2,3-Dichloro-1-propanol

sc-230810

Material Safety Data Sheet

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
2,3-Dichloro-1-propanol

STATEMENT OF HAZARDOUS NATURE

NFPA

SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800

EMERGENCY
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C3-H6-Cl2-O, "2, 3-dichloropropanol" , "1-propanol, 2, 3-dichloro-" , "2, 3-dichloropropyl alcohol" , "n-2, 3-dichloropropanol" , "1, 2-dichloro-3-propanol" , "alpha, beta-dichlorohydrin" , "beta, gamma-dichloro propyl alcohol" , "glycerol alpha, beta-dichlorohydrin" , "glycerol 1, 2-dichlorohydrin" , "asym-glycerol dichlorohydrin" , "allyl alcohol dichloride" , DCIP, DCH

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
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<tbody>
<tr>
<td>Flammability:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Toxicity:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Body Contact:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Reactivity:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Chronic:</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

CANADIAN WHMIS SYMBOLS

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4
EMERGENCY OVERVIEW

RISK
Irritating to eyes.
Toxic in contact with skin and if swallowed.
Inhalation may produce serious health damage*.
Limited evidence of a carcinogenic effect*.
Exposure may produce irreversible effects*.
* (limited evidence).

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
- Accidental ingestion of the material may be seriously damaging to the health of the individual; animal experiments indicate that ingestion of less than 40 gram may be fatal.
- Limited evidence exists that this substance may cause irreversible mutations (though not lethal) even following a single exposure.

EYE
- There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain.

SKIN
- Skin contact with the material may produce toxic effects; systemic effects may result following absorption.
- The material is not thought to be a skin irritant (as classified by EC Directives using animal models). Temporary discomfort, however, may result from prolonged dermal exposures.
- Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
- Open cuts, abraded or irritated skin should not be exposed to this material.
- Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED
- The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless, inhalation of vapours, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
- Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may produce serious damage to the health of the individual.
- Inhalation hazard is increased at higher temperatures.

CHRONIC HEALTH EFFECTS
- There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment. Based on laboratory and animal testing, exposure to the material may result in irreversible effects and mutations in humans. The substance, in a manner similar to its analogue epichlorohydrin, may cause body-weight losses, kidney alterations and hypotension following occupational exposures.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS RN</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3-dichloro-1-propanol</td>
<td>616-23-9</td>
<td>&gt;98</td>
</tr>
</tbody>
</table>

Section 4 - FIRST AID MEASURES

SWALLOWED
- IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
- For advice, contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.

EYE
If this product comes in contact with the eyes:
- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.

**SKIN**
If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

**INHALED**
- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.

**NOTES TO PHYSICIAN**
- Treat symptomatically.

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### BASIC TREATMENT
- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 L/min.
- Monitor and treat, where necessary, for pulmonary oedema.

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### Section 5 - FIRE FIGHTING MEASURES

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<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapour Pressure (mmHG)</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not available</td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>1.3607</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not available</td>
</tr>
</tbody>
</table>

**EXTINGUISHING MEDIA**
- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).

**FIRE FIGHTING**
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding area.
- When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 800 metres in all directions.

**GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS**
- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).
- Combustion products include: carbon dioxide (CO2), hydrogen chloride, phosgene, other pyrolysis products typical of burning organic material.
- May emit poisonous fumes.

**FIRE INCOMPATIBILITY**
- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

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### Section 6 - ACCIDENTAL RELEASE MEASURES

**MINOR SPILLS**
- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.

**MAJOR SPILLS**
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
**Section 7 - HANDLING AND STORAGE**

**PROCEDURE FOR HANDLING**
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.

**RECOMMENDED STORAGE METHODS**
- Lined metal can, lined metal pail/ can.
- Plastic pail.
- Polyliner drum.
- Packing as recommended by manufacturer.

*For low viscosity materials*
- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

< All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.

**STORAGE REQUIREMENTS**
- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.

**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**EXPOSURE CONTROLS**
The following materials had no OELs on our records
- 2,3-dichloro-1-propanol: CAS:616-23-9

**PERSONAL PROTECTION**

**RESPIRATOR**

**EYE**
- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]

**HANDS/FEET**
- Wear chemical protective gloves, eg. PVC.
- Wear safety footwear or safety gumboots, eg. Rubber

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:
- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

