

SAFETY DATA SHEET

According to JIS Z 7253:2019
Revision date 01-Mar-2024
 Revision Number 1.02

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	Ethylene Oxide-2-Chloroethanol Mixture Standard Solution (each 2mg/mL Dichloromethane Solution)
Product Code	051-09511,057-09513

Supplier	FUJIFILM Wako Pure Chemical Corporation 1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605, Japan Phone: +81-6-6203-3741 Fax: +81-6-6203-2029
Emergency telephone number	+81-6-6203-3741 / +81-3-3270-8571
Recommended uses	For research use only
Restrictions on use	Seek expert judgment when using for purposes other than those recommended.

Section 2: HAZARDS IDENTIFICATION

GHS classification

Classification of the substance or mixture

Acute toxicity - Inhalation (Vapors)	Category 3
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1B
Specific target organ toxicity (single exposure)	Category 1, Category 3
Category 1 central nervous system, respiratory system	
Category 3 Narcotic effects	
Specific target organ toxicity (repeated exposure)	Category 1
Category 1 central nervous system, liver, Male reproductive organ	
Acute aquatic toxicity	Category 3
Chronic aquatic toxicity	Category 3

Pictograms



Signal word

Danger

Hazard statements

- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H331 - Toxic if inhaled
- H340 - May cause genetic defects
- H350 - May cause cancer
- H360 - May damage fertility or the unborn child
- H336 - May cause drowsiness or dizziness

H317 - May cause an allergic skin reaction
 H412 - Harmful to aquatic life with long lasting effects
 H402 - Harmful to aquatic life
 H370 - Causes damage to the following organs: central nervous system, respiratory system
 H372 - Causes damage to the following organs through prolonged or repeated exposure: central nervous system, liver, Male reproductive organ

Precautionary statements-(Prevention)

- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- Use personal protective equipment as required
- Contaminated work clothing should not be allowed out of the workplace
- Wear protective gloves
- Do not breathe dust/fume/gas/mist/vapors/spray
- Wash face, hands and any exposed skin thoroughly after handling
- Do not eat, drink or smoke when using this product
- Use only outdoors or in a well-ventilated area
- Avoid release to the environment

Precautionary statements-(Response)

- IF exposed: Call a POISON CENTER or doctor/physician
- 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
- Take off contaminated clothing and wash before reuse
- IF ON SKIN: Wash with plenty of soap and water
- If skin irritation or rash occurs: Get medical advice/attention
- Call a POISON CENTER or doctor/physician
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Precautionary statements-(Storage)

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

Precautionary statements-(Disposal)

- Dispose of contents/container to an approved waste disposal plant

Others

Other hazards Not available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Single Substance or Mixture Mixture

Chemical Name	Weight-%	Molecular weight	ENCS	ISHL No.	CAS RN
Dichloromethane	<100	84.93	(2)-36	*	75-09-2
Ethylene oxide	0.2	44.05	(2)-218	8-(4)-180	75-21-8
2-Chloroethanol	0.2	80.51	(2)-2002	*	107-07-3

Note on ISHL No.: * in the table means announced chemical substances.

Section 4: FIRST AID MEASURES**Inhalation**

Remove to fresh air. If symptoms persist, call a physician.

Skin contact

Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

Eye contact

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

Ingestion

Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.

Protection of first-aiders

Use personal protective equipment as required.

Section 5: FIRE FIGHTING MEASURES

Suitable extinguishing media

Foam, Extinguishing powder, Carbon dioxide (CO₂), Sand

Unsuitable extinguishing media

No information available

Specific hazards arising from the chemical product

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Special extinguishing method

No information available

Special protective actions for fire-fighters

Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin, or inhaling the gas. Work from windward, and retract the people downwind.

Environmental precautions

To be careful not discharged to the environment without being properly handled waste water contaminated.

Methods and materials for contaminant and methods and materials for cleaning up

Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.

Recoverly, neutralization

No information available

Secondary disaster prevention measures

Clean contaminated objects and areas thoroughly observing environmental regulations.

Section 7: HANDLING AND STORAGE

Handling

Technical measures

Flammable. Avoid contact with high temperature objects, spark, and strong oxidizing agents. To cut with care and wear protective gloves and protective goggles to ampoule time of the opening (Cutting method to check the label). Use with local exhaust ventilation.

Precautions

Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle. In places other than those specified, should not be smoking or eating and drinking. Should not be brought contaminated protective equipment and gloves to rest stops. Deny unnecessary entry of non-emergency personnel to the handling area.

Safety handling precautions

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity)

Storage

Safe storage conditions

Storage conditions

Container protected from light, and store tightly closed in freezer (-20°C). Packed with an inert gas. Store locked up.

