Date of issue: 2017/12/06
Date of revision: 2026/06/15

Safety Data Sheet

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

Product identifier:
- Product name: Diethylene glycol
- SDS No. : 2363E-4

Recommended use of the chemical and restrictions on use
- Research and Development

Details of the supplier of the safety data sheet
- Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
- Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN
- Division: Chemical Safety Management Department
- Telephone number: +81-6-6946-8061
- FAX: +81-6-6946-1607

Section 2. Hazards identification

Classification of the substance or mixture
- HEALTH HAZARDS
  - Reproductive toxicity: Category 2
  - Specific target organ toxicity - repeated exposure: Category 1 (liver, kidneys)
- (Note) GHS classification without description: Not classified/Classification not possible

Label elements
- Hazard pictograms:



- Signal word: Danger
- Hazard statements
  - H361 Suspected of damaging fertility or the unborn child
  - H372 Causes damage to organs through prolonged or repeated exposure (liver, kidneys)
- Precautionary statements
  - Prevention
    - P203 Obtain, read and follow all safety instructions before use.
    - P260 Do not breathe dust/fume/gas/mist/vapors/spray.
    - P264 Wash hands thoroughly after handling.
    - P280 Wear protective gloves/protective clothing/eye protection/face protection.
    - P270 Do not eat, drink or smoke when using this product.
  - Response
    - P318 IF exposed or concerned, get medical advice.
    - P319 Get medical help if you feel unwell.
  - Storage
    - P405 Store locked up.
  - Disposal
    - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Specific danger/hazard

Health hazard

See "11. Toxicological Information".

Section 3. Composition/information on ingredients

Substance/mixture:

Substance

Ingredient name	Content (%)	CAS RN	ENCS	Chemical formula
Diethylene glycol	≧99	111-46-6	2-415	HOCH2CH2OCH2CH2OH

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

Impurities

Ethylene glycol ≦0.99% (CAS RN 107-21-1)
1,4-Dioxane ≦0.0010% (CAS RN 123-91-1)
Formaldehyde ≦0.0010% (CAS RN 50-00-0)

Section 4. First aid measures

Descriptions of first aid measures

General measures

IF exposed or concerned, get medical advice.
Get medical help if you feel unwell.

IF INHALED

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms: Get emergency medical help immediately.
Get medical help if you feel unwell.

IF ON SKIN

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water or shower.
If experiencing skin: Get emergency medical help immediately.
If you observe unusual symptom, have irritation/pain and/or feel unwell, seek medical advice.

IF IN EYES

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Rinse in order to better reach all parts of eyes.
Remove all chemicals from contact with the victim's eyes immediately. A delay of only seconds may increase the injury.
If experiencing eye: Get medical help.

IF SWALLOWED

Rinse mouth.
IF SWALLOWED: Get emergency medical help immediately.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.
In case of fire, use spraying loaded liquid, foam (water-soluble liquid: alcohol-resistant

foam), inactive gases, dry powder, dry sand to extinguish.
*Fire Service Act Group 4 Hazardous Materials

Unsuitable extinguishing media

Indoor Fire Plug System or Outdoor Fire Plug System
Sprinkler System
Dry Chemical Extinguishing System-Others (except for phosphates etc., Hydrogen Carbonates etc.)
Fire Extinguisher Discharging Jet Water/Spraying Water
Fire Extinguisher Discharging Jet Loaded Liquid
Fire Extinguisher Discharging Dry Extinguishing agents-Others (except for phosphates etc., Hydrogen Carbonates etc.)
Water Bucket or Water Tank
*Cabinet Order Concerning the Control of Hazardous Materials (Attached Table 5) Group 4 Hazardous Materials

Specific hazards arising from the substance or mixture

Fire may produce irritating, corrosive and/or toxic gases.
Runoff from fire control or dilution water may cause pollution.
See "10.Stability and Reactivity".

Advice for firefighters

Special extinguishing method

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

Personal precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.
Ventilate area until material pick up is complete.
Wear proper protective equipment.

