Section 1 - Product and Company Information

Product Name 1-CHLORO-2-METHYLPROPENE, 98%
Product Number 123358
Brand ALDRICH

Company Sigma-Aldrich Canada, Ltd
Address 2149 Winston Park Drive
          Oakville ON L6H 6J8 CA
Technical Phone: 9058299500
Fax: 9058299292
Emergency Phone: 800-424-9300

Section 2 - Composition/Information on Ingredient

Substance Name 1-CHLORO-2-METHYLPROPENE
CAS # 513-37-1
SARA 313 No

Formula C4H7Cl
Synonyms alpha-Chloroisobutylene * 1-Chloroisobutylene *
           1-Chloro-2-methylpropene (IUPAC) *
           1-Chloro-2-methyl-1-propene *
           Dimethylvinylchloride * beta, beta-Dimethylvinyl
           chloride * 2,2-Dimethylvinyl chloride * Isocrotyl
           chloride * 2-Methyl-1-propenyl chloride *
           NCI-C54819 * 1-Propene, 1-chloro-2-methyl-
RTECS Number: UC8045000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Flammable (USA) Highly Flammable (EU). Toxic.
May cause cancer. Toxic by inhalation, in contact with skin and if
swallowed. Irritating to eyes, respiratory system and skin.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE
If swallowed, wash out mouth with water provided person is
conscious. Call a physician.

INHALATION EXPOSURE
If inhaled, remove to fresh air. If not breathing give
artificial respiration. If breathing is difficult, give oxygen.

Section 5 - Fire Fighting Measures

EXPLOSION HAZARDS
Vapor may travel considerable distance to source of ignition and
flash back. Container explosion may occur under fire conditions. Forms explosive mixtures in air.

FLASH POINT
30 °F   - 1.0 °C   Method: closed cup

AUTOIGNITION TEMP
N/A

FLAMMABILITY
N/A

EXTINGUISHING MEDIA
Suitable: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

FIREFIGHTING
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Extremely flammable. Vapor may travel considerable distance to source of ignition and flash back.
Emits toxic fumes under fire conditions.
Specific Method(s) of Fire Fighting: Use water spray to cool fire-exposed containers.

EXPOSURE HAZARD(S)

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
Cover with an activated carbon adsorbent, take up and place in closed containers. Transport outdoors. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING
User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE
Suitable: Keep tightly closed. Keep away from heat, sparks, and open flame. Store in a cool dry place.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS
Use only in a chemical fume hood. Safety shower and eye bath.
PERSONAL PROTECTIVE EQUIPMENT
Other: Wear appropriate government approved respirator, chemical-resistant gloves, safety goggles, other protective clothing.

GENERAL HYGIENE MEASURES
Wash thoroughly after handling. Wash contaminated clothing before reuse.

Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Color: Very faintly brown-yellow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Form: Clear liquid</td>
<td></td>
</tr>
<tr>
<td>Molecular Weight</td>
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<tr>
<td>pH</td>
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<td>BP/BP Range</td>
<td>67.0 - 69.0 °C</td>
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<tr>
<td>MP/MP Range</td>
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<td>Freezing Point</td>
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<tr>
<td>Vapor Pressure</td>
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<tr>
<td>Vapor Density</td>
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<td>Saturated Vapor Conc.</td>
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<td>SG/Density</td>
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<td>Bulk Density</td>
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<tr>
<td>Odor Threshold</td>
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<td>Volatile%</td>
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<td>VOC Content</td>
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<td>Solvent Content</td>
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<td>Evaporation Rate</td>
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<td>Viscosity</td>
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<td>Decomposition Temp.</td>
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<td>Flash Point</td>
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<td>Explosion Limits</td>
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<td>Autoignition Temp</td>
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<td>Miscellaneous Data</td>
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<tr>
<td>Solubility</td>
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</tbody>
</table>

N/A = not available

Section 10 - Stability and Reactivity

STABILITY
Materials to Avoid: Strong oxidizing agents, Strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Hydrogen chloride gas.

Section 11 - Toxicological Information

ROUTE OF EXPOSURE
Skin Contact: Causes skin irritation.
Multiple Routes: Harmful if swallowed, inhaled, or absorbed through skin. Vapor or mist is irritating to the eyes, mucous
membranes, and upper respiratory tract.

SIGNS AND SYMPTOMS OF EXPOSURE
Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

TOXICITY DATA

Oral
Rat
4465 mg/kg
LD50

Inhalation
Rat
400 mg/m3
LC50

Oral
Mouse
3160 mg/kg
LD50

Inhalation
Mouse
181,000 mg/m3
LC50

CHRONIC EXPOSURE - CARCINOGEN
Result: This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Species: Rat
Route of Application: Oral
Dose: 51500 MG/KG
Exposure Time: 2Y
Frequency: I

Species: Mouse
Route of Application: Oral
Dose: 51 GM/KG
Exposure Time: 2Y
Frequency: I

Species: Mouse
Route of Application: Oral
Dose: 102 GM/KG
Exposure Time: 2Y
Frequency: I
Result: Tumorigenic:Neoplastic by RTECS criteria. Skin and Appendages: Other: Tumors.

IARC CARCINOGEN LIST
Rating: Group 2B Group 2B

Rating: Group 2B

NTP CARCINOGEN LIST
Rating: Clear evidence.
Species: Mouse/rat
Route: Gavage

CHRONIC EXPOSURE - MUTAGEN

Species: Mouse
Dose: 400 UG/L
Cell Type: lymphocyte
Mutation test: Mutation in mammalian somatic cells.

Species: Hamster
Dose: 500 MG/L
Cell Type: ovary
Mutation test: Sister chromatid exchange

Section 12 - Ecological Information
No data available.

Section 13 - Disposal Considerations
APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: Chlorobutanes
UN#: 1127
Class: 3
Packing Group: Packing Group II
Hazard Label: Flammable liquid
PIH: Not PIH

IATA
Proper Shipping Name: Flammable liquid, n.o.s.
IATA UN Number: 1993
Hazard Class: 3
Packing Group: II

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION
Symbol of Danger: F-T
Indication of Danger: Highly Flammable. Toxic.
Risk Statements: May cause cancer. Highly flammable. Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin.

Safety Statements: Avoid exposure - obtain special instructions before use. Keep away from sources of ignition - no smoking. Take off immediately all contaminated clothing. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US CLASSIFICATION AND LABEL TEXT
Risk Statements: May cause cancer. Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin.
Safety Statements: Avoid exposure - obtain special instructions before use. Keep away from sources of ignition - no smoking. Take off immediately all contaminated clothing. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No

UNITED STATES - STATE REGULATORY INFORMATION
CALIFORNIA PROP - 65
California Prop - 65: This product is or contains chemical(s) known to the state of California to cause cancer.

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: No
NDSL: No

Section 16 - Other Information

DISCLAIMER
For R&D use only. Not for drug, household or other uses.

WARRANTY
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2009 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.