Safe packaging material

Ampoule

Incompatible substances Strong oxidizing agents

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls

In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

Exposure limits

Chemical Name	JSOH (Japan)	ISHL (Japan)	ACGIH
Dichloromethane 75-09-2	Ceiling: 100 ppm Ceiling: 347 mg/m ³ TWA: 173 mg/m ³ OEL Skin ISHL/ACL: 50 ppm	ISHL/ACL: 50 ppm	TWA: 50 ppm
Ethylene oxide 75-21-8	TWA: 1 ppm OEL TWA: 1.8 mg/m ³ OEL ISHL/ACL: 1 ppm	ISHL/ACL: 1 ppm	TWA: 1 ppm
2-Chloroethanol 107-07-3	N/A	N/A	Skin Ceiling: 1 ppm

Chemical Name	Concentration standard value set by the Minister of Health, Labor and Welfare (8hr)	Concentration standard value set by the Minister of Health, Labor and Welfare (Short-Term)
2-Chloroethanol 107-07-3	2 ppm	N/A

Personal protective equipment

Respiratory protection gas mask for organic gas (JIS T 8152)
Hand protection chemical protective gloves (JIS T 8116)
Eye protection protective eyeglasses or chemical safety goggles (JIS T 8147)
Skin and body protection Long-sleeved work clothes

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.
 If this product is classified as "Chemical Substances Hazardous to Skin, etc.", use appropriate protective equipment to them.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Data except for the appearance is described as a solvent.

Form

Color	colorless
Turbidity	clear
Appearance	liquid
Odor	characteristic odor
Melting point/freezing point	-97 °C
Boiling point, initial boiling point and boiling range	40 °C
Flammability	no data available
Evaporation rate:	no data available
Flammability (solid, gas):	no data available
Upper/lower flammability or explosive limits	
Upper:	no data available
Lower:	no data available
Flash point	no data available

Auto-ignition temperature:	640 °C
Decomposition temperature:	no data available
pH	no data available
Viscosity (coefficient of viscosity)	no data available
Dynamic viscosity	no data available
Solubilities	Ethanol , Diethyl ether : Very soluble. water : sparingly soluble .
n-Octanol/water partition coefficient:(log Pow)	no data available
Vapour pressure	no data available
Specific Gravity / Relative density	1.320 - 1.330 g/mL
Vapour density	no data available
Particle characteristics	no data available

Section 10: STABILITY AND REACTIVITY

Stability

Reactivity	no data available
Chemical stability	May be altered by light.
Hazardous reactions	None under normal processing
Conditions to avoid	Extremes of temperature and direct sunlight, Heat, flames and sparks, static electricity, spark
Incompatible materials	Strong oxidizing agents
Hazardous decomposition products	Carbon monoxide (CO), Carbon dioxide (CO ₂), Halides

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Dichloromethane	2120 mg/kg (Rat Male)	N/A	18,371 ppm (Rat) 4 h
Ethylene oxide	72 mg/kg (Rat)	N/A	800 ppm (Rat) 4 h
2-Chloroethanol	71 mg/kg (Rat)	67 mg/kg (Rabbit)	32 ppm (Rat) 4 h

Chemical Name	Acute toxicity -oral- source information	Acute toxicity -dermal- source information	Acute toxicity -inhalation gas-source information
Dichloromethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Chemical Name	Acute toxicity -inhalation vapor- source information	Acute toxicity -inhalation dust-source information	Acute toxicity -inhalation mist-source information
Dichloromethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Skin irritation/corrosion

Chemical Name	Skin corrosion/irritation source information
Dichloromethane	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.

Serious eye damage/ irritation

Chemical Name	Serious eye damage/irritation source information
Dichloromethane	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.

Respiratory or skin sensitization

Chemical Name	Respiratory or Skin sensitization source information
Dichloromethane	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.

Reproductive cell mutagenicity

Chemical Name	germ cell mutagenicity source information
Dichloromethane	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.

Carcinogenicity

Chemical Name	Carcinogenicity source information
Dichloromethane	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.

Chemical Name	NTP	IARC	ACGIH	JSOH (Japan)
Dichloromethane 75-09-2	Reasonably Anticipated	Group 2A	A3	Group 2A
Ethylene oxide 75-21-8	Known	Group 1	A2	Group 1

Reproductive toxicity

Chemical Name	Reproductive toxicity source information
Dichloromethane	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.

STOT-single exposure

Chemical Name	STOT -single exposure- source information
Dichloromethane	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.

STOT-repeated exposure

Chemical Name	STOT -repeated exposure- source information
Dichloromethane	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.

