

Safety Data Sheet



1. Identification of the Substance/Mixture and the Supplier

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Identity of Substance/Mixture : Certified Reference Material NMIJ CRM 4004-a
 1,2-Dichloroethane
 Recommended Use of the Chemical and Restriction on Use : This CRM is intended for use in calibration of analytical instruments, quality control of analytical instruments, and validation of analytical techniques and instruments.
 Do not use this reference material for other purposes than testing/research.
 This CRM is a reference material (specified in the Japanese Industrial Standard (JIS) Q 0030).

2. Hazards Identification

GHS Classification :

Ignitable liquid	: Class 2
Acute toxicity (Oral)	: Class 4
Acute toxicity (Endermatic)	: Class 5
Acute toxicity (Inhalation)	: Class 3
Skin corrosivity/irritation	: Class 2
Severe damage to eye/eye irritation	: Class 2B
Germ-cell mutagenicity	: Category 2
Carcinogenicity	: Class 2
Particular target organ/systemic toxicity (Single exposure)	: Class 1 (Central nervous system) Class 1 (Liver) Class 1 (Kidney) Class 1 (Adrenal gland) Class 3 (Anesthetic action)
Particular target organ/systemic toxicity (Repetitive exposure)	: Class 1 (Nervous system) Class 1 (Liver) Class 1 (Thyroid gland)

	Class 2 (Kidney)
	Aspiration respiratory hazard : Class 1
	Water environment toxicity(Acute) : Class 3
GHS Label element:	
Signal word :	Danger
Hazard and toxicity:	<p>Highly ignitable liquid and vapor</p> <p>Skin irritant</p> <p>Eye irritant</p> <p>Toxic if swallowed</p> <p>May be harmful if in contact with skin</p> <p>Toxic if inhaled</p> <p>May cause hereditary disease</p> <p>Potential carcinogenicity</p> <p>Damages to organs (central nerve system, liver, adrenal gland, thyroid gland)</p> <p>May irritate respiratory organ</p> <p>Damages to organs due to long-term or repeated exposure (nervous system, liver, thyroid gland)</p> <p>May cause damages to organ due to long-term or repeated exposure (Liver)</p> <p>May be lethal if swallowed and spread into respiratory tract</p> <p>Harmful to aquatic organisms</p>
Other hazard and toxicity information	May be severely toxic if the vapor is inhaled
Precautionary statement :	<p>[Preventive measures]</p> <p>Do not handle before reading and understanding the safety precautions fully</p> <p>Handling only in outdoor or in well ventilated area only</p> <p>Avoid discharging to the environment</p> <p>Wash hands well after the handling</p> <p>Avoid inhaling gas/mist/vapor/spray</p> <p>Use protective eyeglasses/mask/gloves. If necessary, use personal protective equipment</p> <p>[Response]</p> <p>If swallowed : If feeling ill, get medical assistance</p> <p style="padding-left: 40px;">Rinse mouth well and drink a lot of water.</p> <p style="padding-left: 40px;">Do not induce vomiting</p> <p>If in eyes : Rinse carefully with plenty of water for few minutes.</p> <p style="padding-left: 40px;">Get medical assistance</p>

- If inhaled : Move to get a fresh air, take a comfortable posture to ease breathing and rest
- If on skin : Rinse with plenty of water using soap. Get medical assistance/ treatment
If exposed or possibility of the exposure : Get medical assistance/treatment
Take off all the contaminated clothes and wash them if reusing the clothes.
Collect the leaked substance/material promptly

[Storage]

Keep in a locked cabinet
Protect from light, in a clean place at the temperature of about -20 °C

[Disposal]

The content or container should be incinerated in an appropriate incinerator, or outsourced to a professional industrial waste disposal contractor licensed by the prefectural governor.

Hazardous and toxic properties not specified in the above are neither the object of the classification nor classifiable.

3. Composition/Information on Ingredients

Substance or mixture	: Single product	:
Chemical name	: 1,2- Dichloroethane	
Other name	: Ethylenedichloride, Ethane dichloride	
Amount	: 99.97 % or over	
Chemical formula or structural formula	: $\text{ClCH}_2\text{CH}_2\text{Cl}$	
Molecular weight	: 98.96	
Reference Number in Gazetted List in Japan	: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (2) - 54 Industrial Safety and Health Act : 2 - (13) - 23	
CAS No.	: 107-06-2	
Hazardous component	: 1,2-Dichloroethane	

4. First-aid Measures

If in eye	: Rinse with plenty of clean water. Get medical assistance.
If on skin	: Rinse with plenty of clean water. Take off the contaminated clothes and shoes, etc. Get medical assistance.
If inhaled	: Move to a fresh air, rest, keep warm. Get medical assistance.
If swallowed	: Wash mouth well with water. Do not induce vomiting. Get medical assistance.
Anticipated acute and delayed symptoms	: Drowsiness, dizziness, nausea

Most important characteristics and symptoms : Not specified

Measures to be taken to protect the person applying emergency first aid : Not specified

5. Fire-fighting Measures

- Extinguishing media : Powder, foam, carbon dioxide, water(spray)
- Specific hazards at the time of fire : Use appropriate protective to avoid inhaling smoke during the extinguishing action
- Specific extinguishing measures : Remove fire sources and extinguish using appropriate extinguishing agent. Transfer the movable container to a safe place promptly. If impossible to transfer, use water spray to cool the periphery.
- Protecting fire-fighting personnel : Extinguishing activities on windward side, avoid inhaling toxic gases (phosgene, chlorine, hydrogen chloride). Use protective equipment such as air-breathing apparatus, etc.

