

Updated on: April 2022

Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name:	Ethylene Dichloride (EDC)
Uses:	Use as chemical intermediate for the production of vinyl chloride
Supplier:	Sahara & Ma'aden petrochemicals company (SAMAPCO) PO Box 11166, Jubail Industrial City, Kingdom of Saudi Arabia, 31961
Emergency Telephone Number:	00966-359 9985 (24/7 hours)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Ethylene Dichloride Dichloroethane

Hazardous Components

Chemical Name	CAS	EINECS	Symbol(s)	R-phrases(s)	Conc.
Ethylene Dichloride	107-06-2	03-458-1	F, T	R45; R11; R22; R36/37/38	>= 99.98 %

Additional Information: Refer to chapter 16 for full text of EC R-phrases.

3. HAZARDS IDENTIFICATION

Health Hazards

Harmful if swallowed. Harmful if swallowed. Irritating to eyes, respiratory system and skin. Irritating to eyes, respiratory system and skin. Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s): Kidney. Liver. May cause cancer. May cause cancer. Possible risk of irreversible (genetic) effects.

Signs and Symptoms

Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Other signs and symptoms of central nervous system (CNS) depression may include headache, nausea, and lack of coordination. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. Breathing of high vapor concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue, bleeding or easy bruising and sometimes pain and swelling in the upper right abdomen. Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back, or general edema (swelling from fluid retention).

Aggravated Medical Condition

Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Skin. Eyes. Liver. Kidney.

Safety Hazards

Highly flammable. May form flammable/explosive vapor-air mixture.

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Environmental Hazards

Not classified as dangerous under EC criteria. Not classified as dangerous under EC criteria.

4. FIRST AID MEASURES

General Information

Keep victim calm. Obtain medical treatment immediately.

Inhalation

DO NOT DELAY. Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

Skin Contact

Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact

Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

Ingestion

If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Give nothing by mouth.

Advice to Physician

Simultaneous exposure to EDC and alcohol can increase the toxic hazards of EDC.

5. FIRE FIGHTING MEASURES

Extinguishing Media

Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media

Do not use water in a jet.

Protective Equipment for Firefighters

Wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations. Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal.

Protective measures

Isolate hazard area and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low areas. Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and firefighting water) to avoid environmental contamination. Prevent from spreading or entering drains,

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ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapor or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Ventilate contaminated area thoroughly.

Clean Up Methods

For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Additional Advice

Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. The vapor is heavier than air, spreads along the ground and distant ignition is possible. Vapor may form an explosive mixture with air.

7. HANDLING AND STORAGE

Handling

Avoid contact with skin, eyes, and clothing. Avoid inhaling vapor and/or mists. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Handling Temperature: Ambient.

Storage

Storage Temperature: Ambient. Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat. Vapors from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapor treatment system.

Product Transfer

Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge.

Recommended Materials

For lines and fittings, use stainless steel. For containers or container linings, use stainless steel. Carbon steel

Unsuitable Materials

Natural, butyl, neoprene or nitrile rubbers. PVC.

Additional Information

Ensure that all local regulations regarding handling and storage facilities are followed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Ethylene Dichloride	ACGIH	TWA	10 ppm		

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	KOR OEL	TWA	10 ppm	40 mg/m ³	
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Additional Information

Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapor through the eyes or mucous membranes.

Material	Source	Hazard Designation
Ethylene Dichloride	ACGIH	Not classifiable as a human carcinogen.

Exposure Controls

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated. The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Exhaust emission systems should be designed in accordance with local conditions; the air should always be moved away from the source of vapor generation and the person working at this point. Eye washes and showers for emergency use. Items that cannot be decontaminated should be destroyed (see Chapter 13).

Personal Protective Equipment

Check with respiratory protective equipment suppliers. Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Select a filter suitable for combined particulate/organic gases and vapors [boiling point >65 °C (149 °F)] meeting EN141 (AS/NZS:1716). Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where respiratory protective equipment is required, use a full-face mask. Select a filter suitable for combined particulate/organic gases and vapors [boiling point >65 °C (149 °F)].

Hand Protection

Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS:2161) made from the following materials may provide suitable chemical protection: Longer term protection: Viton. Incidental contact/Splash protection: Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, extensity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non- perfumed moisturizer is recommended.

Eye Protection: Monogoggles (EN166)

Protective Clothing

Where risk of splashing or in spillage clean up, use chemical resistant one-piece overall with integral hood and chemical resistant gloves. Otherwise use chemical resistant apron and gauntlets.