Environmental precautions

Prevent spills from entering sewers, watercourses, low areas or rivers. To be careful not discharged to the environment without being properly handled waste water contaminated.

Methods and materials for containment and cleaning up

Liquid: Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.
Solid: Sweep up, place in a bag and hold for waste disposal.

Preventive measures for secondary accident

Collect spillage.

Section 7. Handling and storage

Precautions for safe handling

Engineering measures

(Measures to prevent operator exposure)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Measures to prevent fire and explosion)

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

(Local ventilation/general ventilation)

Use adequate general or local exhaust ventilation.

(Precautions)

Avoid contact with skin.

Avoid contact with eyes.

Advice on safe handling

Obtain, read and follow all safety instructions before use.

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

Wash hands and contaminated parts thoroughly after handling.

When using do not eat, drink or smoke.

Avoidance of contact

See Section 10: Stability and Reactivity.

Advice on general occupational hygiene

Wash hands thoroughly after handling. Do not touch eyes.

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

Conditions for safe storage, including any incompatibilities

Conditions for safe storage

Keep container tightly closed.

Store locked up. (P405)

Store in a cool, dry place. Do not store in direct sunlight.

Storage in accordance with local/national regulation.

Safe packaging material

Use closed unbreakable containers.

Section 8. Exposure controls/personal protection

Control parameters

Permissible concentration

Administrative Control Levels and Concentration standard value

(Diethylene glycol)

Concentration standard value TWA: 10ppm (effective from 1 October 2026)

(Ethylene glycol)

Concentration standard value TWA: 10ppm; STEL: 50ppm

(1,4-Dioxane)

Japan control value 10ppm

(Formaldehyde)

Japan control value 0.1ppm

Occupational exposure limit values

The Japan Society for Occupational Health

(1,4-Dioxane)

1ppm; 3.6mg/m3 (skin)

(Formaldehyde)

0.1ppm, 0.12mg/m3; (Ceiling) 0.2ppm, 0.24mg/m3

ACGIH

(Ethylene glycol)

TWA: 25ppm(V); STEL: 50ppm(V); STEL: 10mg/m3(I, H) (URT irr)

(1,4-Dioxane)

TWA: 1ppm (Liver dam; URT dam)

(Formaldehyde)
TWA: 0.1ppm; STEL: 0.3ppm (URT & eye irr; URT cancer)
Notation
(1,4-Dioxane)
Skin
(Formaldehyde)
DSEN; RSEN

Appropriate engineering controls
Do not use in areas without adequate ventilation.
Washing facilities should be available.

Individual protection measures, such as personal protective equipment
Recommend to use protective equipment in conformity with the standards.
Use appropriate protective equipment in accordance with local/national regulation.

Respiratory protection
Wear respiratory protection (dust-proof mask/gas mask). Select chemical cartridge corresponding to type of gases when using a gas mask.

Hand protection
Wear impervious protective glove.
Consult with your glove and/or personnel equipment manufacturer for selection of appropriate compatible materials as needed.
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 as needed.

Eye/face protection
Wear eye/face protection. Wear safety goggles in cases gas is generated.

Skin and body protection
Wear protective clothing.
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

Physical state: Liquid
Color: Colorless, clear
Odor: Odorless
Melting point/Freezing point: -6.5℃
Boiling point or initial boiling point and boiling range: (Diethylene glycol)245℃
Flammability data is not available.
Lower and upper explosion limit/flammability limit:
Lower explosion limit: 1.6 vol %
Upper explosion limit: 10.8 vol %
Flash point: (Diethylene glycol)(C.C.) 124℃
Auto-ignition temperature: (Diethylene glycol)229℃
Decomposition temperature data is not available.
pH data is not available.
Kinematic viscosity data is not available.
Solubility:
Solubility in water: Miscibe
Solubility in solvent data is not available.
Partition coefficient n-octanol/water (log value): -1.47

Vapor pressure: 2.7 Pa (20℃)
Density and/or relative density: 1.12
Relative vapor density (Air=1): 3.7
Particle characteristics data is not available.
Other information
Other information is not available.

