Material Safety Data Sheet

Section 1 - Product and Company Information

Product Name: Chloroform-d 99.9% atom % D
Product Number: 225789
Brand: Aldrich Chemical
Company: Sigma-Aldrich
Address: 3050 Spruce Street, SAINT LOUIS, MO 63103 US
Technical Phone: 800-352-5832
Fax: 800-325-5052
Emergency Phone: 314-776-0000

Section 2 - Composition/Information on Ingredient

Substance Name: CHLOROFORM-D, * ATOMIC D
CAS #: 905-49-6
SARA 313: Yes
EC No: 212-742-4
Annex I Index Number: 602-005-00-4

Formula: CCl3O
Synonyms: CC13O

Section 3 - Hazards Identification

Emergency Overview
Harmful:
Harmful if swallowed. Limited evidence of a carcinogenic effect. Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
HMIS Rating
Health: 2
Flammability: 0
Reactivity: 1
NFPA Rating
Health: 2
Flammability: 0
Reactivity: 1

Additional chronic hazards present.
For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Eye Exposure
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Information for Physician
Contamination of the eyes should be treated by immediate and prolonged irrigation with copious amounts of water.

Section 5 - Fire Fighting Measures

Autoignition Temp: N/A
Extinguishing Media
Suitable: Noncombustible. Use extinguishing media appropriate to surrounding fire conditions.

Firefighting
Protective Equipment
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s)
Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedures to be Followed in Case of Leak or Spill
Evacuate area.

Procedure(s) of Personal Precaution(s)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.

Methods for Cleaning Up
Absorb on sand or vermiculite and place in closed containers for disposal. 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, or clothing. Avoid prolonged or repeated exposure.

Storage
Suitable
Keep tightly closed.

Special Requirements
Store under inert gas. Hygroscopic.

Section 8 - Exposure Controls / PPE

Engineering Controls
Use only in a chemical fume hood. Safety shower and eye bath.

Personal Protective Equipment
Respiratory
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate, use a half-face respirator with multi-purpose combination (US) or type ABEK (EU) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand
Compatible chemical-resistant gloves.

Aldrich Chemical - 225789
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Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
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<tbody>
<tr>
<td>Molecular Weight</td>
<td>120.36 AMU</td>
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<tr>
<td>pH</td>
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<tr>
<td>DP/VP Range</td>
<td>60.3 °C</td>
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<tr>
<td>MP/MP Range</td>
<td>-64 °C</td>
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<tr>
<td>Freezing Point</td>
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<tr>
<td>Vapour Pressure</td>
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<td>Vapour Density</td>
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<td>Saturated Vapour Conc.</td>
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<tr>
<td>Solubility</td>
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<tr>
<td>Bulk Density</td>
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<tr>
<td>Odor Threshold</td>
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<tr>
<td>Volatility%</td>
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<tr>
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<tr>
<td>Solvent Content</td>
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<tr>
<td>Flash Point °C</td>
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<tr>
<td>Explosion Limits</td>
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<td>Flammability</td>
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<tr>
<td>Autoignition Temp</td>
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<td>Refractive Index</td>
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<tr>
<td>Solubility</td>
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</table>

Section 10 - Stability and Reactivity

Stability
Stable

Unstable

Conditions of Instability
May decompose on exposure to light.

Materials to Avoid
Strong oxidizing agents, Strong bases, Magnesium, Sodium, Lithium.

Hazardous Decomposition Products

Carbon monoxide, Carbon dioxide, Phosgene gas, Chlorine.

Stabilizers Present
Contains 0.03% Dimethyl sulfoxide (DMSO).

Section 11 - Toxicological Information

Route of Exposure
Skin Contact
Causes skin irritation.

Skin Absorption
Skin absorption may occur.

Eye Contact
Causes eye irritation.

Inhalation
May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion
Harmful if swallowed.

Target Organ(s) or System(s)
Cardiovascular system, Central nervous system, Blood, Liver, Kidneys.

Signs and Symptoms of Exposure
Exposure can cause: Vomiting, Gastrintestinal disturbances. Exposure to and/or consumption of alcohol may increase toxic effects. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Conditions Aggravated by Exposure
May cause nervous system disturbances.

RTECS Number: N/A

Chronic Exposure - Carcinogen
Result: This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification. The National Cancer Institute (NCI) has found clear evidence for carcinogenicity.

IRIS/EPA Carcinogen List

<table>
<thead>
<tr>
<th>Rating</th>
<th>Species</th>
<th>Route</th>
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<tbody>
<tr>
<td>Group B2</td>
<td>Rat, mouse</td>
<td>Gastric</td>
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</table>

Chronic Exposure - Mutagen
Result: Laboratory experiments have shown mutagenic effects.

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

Disposal Requirements: "Always store under anhydrous conditions. Use in a fume hood. Avoid contact with water. Dangerous if inhaled. May cause skin irritation. Avoid breathing dust or fumes. Avoid skin contact."
Section 15 - Regulatory Information

EU Directives Classification
Symbol of Danger: Xn
Indication of Danger
Harmful.
Risk Statements
R: 22 36 40 48/2022
Harmful if swallowed. Irritating to skin. Limited evidence of a carcinogenic effect. Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
Safety Statements
S: 36/37
Wear suitable protective clothing and gloves.

US Classification and Label Text
Indication of Danger
Harmful.
Risk Statements
Harmful if swallowed. Limited evidence of a carcinogenic effect. Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
Safety Statements
Wear suitable protective clothing and gloves.
US Statements

United States Regulatory Information
SARA Listed: Yes
Deminimis: 0.1%
Notes: This product is subject to SARA section 313 reporting requirements.

United States - State Regulatory Information
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 OPRP, and the MSDS contains all the information required by the OPRP.
DSL: Yes
NDISL: 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 2007 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.