**OTHER**
- Overalls.
- Eyewash unit.
- Barrier cream.
- Skin cleansing cream.
ENGINEERING CONTROLS

- Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
- The basic types of engineering controls are:
  - Process controls which involve changing the way a job activity or process is done to reduce the risk.
  - Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Liquid.
Mixes with water.
Toxic or noxious vapours/gas.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>State</td>
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<td>Molecular Weight</td>
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<td>Flash Point (°F)</td>
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<td>Decomposition Temp (°F)</td>
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<td>Autoignition Temp (°F)</td>
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<td>Lower Explosive Limit (%)</td>
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<tr>
<td>Volatile Component (%vol)</td>
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<td>Viscosity</td>
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<td>Solubility in water (g/L)</td>
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<td>pH (1% solution)</td>
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<tr>
<td>pH (as supplied)</td>
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<tr>
<td>Vapour Pressure (mmHG)</td>
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<tr>
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<tr>
<td>Relative Vapour Density (air=1)</td>
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<tr>
<td>Evaporation Rate</td>
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</table>

APPEARANCE

Viscous liquid with ethereal odour; mixes with water, alcohol, benzene.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

STORAGE INCOMPATIBILITY

- Avoid strong acids, bases.
- Avoid reaction with oxidising agents

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

2,3-dichloro-1-propanol

TOXICITY AND IRRITATION

The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.

Section 12 - ECOLOGICAL INFORMATION

This material and its container must be disposed of as hazardous waste.

Ecotoxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
<th>Bioaccumulation</th>
<th>Mobility</th>
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<tbody>
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<td>2,3-dichloro-1-propanol</td>
<td>HIGH</td>
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<td>LOW</td>
<td>HIGH</td>
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</tbody>
</table>

GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles
Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions
All waste must be handled in accordance with local, state and federal regulations.
Legislation addressing waste disposal requirements may differ by country, state and/or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:

- **Reduction**
- **Reuse**
- **Recycling**
- **Disposal (if all else fails)**

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

- **DO NOT** allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

**DOT:**

<table>
<thead>
<tr>
<th>Symbols:</th>
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<tr>
<td>Hazard class or Division:</td>
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Identification Numbers:

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<th>UN2810</th>
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<tbody>
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Label Codes:

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<th>Special provisions:</th>
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<tbody>
<tr>
<td>IB2, T11, TP2, TP13, TP27</td>
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</table>

Packaging:

<table>
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<tr>
<th>153</th>
<th>Packaging: Non-bulk:</th>
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<tbody>
<tr>
<td>202</td>
<td></td>
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</table>

Packaging: Exceptions:

<table>
<thead>
<tr>
<th>153</th>
<th>Quantity limitations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger aircraft/rail:</td>
<td></td>
</tr>
<tr>
<td>5 L</td>
<td></td>
</tr>
</tbody>
</table>

Quantity Limitations: Cargo aircraft only:

<table>
<thead>
<tr>
<th>60 L</th>
<th>Vessel stowage: Location:</th>
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</thead>
<tbody>
<tr>
<td>B</td>
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</table>

Vessel stowage: Other:

| 40 |

Hazardous materials descriptions and proper shipping names:

Toxic, liquids, organic, n.o.s.

**Air Transport IATA:**
Section 15 - REGULATORY INFORMATION

2,3-dichloro-1-propanol (CAS: 616-23-9) is found on the following regulatory lists;
*Canada Domestic Substances List (DSL),"Canada List of Prohibited and Restricted Cosmetic Ingredients (The Cosmetic Ingredient 
VIII to 40 CFR 261","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory","US Toxic Substances Control Act (TSCA) - 
Premanufacture Notice (PMN) Chemicals","US TSCA Section 5(a)(2) - Significant New Use Rules (SNURs)","US TSCA Section 8 (d) - 
Health and Safety Data Reporting","US USDA National Organic Program - Synthetic substances allowed for use in organic crop production"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE
■ Inhalation may produce serious health damage*.
■ Limited evidence of a carcinogenic effect*.
■ Exposure may produce irreversible effects*.
* (limited evidence).

Denmark Advisory list for selfclassification of dangerous substances
<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS</th>
<th>Suggested codes</th>
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</thead>
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<tr>
<td>2, 3- dichloro- 1- propanol</td>
<td>616- 23- 9</td>
<td>Carc3; R40 T;</td>
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<tr>
<td></td>
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<td>R25 Xi; R38</td>
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Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

■ For detailed advice on Personal Protective Equipment, refer to the following U.S. Regulations and Standards:
  OSHA Standards - 29 CFR:
  1910.132 - Personal Protective Equipment - General requirements
  1910.133 - Eye and face protection
  1910.134 - Respiratory Protection
  1910.136 - Occupational foot protection
1910.138 - Hand Protection
Eye and face protection - ANSI Z87.1
Foot protection - ANSI Z41
Respirators must be NIOSH approved.

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