6. Accidental Release Measures

- Personal precautions : Promptly remove fire source from around the substance. Ready for a fire by keeping an appropriate extinguisher at hand.
- Protective equipment and emergency procedure : If released indoor, ventilate well until the treatment is completed.
Use appropriate protective equipment to protect the skin from the airborne droplets and avoid inhaling dust and gas.
- Environmental precaution : To prevent causing environmental impact, do not release the spilled material into rivers, etc. directly. Treat the contaminated waste water appropriately before discharging to the environment.
- Recovery, neutralization : Open flames or other sources of ignition prohibited. Adsorb the spilled liquid to waste cloth or to sand and soil and wiped off completely. Collect everything used to clean up the spillage in an airtight container.
- Measures to prevent secondary accident : Rope-off the leaked area and restrict access to the area to the authorized personnel only. Evacuate the people on the leeward and work on the windward side.

7. Handling and Storage

- Handling Technological counter measures : The floor should be of the material such as concrete, etc. that can prevent from seeping underground.
Open flame or other source of ignition prohibited. Avoid contact with high temperature matter, sparks, strong oxidants, etc.

Local ventilation/ general ventilation	:	Use appropriate protective equipment Use local exhaust ventilation system when handling indoor
Precautions for safe handling	:	Do not treat the container roughly, no dropping, knocking down or dragging. Prevent leakage, spillage or overflow that causes fume to form. Wash hands and face, etc. well and gargle after the handling. Eating, drinking or smoking only at the designated areas. Entering the handling area only by the authorized persons. Use appropriate protective equipment to prevent inhaling, coming in contact with eyes, skin and the clothing.
Storage		
Appropriate condition	:	Use explosion-proof structured electrical equipment in the storage room. Earth (ground) all the equipment. Store in a dark clean place at the temperature of about $-20\text{ }^{\circ}\text{C}$ Do not store near strong oxidizers and fire sources.
Material for safe packing	:	Glass

8. Exposure Controls/Personal Protection

Administrative levels

•Working Environment : 10 ppm

Evaluation Standards

Occupational exposure limit

•ACGIH TLV-TWA : 10 ppm

•Japan Society for : 10 ppm (40 mg/m^3)

Occupational Health

Recommended

Reference Value

•OSHA PEL TWA : air TWA 50 ppm, CL 100 ppm, PK 200 ppm/5min/3Hr

Facility Engineering

•Ventilation, exhaust : Install safety shower, hand/eye washer, and indicate their
location conspicuously.
Local exhaust ventilation system or general ventilation
system

•Safety management,
gas detection : Detector

Storage precaution : -

Protective equipment

Respiratory organ : Chemical cartridge respirator for organic gas, breathing
apparatus

Hand : Protective gloves

Eye : Protective eyeglasses

Skin and body : Protective clothing

Sanitary measures : Masks, etc. used to adsorb the substances, etc. should be
changed periodically or every time of use. Check them closely

because the substance affects rubber, etc. adversely

9. Physical and Chemical Properties

- Appearance, etc. : Liquid
- Color : Clear and colorless
- Odor : Similar to chloroform
- pH : No data
- Melting point : -40 °C
- Boiling point : 83 °C to 84 °C
- Flashing point : 13 °C (Sealed system)
- Explosive range : 6.2 vol % to 16 vol % (In air)
- Vapor pressure : 133 hPa (29.4 °C)
- Relative vapor density (Air=1) : 3.35
- Specific gravity or bulk specific gravity : 1.258 (20 °C)
- Solubility : Poor water-soluble (0.87 g/100 mL water), miscible in alcohol, ether and other organic solvents.
- *n*-Octanol/water partition coefficient (Log Po/w) : No data
- Auto-ignition temperature : No data

10. Stability and Reactivity

- ◇ Stability
 - Stable under normal condition
- ◇ Reactivity
 - Degrades under the influence of heating, combustion, contact with high temperature surface or static electricity and forms hydrogen chloride and phosgene. Reacts violently with aluminum, ammonia, alkali, alkaline amid, alkaline earth metals and oxidizers. Affects many metals if water exists. Affects different kinds of plastics.
- ◇ Conditions to avoid
 - Sunlight, heat, open flames, high temperature, spark, static electricity, other source of ignition.
- ◇ Hazardous decomposition products
 - Carbon monoxide, phosgene, chlorine, hydrogen chloride