Section 10. Stability and Reactivity

Reactivity
Not available.
Chemical stability
Hygroscopic materials.
Possibility of hazardous reactions
Reacts violently with strong oxidants. This generates fire and explosion hazard. Attacks some forms of plastic. (ICSC 0619)
Conditions to avoid
Contact with incompatible materials.
Contact with fire source.
Incompatible materials
Strong oxidizing agents
Hazardous decomposition products
Carbon oxides

Section 11. Toxicological Information

Information on toxicological effects
Acute toxicity
Acute toxicity (Oral)
[Data for components of the product]
[NITE-CHRIP]
(Diethylene glycol)
rat LD50: 15.6 g/kg (source: NITE)
(Ethylene glycol)
rat LD50: 6140 mg/kg (source: NITE)
(1,4-Dioxane)
rat LD50: 5170 mg/kg (source: NITE)
(Formaldehyde)
rat LD50: 600 - 700 mg/kg (test substance: 2 - 4% Aqueous solution) (source: NITE)
Acute toxicity (Dermal)
[Data for components of the product]
[NITE-CHRIP]
(Diethylene glycol)
rabbit LD50: 13300 mg/kg (source: NITE)
(Ethylene glycol)
rat LD50: 2800 mg/kg (source: NITE)
(1,4-Dioxane)
rat LD50: 2100 mg/kg (source: NITE)
(Formaldehyde)
rabbit LD50: 270 mg/kg (test substance: Formalin) (source: NITE)

Acute toxicity (Inhalation)
[Data for components of the product]
[NITE-CHRIP]
(Ethylene glycol)
mist: rat LC50: 10.9 mg/L (1-hour) (converted 4-hour equivalent value: 2.7 mg/L) (source: NITE)
(1,4-Dioxane)
vapor: rat LC50: 14250 ppm (4-hour) (source: NITE)
dust/mist: rat : 0 out of 12 animals died at 37000 ppm (133 mg/L) (1-hour), 6 out of 6 animals died at 37000 ppm (133 mg/L) (2-hour), 6 out of 6 animals died at 37000 ppm (133 mg/L) (4-hour) (source: NITE)
(Formaldehyde)
gas: rat LC50: 480 ppm (4-hour) (source: NITE)

Skin corrosion/irritation
[Data for components of the product]
[NITE-CHRIP]
(Ethylene glycol)
Category 2 (source: NITE)
(Formaldehyde)
Category 1 (source: NITE)

Serious eye damage/irritation
[Data for components of the product]
[NITE-CHRIP]
(Ethylene glycol)
Category 2B (source: NITE)
(1,4-Dioxane)
Category 2 (source: NITE)
(Formaldehyde)
Category 2 (source: NITE)

Allergenic and sensitizing effects data is not available.

Mutagenic effects data is not available.

Carcinogenicity
[Data for components of the product]
[IARC]
(1,4-Dioxane)
Group 2B : Possibly carcinogenic to humans
(Formaldehyde)
Group 1 : Carcinogenic to humans
[ACGIH]
(Ethylene glycol)
A4: Not Classifiable as a Human Carcinogen
(1,4-Dioxane)
A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans
(Formaldehyde)
A1: Confirmed Human Carcinogen
[JSOH]
(1,4-Dioxane)
Group 2B: The agents which are probably or possibly carcinogenic to humans
(Formaldehyde)
Group 2A: The agents which are probably or possibly carcinogenic to humans

[NTP]
(1,4-Dioxane)
RAHC : Reasonably Anticipated to be Human Carcinogens
(Formaldehyde)
Known : Known to be Human Carcinogens
[EU]
(1,4-Dioxane)
Category 1B; Substances presumed to have carcinogenic potential for humans
(Formaldehyde)
Category 1B; Substances presumed to have carcinogenic potential for humans

Reproductive toxicity

[Product]
Category 2, Suspected of damaging fertility or the unborn child

[Data for components of the product]
[NITE-CHRIP]
(Diethylene glycol)
Category 2 (source: NITE)

Specific target organ toxicity – single exposure

[Data for components of the product]
[NITE-CHRIP]
(Ethylene glycol)
Category 3 (Respiratory tract irritation), Category 3 (Narcotic effects) (source: NITE)
(1,4-Dioxane)
Category 3 (Respiratory tract irritation), Category 3 (Narcotic effects) (source: NITE)

Specific target organ toxicity – repeated exposure

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

[Data for components of the product]
[NITE-CHRIP]
(Diethylene glycol)
Category 1 (liver, kidneys) (source: NITE)

Aspiration hazard data is not available.

