

Safety Data Sheet

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

Product identifier:

Product name: 1,4-Dioxane

Product code(SDS NO): 33675jis_E-2

Details of the supplier of the safety data sheet

Manufacturer/Supplier: JUNSEI CHEMICAL CO., LTD.

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

Division: Quality Assurance Department

Telephone number: +81-48-986-6161

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

2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

PHYSICAL HAZARDS

Flammable liquids: Category 2

HEALTH HAZARDS

Acute toxicity Inhalation: Category 4

Skin corrosion/irritation: Category 2

Serious eye damage/eye irritation: Category 2A

Carcinogenicity: Category 2

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

Specific target organ toxicity – single exposure: Respiratory tract irritation Category 3

Specific target organ toxicity – single exposure: Narcosis Category 3

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

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

(Note) GHS classification without description: Not applicable/Out of classification/Not classifiable

Label elements



Signal word: Danger

HAZARD STATEMENT

Highly flammable liquid and vapor

Harmful if inhaled

Causes skin irritation

Causes serious eye irritation

Suspected of causing cancer

Causes damage to organs(central nervous system) after single exposure

May cause respiratory irritation

May cause drowsiness or dizziness

Causes damage to organs(kidney, liver, central nervous system) through prolonged or repeated exposure

May cause damage to organs(respiratory system) through prolonged or repeated exposure

PRECAUTIONARY STATEMENT

Prevention

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

1,4-Dioxane, JUNSEI CHEMICAL CO., LTD., 33675jis_E-2,20/06/2017

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Keep container tightly closed.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Do not breathe vapors.

Use only outdoors or in a well-ventilated area.

Wash contaminated parts thoroughly after handling.

Wear protective gloves and face protection.

Wear eye protection/face protection.

Use personal protective equipment as required.

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

Response

In case of fire: Use appropriate media for extinction.

Get medical advice/attention if you feel unwell.

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

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

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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. Keep cool.

Store locked up.

Disposal

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

Physical and Chemical hazards

Highly flammable liquid. Vapor/air mixture may explode.

3. Composition/information on ingredients

Mixture/Substance selection:

Substance

Common name, synonyms: Diethylene dioxide

Ingredient name: 1,4-Dioxane

Content(%): 98.0 <

Chemical formula: C₄H₈O₂

Chemicals No, Japan: 5-839

CAS No.: 123-91-1

MW: 88.11

ECNO: 204-661-8

Impurities and stabilizing additives

Stabilizer[(EP)and(GR)]: 2,6-Di-*t*-butyl-4-methylphenol(BHT)

4. First-aid measures

Descriptions of first-aid measures

General measures

Get medical attention/advice if you feel unwell.

IF INHALED

Remove person to fresh air and keep comfortable for breathing.

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

IF ON SKIN (or hair)

Take off immediately all contaminated clothing. Rinse skin with water/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.

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 or doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

Cough. Sore throat. Nausea. Dizziness. Headache. Drowsiness. Vomiting. Unconsciousness.

Abdominal pain.

(Symptoms when skin and/or eye contact)

Redness(eyes). Pain(eyes).

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use water mist, foam, dry powder, CO₂, dry sand.

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/flame resistant/retardant clothing.

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

Firefighters should wear self-contained breathing apparatus with full face piece operated positive pressure mode.

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 after material pick up is complete.

Wear proper protective equipment.

PUBLIC SAFETY: Ventilate closed spaces before entering.

Environmental precautions

Runoff to sewer may create fire or explosion hazard.

Vapor explosion hazard indoors, outdoors or in sewers.

Avoid release to the 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.

Use clean non-sparking tools to collect absorbed material.
All equipment used when handling the product must be grounded.

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).
Prevent entry into waterways, sewers, basements or confined areas.
A vapor suppressing foam may be used to reduce vapors.

7. Handling and storage

Precautions for safe handling

Preventive measures

(Exposure Control for handling personnel)

Do not breathe vapors.

(Protective measures against fire & explosion)

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Exhaust/ventilator

Exhaust/ventilator should be available.

Safety treatments

Avoid contact with skin.

Avoid contact with eyes.

Avoid breathing vapor.

Safety Measures/Incompatibility

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 or face protection.

Wear protective gloves and face protection.

Wear eye protection/face protection.

Use personal protective equipment as required.

When using do not eat, drink or smoke.

Conditions for safe storage, including any incompatibilities

Recommendation for storage

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

Keep cool. Protect from sunlight.

Store locked up.

8. Exposure controls/personal protection

Control parameters

Control value

Japan control value (1995) ≤ 10 ppm

Adopted value

JSOH(2015) 1ppm; 3.6mg/m³ (dermal)

ACGIH(1996) TWA: 20ppm (Liver dam)

Notation···Skin

OSHA-PEL

TWA 100ppm, 360mg/m³

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**

- Wear respiratory protection.

Hand protection

- Wear protective gloves. Recommended material(s): butyl rubber
- Consult with your glove and/or personnel equipment manufacturer for selection of appropriate compatible materials.

Eye protection

- Wear safety glasses with side-shields.
- Wear eye/face protection.

Safety and Health measures

- Wash ... thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Take off contaminated clothing and wash it before reuse.

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

- Appearance: Liquid
- Color: Colorless-clear
- Odor: Characteristic odor
- pH data N.A.

