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MATERIAL SAFETY DATA SHEET (MSDS)

1,4-DICHLOROBUTANE (FOR SYNTHESIS)

1 - Chemical Product

Product Name: 1 4-Dichlorobutane
Synonym: None

Cas no: 110-56-5

Product Coad: SS0115300500

Molecular Formula: C₄H₈Cl₂
Molecular Weight: 127.01

2 - COMPOSITION, INFORMATION ON INGREDIENTS

CAS#	Chemical Name	content	EINECS#
110-56-5	1,4-Dichlorobutane	99	203-778-1

3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Flammable. Flammable liquid. The toxicological properties of this material have not been fully investigated.

Potential Health Effects

Eye: May cause eye irritation and possible burns.

Skin: May cause skin irritation and possible burns.

Ingestion: May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.

Inhalation: Causes respiratory tract irritation. May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated. Vapors may cause dizziness or suffocation.

Chronic: No information found.

4 - FIRST AID MEASURES

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water.

Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

5 - FIRE FIGHTING MEASURES

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Vapors may form an explosive mixture with air. Containers may explode when heated.

Extinguishing Media: Use water spray to cool fire-exposed containers. Do NOT use straight streams of water. For small fires, use dry chemical, carbon dioxide, water spray or regular foam. Cool containers with flooding quantities of water until well after fire is out. For large fires, use water spray, fog or regular foam.

6 - ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. A vapor suppressing foam may be used to reduce vapors. Water spray may reduce vapor but may not prevent ignition in closed spaces.

7 - HANDLING and STORAGE

Handling: Wash thoroughly after handling. Use with adequate ventilation.

Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize,

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cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Exposure Limits CAS# 110-56-5: Personal Protective Equipment Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Color: clear, colorless

Odor: Not available.

pH: Not available.

Vapor Pressure: 5 hPa @ 20 C

Viscosity: 1.46 mPas 20 deg C

Boiling Point: 154 deg C

Freezing/Melting Point: -37 deg C

Autoignition Temperature: 220 deg C (428.00 deg F)

Flash Point: 126 deg F (52.22 deg C)

Explosion Limits, lower: 1.5 vol %

Explosion Limits, upper: 4.0 vol %

Decomposition Temperature: 120 deg C

Solubility in water: Insoluble.

Specific Gravity/Density: 1.1600g/cm3

Molecular Formula: C4H8Cl2

Molecular Weight: 127.01

10 - STABILITY AND REACTIVITY

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, ignition sources, excess heat, temperatures above 40C.

Incompatibilities with Other Materials: Oxidizing agents, alkalis.

Hazardous Decomposition Products: Hydrogen chloride, carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

11 - TOXICOLOGICAL INFORMATION

RTECS#:

CAS# 110-56-5 unlisted.

LD50/LC50:

Not available.

Carcinogenicity:

1,4-Dichlorobutane - Not listed by ACGIH, IARC, or NTP.

12 - ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Rainbow trout: LC50 = 4.14 mg/L; 96 Hr.; Unspecified Fish: Fathead Minnow: LC50 = 5.10 mg/L; 96 Hr.; Unspecified Water flea Daphnia: LC50 = 3.87 mg/L; 48 Hr.; Unspecified

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Dispose of in a manner consistent with federal, state, and local regulations.

14 - TRANSPORT INFORMATION

IATA
Shipping Name: FLAMMABLE LIQUID, N.O.S.*
Hazard Class: 3
UN Number: 1993
Packing Group: III
IMO
Shipping Name: FLAMMABLE LIQUID, N.O.S.
Hazard Class: 3.3
UN Number: 1993
Packing Group: III
RID/ADR
Shipping Name: FLAMMABLE LIQUID, N.O.S.
Hazard Class: 3
UN Number: 1993
Packing group: III

15 - REGULATORY INFORMATION

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: F
Risk Phrases:
R 10 Flammable.
Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
WGK (Water Danger/Protection)
CAS# 110-56-5: 2
Canada
CAS# 110-56-5 is listed on Canada's NDSL List.
CAS# 110-56-5 is not listed on Canada's Ingredient Disclosure List.
US FEDERAL
TSCA
CAS# 110-56-5 is listed on the TSCA inventory.

16. Other Information

Product Use: Laboratory Reagent.

In accordance with REACH Regulation (CE) N° 1907/2006 and with CLP Regulation (CE) N° 1272/2008

DISCLAIMER:

- **SUVCHEM** Products are to be used as Lab Chemicals for R&D only. Not for drug, medicinal, household or other uses.
- **SUVCHEM** shall not be responsible for any damage resulting from handling or from contact with the above product.
- **SUVCHEM** provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.

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