11. Toxicological Information

- | | |
|----------------|---|
| Acute toxicity | Inhalation-humans TCLo:4000 ppm/1Hr Flaccid nerve paralysis(without anesthetic), coma |
| | Oral-humans LDLo:286 mg/kg Gastric ulcer, gastric bleeding, nausea, vomiting, fatty liver atrophy |
| | Oral-humans TDLo:892 mg/kg Digestive organ atrophy, diarrhea, nausea, vomiting, jaundice |
| | Oral-humans LDLo:714 mg/kg Disordered consciousness, |

	cardiac damage, cyanosis
	Subcutaneous –rats LD ₀ :99 mg/kg Cardiac damage, digestive organ damage
	Skin-rabbits LD ₅₀ :3890 mg/kg
Skin	Skin irritation-rabbits 625 mg Open system, mild
corrosivity/irritation	
Severe damage to eyes/ eye irritation	Eye irritation-rabbits 63 mg severe
Germ-cell mutagenicity	Mutagen testing using microorganisms : Salmonella 10 µL/plate DNA repair tests : Escherichia coli 10 mg/plate
Carcinogenicity	Regulated under Industrial Safety and Health Act, Article 28, Paragraph 3 “ Substances Designated by Minister of Health, Labor and Welfare” Categorized as 2B by IARC(1999)、B2 by IRIS (2005)、R by NTP (2005)
Reproductive toxicity	Based on the descriptions of NTP (1986) and ATSDR (2005), dose related toxicity in mother animals is observed in the embryo.
Particular target organ/ systemic toxicity (Single exposure)	Adverse effects on humans are described as “crouching, confusion, wobbling,, hyperactivity disorder, tremor disorder, drowsiness、disordered consciousness, coma, bleeding tendency, cyanosis, hepatic necrosis, tubulonecrosis, adrenal necrosis, cardiovascular disorder,” etc. in CERI・NITE Hazard Assessment Report, No.3 (2004).
Particular target organ/ systemic toxicity (Repetitive exposure)	Adverse effects on humans are described as “neurosis, myeloradiculitis, liver disorder, biliary tract disease, autonomic ataxia, thyroid adenoma or hyperthyroidism, asthenia, ”etc. in CERI・NITE Hazard Assessment Reports No.3 (2004).
Aspiration Hazard	Risk Assessment Reports of Ministry of the Environment Volume 2 (2003) describes “May cause pulmonary edema if inhaled. Results in chemical pneumonia if swallowed”.

12. Ecological Information

Degradability, concentration

- No data available

Bioaccumulation

- No data available

Ecotoxicity

- Fish(Bluegill)based on LC50=94 mg/L 96Hr(SIDS, 2004) and others.

13. Disposal Considerations

- Incinerate in an incinerator equipped with after burner and scrubber.

14. Transport Information

UN Number : 1184

UN Classification	: Class 3 (Ignitable liquid)
Material name	: 1, 2-Dichloroethane
Container grade	: PG II
ICAO/IATA	: Class 3 Grade II
Marine pollutant	: Applicable
Precautions	: Transfer with caution by avoiding direct sunlight and fire source at the temperature about -20 °C. Protect from leakage or spill due to fall or drop.

15. Regulatory Information

◇Fire Service Act

- Hazardous material Category 4 No 1 Petroleum (water insoluble) Hazard class 2

◇Industrial Safety and Health Act (Law)

- Article 57 (Enforcement Order: Article 18) Hazardous substance whose name, etc. must be labeled.
- Article 57, 2 of the Law (Article 18, 2 of the Order) , Toxic substances of which the names etc. are subject to the notification No. 240
- Ordinance on the Prevention of Organic Solvent Poisoning, Class 1

◇Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.

- Type II Monitoring Chemical Substances

◇Ship Safety Act

- Ignitable liquid

◇Law Relating to the Prevention of Marine Pollution and Maritime Disaster

- Enforcement Order Appended Table No. 1 Toxic liquid substances Category Y substance

◇Air Pollution Control Law

- Hazardous air pollutant (Substances of priority concern)

◇Water Pollution Control Act

- Article 2, Paragraph 2 (Harmful substance)

◇Soil Contamination Countermeasures Act

- Designated Hazardous Substances

◇Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management

- Designated as Class 1 specified chemical substances No.116

◇Export Trade Control Order

- Appended Table No 2 No.35-3-1Export licensed products

- ◎ **This SDS is originally prepared for the use of the material in Japan, thus the stated laws and regulations are stipulated and carried out in Japan. The use of the material in other countries should be referred to and by application of the relevant laws and regulations of the country in which the material will be used.**

16. Other Information

Others

The information in this document is not intended to be exhaustive and is based on

currently available information and data. The measures given in this document are applicable only to normal handling conditions. When handling this reference material under special conditions etc., it is recommended to take safety measures appropriate to each specific application and context of use. This document is intended to provide information and not intended to guarantee anything in handling this reference material.