Phase change temperature

- Initial Boiling Point/Boiling point: 101°C
- Melting point/Freezing point: 12°C
- Decomposition temperature data N.A.
- Flash point: (c.c.)12°C
- Auto-ignition temperature: 180°C
- Explosive properties: Flammability or explosive limit
 - lower limit: 2 vol %
 - upper limit: 22.5 vol %

Vapor pressure: 4.1 kPa (20°C)

Relative Vapor Density (Air=1): 3.0

Relative density of the Vapor/air-mixture at 20°C (Air = 1): 1.08

Specific gravity/Density: 1.03g/cm³(20°C)

Viscosity: 1.313mPas(20°C)

Solubility

- Solubility in water: Miscible(100 g/100 ml)
- Solubility in solvent: Very soluble in ethanol and diethyl ether.
- n-Octanol /water partition coefficient: log Pow-0.42

10. Stability and Reactivity**Chemical stability**

- Stable under normal storage/handling conditions.
- Highly flammable.

Possibility of hazardous reactions

- The vapour is heavier than air and may travel along the ground; distant ignition possible.

The substance can form explosive peroxides on exposure to air.
Reacts with oxidants and strong acids.
Reacts violently with some catalysts.

Conditions to avoid

Contact with incompatible materials.
Open flames. Heat. Air.

Incompatible materials

Strong acids, Oxidizing agents

Hazardous decomposition products

Carbon oxides

11. Toxicological Information**Information on toxicological effects****Acute toxicity****Acute toxicity (Oral)**

[GHS Cat. Japan, base data]

rat LD50=5170~7339 mg/kg (CERI/NITE hazard assessment data, 2006 et al.)

Acute toxicity (Dermal)

[GHS Cat. Japan, base data]

rat LD50=2100 mg/kg (CERI/NITE hazard assessment data, 2006)

Acute toxicity (Inhalation)

[GHS Cat. Japan, base data]

vapor : rat LC50=9158 ppm/4hr (CERI/NITE risk assessment, 2006)

Labor standard law, Japan; Toxic

1,4-Dioxane

Irritant properties**Skin corrosion/irritation**

[GHS Cat. Japan, base data]

rabbit : moderate (CERI/NITE hazard assessment, 2006)

Serious eye damage /irritation

[GHS Cat. Japan, base data]

cat 2A; human/rabbit (EU-RARNo.21, 2002 et al.)

No Allergenic and sensitizing effects data available

No Mutagenic effects data available

Carcinogenicity

[GHS Cat. Japan, base data]

cat 2; IARC (1999) Gr.2B

IARC-Gr.2B : Possibly carcinogenic to humans

ACGIH-A3(1996) : Confirmed Animal Carcinogen with Unknown Relevance to Humans

JSOH-2B: Insufficient Evidence of Carcinogenicity for Humans

EU-Category 2; Substances suspected human carcinogens

EPA "Likely to Be Carcinogenic to Humans"(2005)

NTP-Reasonably Anticipated To Be Human Carcinogen

No Teratogenic effects data available

No reproductive toxicity data available

Delayed and immediate effects and also chronic effects from short- and long-term exposure

STOT**STOT-single exposure**

[cat.1]

[Japan published data]

CNS (EPA_JP risk assessment vol.2, 2003)

[cat.3(resp. irrit.)]

[Japan published data]

Respiratory tract irritation (ATSDR, 2007)

[cat.3(drow./dizz.)]

[Japan published data]

Narcosis (ATSDR, 2007)

STOT-repeated exposure

[cat.1]

[Japan published data]

kidney; liver; CNS (CERI/NITE hazard assessment, 2004)

[cat.2]

[Japan published data]

respiratory apparatus/system (EPA_JP risk assessment vol.2, 2003)

No Aspiration hazard data available

12. Ecological Information

Toxicity

Aquatic toxicity

Aquatic acute toxicity component(s) data

[GHS Cat. Japan, base data]

Fish (top minnow) LC50 > 100mg/L/96hr

(Test for the Ecological Effect of Chemical Substances(MOE_japan), 1995, etc)

Water solubility

100 g/100 ml (PHYSPROP Database, 2009)

No Persistence and degradability data available

Bioaccumulative potential

log Pow=-0.27 (ICSC, 2008)

13. Disposal considerations

Waste treatment methods

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

14. Transport Information

UN No, UN CLASS

UN number: 1165

UN proper shipping name: DIOXANE

Transport hazard class(es): 3

Packing group: II

ERG GUIDE NO.: 127

Transport in bulk according to Annex II of MARPOL73/78 and IBC Code

Noxious Liquid ; Cat. Y...1,4-Dioxane

15. Regulatory Information

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

US major regulations

TSCA

1,4-Dioxane

Other regulatory information

We are not able to check up the regulatory information in 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.

16. Other information

GHS classification and labelling

Flam. Liq. 2: H225 Highly flammable liquid and vapor

Acute Tox. 4: H332 Harmful if inhaled

Skin Irrit. 2: H315 Causes skin irritation

Eye Irrit. 2A: H319 Causes serious eye irritation

Carc. 2: H351 Suspected of causing cancer

STOT SE 1: H370 Causes damage(central nervous system) to organs after single exposure

STOT SE 3: H335 May cause respiratory irritation

STOT SE 3: H336 May cause drowsiness or dizziness

STOT RE 1: H372 Causes damage to organs(kidney, liver, central nervous system) through prolonged or repeated exposure

STOT RE 2: H373 May cause damage to organs(respiratory system) through prolonged or repeated exposure

Reference Book

Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN

Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN

Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)

2012 EMERGENCY RESPONSE GUIDEBOOK(US DOT)

2017 TLVs and BEIs. (ACGIH)

<http://monographs.iarc.fr/ENG/Classification/index.php>

Supplier's data/information

Chemical Risk Information Platform (CHRIP)(NITE) <http://www.safe.nite.go.jp/japan/db.html>

GHS Classification Guidance for Enterprises 2013 Revised Edition (August, 2013, METI)

General Disclaimer

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determinate the safety and suitability of each such product or combination for their own purposes.

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 2015).