Section 12. Ecological Information

Toxicity

Aquatic toxicity

[Data for components of the product]
Hazardous to the aquatic environment, short-term (acute)
[NITE-CHRIP]
(Diethylene glycol)
Fish (Fathead minnow) 96-hour LC50: 75200 mg/L (source: NITE)
(Ethylene glycol)
Algae (Pseudokirchneriella subcapitata) 72-hour ErC50: > 1000 mg/L (source: NITE)
Crustacea (Daphnia magna) 48-hour EC50: > 1120 mg/L (source: NITE)
Fish (Oryzias latipes) 96-hour LC50: > 100 mg/L (source: NITE)
(1,4-Dioxane)
Fish (Oryzias latipes) 96-hour LC50: > 100 mg/L (source: NITE)
Crustacea (Daphnia magna) 48-hour EC50: > 1000 mg/L (source: NITE)
Algae (Pseudokirchneriella subcapitata) 72-hour ErC50: > 1000 mg/L (source: NITE)

(Formaldehyde)
Algae (Desmodesmus subspicatus) 72-hour ErC50: 4.89 mg a.i./L (a.i.: active ingredient)
(source: NITE)
Hazardous to the aquatic environment, long-term (chronic)
[NITE-CHRIP]
(Ethylene glycol)
Crustacea (Ceriodaphnia dubia) 7-day MATC: 4.2 mg/L (source: NITE)
(Formaldehyde)
Crustacea (Ceriodaphnia dubia) 7-day NOEC: 1.0 mg/L (source: NITE)

Water solubility
(Diethylene glycol)
1000000 mg/L (source: NITE)
(1,4-Dioxane)
not poorly water-soluble (1000000 mg/L) (source: NITE)
(Formaldehyde)
not poorly water-soluble (400000 mg/L) (source: NITE)

Persistence and degradability
[Data for components of the product]
(Ethylene glycol)
Rapidly degradable (Degradation rate: 90% (by BOD)) (source: NITE)
(Formaldehyde)
Rapidly degradable (Degradation rate: 87 - 96% (by BOD)) (source: NITE)

Bioaccumulative potential
[Data for components of the product]
(Diethylene glycol)
log Pow: -1.47 (source: ICSC, 2007)
(Ethylene glycol)
log Pow: -1.36 (source: ICSC, 2018)
(1,4-Dioxane)
log Pow: -0.27 (source: ICSC, 2008)
(Formaldehyde)
log Kow: 0.35 (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

Waste treatment methods

Waste from residues, Contaminated packing
Avoid release to the environment.
Dispose of contents/container as industrial waste. Accordance with local/national regulation.

Section 14. Transport Information

UNRTDG
UN number : Not regulated

IMDG Code (International Maritime Dangerous Goods Regulations)

UN number : Not regulated

IATA (Dangerous Goods Regulations)

UN number : Not regulated

Environmental hazards

Marine pollutants (yes/no) : no

Environmentally hazardous substance/mixture (yes/no) : no

Section 15. Regulatory Information

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

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

Chemicals listed in TSCA Inventory

Formaldehyde; Diethylene glycol; 1,4-Dioxane; Ethylene glycol

Other regulatory information

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

Section 16. Other information

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 (67th Edition) 2026
2024 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2026 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2025
JIS Z 7253 : 2025
Recommendation of occupational exposure limits (2024-2025) (JSOH)
Supplier's data/information

General Disclaimer

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Unauthorized translation or modification is prohibited.
Please provide SDS to customers for selling or transferring.
All chemicals have unknown hazard. Handle the product with care.
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 FY2024).