Environmental Exposure Controls

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Adequate ventilation to control airborne concentrations. Exhaust emission systems should be designed in accordance with local conditions; the air should always be moved away from the source of vapor generation and the person working at this point.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Colorless Liquid.
Odor	:	chloroform-like
Odor threshold	:	40 ppm
Boiling point	:	84 °C / 183 °F
Melting / freezing point	:	-35 °C / -31 °F
Flash point	:	13 °C / 55 °F
Explosion / Flammability	:	>= 6.2 %(V) limits in air 16 %(V)
Auto-ignition temperature	:	413 °C / 775 °F
Vapor pressure	:	81.3 hPa at 20 °C / 68 °F
Density	:	1.253 g/cm ³ at 20 °C / 68 °F
Water solubility	:	8.5 g/l at 20 °C / 68 °F
n-octanol/water partition	:	1.45 at 20 °C / 68 °F coefficient (log Pow)
Dynamic viscosity	:	0.84 mPa.s at 20 °C / 68 °F
Vapor density (air=1)	:	3.4 at 20 °C / 68 °F
Surface tension	:	24.15 mN/m at 20 °C / 68 °F
Molecular weight	:	98.96 g/mol

10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions of use. Darkens on exposure to air or light.

Conditions to Avoid

Avoid heat, sparks, open flames and other ignition sources. Exposure to air or moisture over prolonged periods. Exposure to sunlight.

Materials to Avoid

Aluminum. Nitric acid. Oxidizing agents. Bases.

Hazardous Decomposition Products

Emits toxic fumes of phosgene, hydrogen chloride, acetylene and vinyl chloride when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	:	Information given is based on product testing.
Acute Oral Toxicity	:	Moderately toxic: LD50 >200 - 2000 mg/kg , Rat
Acute Dermal Toxicity	:	Low toxicity: LD50 >2000 mg/kg , Rabbit
Acute Inhalation Toxicity	:	Low toxicity: LC50 >5 mg/l / 10 hours, Rat
Skin Irritation	:	Irritating to skin.
Eye Irritation	:	Irritating to eyes.
Respiratory Irritation	:	Inhalation of vapors or mists may cause irritation to the respiratory system.
Sensitization	:	Not expected to be a skin sensitizer.
Repeated Dose Toxicity	:	Kidney: can cause kidney damage. Liver: can cause liver damage.

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Mutagenicity	:	Mutagenic; positive in in-vivo and in-vitro assays.
Carcinogenicity	:	Causes cancer in laboratory animals.
Reproductive and Developmental Toxicity	:	Not expected to be a developmental toxicant. Not expected to impair fertility.

12. ECOLOGICAL INFORMATION

Acute Toxicity

Fish: Harmful: $10 < LC/EC/IC50 \leq 100$ mg/l

Aquatic Invertebrates: Low toxicity: $LC/EC/IC50 > 100$ mg/l

Algae: Low toxicity: $LC/EC/IC50 > 100$ mg/l

Microorganisms: Low acute toxicity, $LC/EC/IC50 > 100$ mg/l

Mobility: If product enters soil, it will be mobile and may contaminate groundwater. Evaporates within a day from water or soil surfaces.

Persistence/degradability: Inherently biodegradable. Not susceptible to hydrolysis.

Bioaccumulation: Does not bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

Material Disposal

Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses. Waste product should not be allowed to contaminate soil or water.

Container Disposal: Data not available.

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

14. TRANSPORT INFORMATION IMDG

Identification number UN 1184

Proper shipping name ETHYLENE DICHLORIDE Class / Division 3

Subsidiary class/Division 6.1 Packing group II

Marine pollutant: No

IATA (Country variations may apply)

UN No.: 1184

Proper shipping name: Ethylene dichloride Class / Division: 3

Subsidiary class/Division: 6.1 Packing group: II

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

EC Symbols	:	F Highly flammable. T Toxic.
EC Risk Phrases	:	R45 May cause cancer.

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EC Safety Phrases	:	R11 Highly flammable. R22 Harmful if swallowed. R36/37/38 Irritating to eyes, respiratory system and skin. S53 Avoid exposure - obtain special instructions before use. S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
DSL	:	Listed.
INV (CN)	:	Listed.
ENCS (JP)	:	Listed. (2)-54
ISHL (JP)	:	Listed. 2-(13)-23
TSCA	:	Listed.
EINECS	:	Listed. 203-458-1
KECI (KR)	:	Listed. KE-10121
KECI (KR)	:	Listed. 2001-1- 518
PICCS (PH)	:	Listed.
NZIOC	:	Listed.

Toxic Chemicals (TCCL Article 10)

Chemical Name	CAS	Classification:	Reference:	Threshold limits:
Ethylene Dichloride	107-06-2	Toxic	2001-1-518	>= 0.1 %

Toxic Release Inventory	(TRI) Chemicals	(TCCL Article 14)
Ethylene Dichloride	(107-06-2)	Threshold limits: 0.1 % wt Reportable threshold: 10 ton

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16. OTHER INFORMATION

R-phrases(s)

- R11** Highly flammable.
R22 Harmful if swallowed.
R36/37/38 Irritating to eyes, respiratory system and skin.
R45 May cause cancer.

Uses and Restrictions: For industrial use only.

MSDS Distribution

The information in this document should be made available to all who may handle the product

Disclaimer

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.