magna) 21-day NOEC (reproduction inhibition): 2.1 mg/L (source: NITE)
Algae (Pseudokirchneriella subcapitata) 96-hour NOEC (growth rate): 17.8 mg/L (source: NITE)
Fish (Jordanella floridae) 28-day NOEC (survival rate): 10.6 mg/L (source: NITE)

Water solubility

[Data for components of the product]

(Trichloroethylene)

0.1 g/100 mL (20℃) (source: ICSC, 2013)

(1,2-Epoxybutane)

5.9 g/100 mL (20℃) (source: ICSC, 2017)

Persistence and degradability

[Data for components of the product]

(Trichloroethylene)

Not rapidly degradable (Degradation rate: 2.4% (by BOD)) (source: NITE)

(1,2-Epoxybutane)

Rapidly degradable (Degradation rate: 109% (by BOD)) (source: NITE)

Bioaccumulative potential

[Data for components of the product]

(Trichloroethylene)

log Pow: 2.42 (source: ICSC, 2013)

(1,2-Epoxybutane)

log Kow: 0.86 (source: NITE)

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 : 1710

UN Proper Shipping Name :

TRICHLOROETHYLENE

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 : 1710

UN Proper Shipping Name :

TRICHLOROETHYLENE

Class or division (Transport hazard class) : 6.1

Packing group : III

IATA (Dangerous Goods Regulations)

UN Number or ID Number : 1710

UN Proper Shipping Name :

TRICHLOROETHYLENE

Class or division (Transport hazard class) : 6.1

Hazard labels : Toxic
Packing group : III
Environmental hazards
Marine pollutants (yes/no) : no
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Noxious Liquid Substances ; Cat. Y
1,2-Epoxybutane; Trichloroethylene
MARPOL Annex V - HME (Harmful to the Marine Environment)
Carcinogenicity: cat.1, 1A, 1B
Trichloroethylene
Specific target organ toxicity - repeated exposure: cat.1
Trichloroethylene

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 (item (iv)-1 of Appended Table 1-2 of Regulation)
Trichloroethylene
List of substances subject to authorisation (REACH, Annex XIV)/SVHC - candidate list
Carcinogenic (Article 57a)
Trichloroethylene
U.S. Toxic Substances Control Act (TSCA) Inventory
Chemicals listed in TSCA Inventory
79-01-6; 106-88-7
All components are listed or exempted.
Superfund Amendments and Reauthorizations Act (SARA), Title III
SARA 313 (TRI)
1,2-Epoxybutane; Trichloroethylene
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
Self-Reactive Substances and Mixtures, Type G
H332-Acute toxicity, Category 4: H332 Harmful if inhaled
H315-Skin corrosion/irritation, Category 2: H315 Causes skin irritation

H319-Serious eye damage/eye irritation, Category 2A: H319 Causes serious eye irritation
H317-Skin sensitization, Category 1: H317 May cause an allergic skin reaction
H341-Germ cell mutagenicity, Category 2: H341 Suspected of causing genetic defects
H350-Carcinogenicity, Category 1A: H350 May cause cancer
H361-Reproductive toxicity, Category 2: H361 Suspected of damaging fertility or the unborn child
H370-STOT - single exposure, Category 1: H370 Causes damage to organs
H335-STOT - single exposure, Category 3, Respiratory tract irritation: H335 May cause respiratory irritation.
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
H401-Hazardous to the aquatic environment, short-term (acute), Category 2: H401 Toxic to aquatic life

References and sources for data

Globally Harmonized System of classification and labelling of chemicals, UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 23rd edit., 2023 UN
IMDG Code, 2024 Edition (Incorporating Amendment 42-24)
IATA Dangerous Goods Regulations (66th Edition) 2025
2024 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2025 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2019
JIS Z 7253 : 2019
Recommendation of occupational exposure limits (2023-2024) (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 4.34 (https://www.asahi-ghs.com/)
NITE Chemical Risk Information Platform "NITE-CHRIP" (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 Data published in Japan (National Institute of Technology and Evaluation (NITE) Chemical Risk Information Platform (NITE-CHRIP), up to FY2023).