Aspiration hazard

Chemical Name	Aspiration Hazard source information
Dichloromethane	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Dichloromethane	N/A	N/A	EC50:Daphnia magna 27 mg/L 48 h
Ethylene oxide	N/A	LC50:Pimephales promelas 73 - 96 mg/L 96 h	LC50:Daphnia magna 137 - 300 mg/L 48 h

2-Chloroethanol	<i>EC50:Desmodesmus subspicatus</i> 2.9 mg/L 72 h	<i>LC50:Lepomis macrochirus</i> 19.2 - 24.1 mg/L 96 h <i>LC50:Oryzias latipes</i> 26.4 - 34.5 mg/L 96 h <i>LC50:Oncorhynchus mykiss</i> 30.8 - 41.2 mg/L 96 h <i>LC50:Pimephales promelas</i> 35 - 40 mg/L 96 h <i>LC50:Pimephales promelas</i> 49 - 84 mg/L 96 h	<i>EC50:Daphnia magna</i> 187 - 275 mg/L 48 h
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Other data

Chemical Name	Short-term (acute) hazardous to the aquatic environment source information	Long-term (chronic) hazardous to the aquatic environment source information
Dichloromethane	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Ethylene oxide	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
2-Chloroethanol	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Persistence and degradability	No information available
Bioaccumulative potential	No information available
Mobility in soil	No information available
Hazard to the ozone layer	No information available

Section 13: DISPOSAL CONSIDERATIONS

Waste from residues

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated container and contaminated packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14: TRANSPORT INFORMATION

ADR/RID

UN number	UN1593
Proper shipping name:	Dichloromethane
UN classification	6.1
Subsidiary hazard class	
Packing group	III
Marine pollutant	Not applicable

IMDG

UN number	UN1593
Proper shipping name:	Dichloromethane
UN classification	6.1
Subsidiary hazard class	
Packing group	III
Marine pollutant (Sea)	Not applicable
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	No information available

IATA

UN number	UN1593
Proper shipping name:	Dichloromethane
UN classification	6.1
Subsidiary hazard class	
Packing group	III

Environmentally Hazardous Substance Not applicable

Section 15: REGULATORY INFORMATION

Japanese regulations

Fire Service Act	Not applicable
Poisonous and Deleterious Substances Control Law	Deleterious Substances 2nd. Grade
Industrial Safety and Health Act	Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57) Notifiable Substances (Law Art.57-2) Group 2 Specified Chemical Substance Mutagens - Existing Chemicals Substances with Health Hazards Prevention Guideline(Carcinogenicity Substance) Working Environment Evaluation Standards, Administrative Control Levels (Law Art.65-2, Para.1)
Industrial Safety and Health Act (2024~)	【2024.4.1~】 Chemical Substances Hazardous to Skin, etc.(Regulations Article 594-2 Paragraph 1)
Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc	Priority Assessment Chemical Substances (Law Article 2, Para.5)
Regulations for the carriage and storage of dangerous goods in ship	Toxic Substances - Poison (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)
Civil Aeronautics Law	Toxic and Infectious Substances (Ordinance Art.194, MITL Notification for Air Transportation of Explosives etc., Attached Table 1)
Marine Pollution Prevention Law	Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Y
Pollutant Release and Transfer Register Law (2023.4.1-)	Specified Class 1 No. Class 1
Specified Class 1-No.	56
Class 1 - No.	186
Water Pollution Control Act	Harmful Substances (Law Art.2, Enforcement Order Art.2, Ordinance Designating Wastewater Standards Art.1)
Export Trade Control Order	Appendix 2 Export Approval Item
Air Pollution Control Law	Priority Chemical Substances
Soil Contamination Control Law	Designated Hazardous Substances

Chemical Name	Poisonous and Deleterious Substances Control Law	Industrial Safety and Health Act Substances (Law Art.57-2)	Pollutant Release and Transfer Register Law (2023.4.1-)
Dichloromethane 75-09-2 (<100)	-	Applicable	Applicable
Ethylene oxide 75-21-8 (0.2)	Applicable	Applicable	Applicable
2-Chloroethanol 107-07-3 (0.2)	Applicable	Applicable	-

Section 16: OTHER INFORMATION

Key literature references and sources for data etc.

NITE: National Institute of Technology and Evaluation (JAPAN)
<http://www.safe.nite.go.jp/japan/db.html>
 IATA dangerous Goods Regulations
 RTECS:Registry of Toxic Effects of Chemical Substances
 Japan Industrial Safety and Health Association GHS Model SDS

Dictionary of Synthetic Organic Chemistry , SSOCJ, Koudansha Scientific Co.Ltd.
Chemical Dictionary, Kyouritsu Publishing Co., Ltd.
etc

Record of SDS revisions

The following contents were revised. Regulatory information.

Disclaimer

This SDS is according to JIS Z 7253: 2019. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GHS Classification is according to JIS Z 7252:2019. *JIS: Japanese Industrial Standards

End of Safety Data Sheet