

# SAFETY DATA SHEET

Version 8.0  
Revision Date 03/11/2020  
Print Date 11/20/2020

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : Chloroform  
Product Number : 437581  
Brand : Sigma-Aldrich  
CAS-No. : 67-66-3

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

### 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.  
3050 Spruce Street  
ST. LOUIS MO 63103  
UNITED STATES

Telephone : +1 314 771-5765  
Fax : +1 800 325-5052

### 1.4 Emergency telephone number

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-  
527-3887 CHEMTREC (International) 24  
Hours/day; 7 Days/week

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 4), H302  
Acute toxicity, Inhalation (Category 3), H331  
Skin irritation (Category 2), H315  
Eye irritation (Category 2A), H319  
Carcinogenicity (Category 2), H351  
Reproductive toxicity (Category 2), H361  
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336  
Specific target organ toxicity - repeated exposure (Category 1), Liver, Kidney, H372  
Short-term (acute) aquatic hazard (Category 3), H402  
Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

|      |   |
|------|---|
| H302 | Harmful if swallowed.   |
| H315 | Causes skin irritation.   |
| H319 | Causes serious eye irritation.  |
| H331 | Toxic if inhaled.   |
| H336 | May cause drowsiness or dizziness.  |
| H351 | Suspected of causing cancer.  |
| H361 | Suspected of damaging fertility or the unborn child.                            |
| H372 | Causes damage to organs (Liver, Kidney) through prolonged or repeated exposure. |
| H412 | Harmful to aquatic life with long lasting effects.                              |

Precautionary statement(s)

|                    |  |
|--------------------|--|
| P201               | Obtain special instructions before use.  |
| P202               | Do not handle until all safety precautions have been read and understood.  |
| P260               | Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  |
| P264               | Wash skin thoroughly after handling.   |
| P270               | Do not eat, drink or smoke when using this product.  |
| P271               | Use only outdoors or in a well-ventilated area.  |
| P273               | Avoid release to the environment.  |
| P280               | Wear protective gloves/ protective clothing/ eye protection/ face protection.  |
| P301 + P312 + P330 | IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.   |
| P302 + P352        | IF ON SKIN: Wash with plenty of soap and water.  |
| P304 + P340 + P311 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor.                          |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P308 + P313        | IF exposed or concerned: Get medical advice/ attention.  |
| P332 + P313        | If skin irritation occurs: Get medical advice/ attention.  |
| P337 + P313        | If eye irritation persists: Get medical advice/ attention.   |
| P362               | Take off contaminated clothing and wash before reuse.  |
| P403 + P233        | Store in a well-ventilated place. Keep container tightly closed.   |
| P405               | Store locked up.   |
| P501               | Dispose of contents/ container to an approved waste disposal plant.  |

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

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## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Synonyms : Trichloromethane  
Methylidyne trichloride

Formula : CHCl<sub>3</sub>

Molecular weight : 119.38 g/mol  
CAS-No. : 67-66-3

| Component         | Classification   | Concentration |
|-------------------|--|---------------|
| <b>Chloroform</b> |  |               |
|                   | Acute Tox. 4; Acute Tox. 3; Skin Irrit. 2; Eye Irrit. 2A; Carc. 2; Repr. 2; STOT SE 3; STOT RE 1; Aquatic Acute 3; H302, H331, H315, H319, H351, H361, H336, H372, H402<br>Concentration limits:<br>20 %: STOT SE 3, H336; | <= 100 %      |
| <b>ethanol</b>    |  |               |
|                   | Flam. Liq. 2; Eye Irrit. 2A; H225, H319  | >= 1 - < 5 %  |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

#### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

#### If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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## **SECTION 5: Firefighting measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### **5.2 Special hazards arising from the substance or mixture**

Carbon oxides, Hydrogen chloride gas

Not combustible.

### **5.3 Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

### **5.4 Further information**

No data available

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## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

For personal protection see section 8.

### **6.2 Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Discharge into the environment must be avoided.

### **6.3 Methods and materials for containment and cleaning up**

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

### **6.4 Reference to other sections**

For disposal see section 13.

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

For precautions see section 2.2.

### **7.2 Conditions for safe storage, including any incompatibilities**

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

### **7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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## **SECTION 8: Exposure controls/personal protection**

### **8.1 Control parameters**

#### **Components with workplace control parameters**

| Component  | CAS-No. | Value  | Control parameters       | Basis   |
|------------|---------|--|--------------------------|---|
| Chloroform | 67-66-3 | TWA  | 10 ppm                   | USA. ACGIH Threshold Limit Values (TLV)   |
|            | Remarks | Central Nervous System impairment<br>Liver damage<br>Embryo/fetal damage<br>Confirmed animal carcinogen with unknown relevance to humans |                          |   |
|            |         | ST   | 2 ppm<br>9.78 mg/m3      | USA. NIOSH Recommended Exposure Limits  |
|            |         | Potential Occupational Carcinogen<br>See Appendix A  |                          |   |
|            |         | C  | 50 ppm<br>240 mg/m3      | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants        |
|            |         | The value in mg/m3 is approximate.<br>Ceiling limit is to be determined from breathing-zone air samples.                                 |                          |   |
|            |         | PEL  | 2 ppm<br>9.78 mg/m3      | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |
| ethanol    | 64-17-5 | TWA  | 1,000 ppm<br>1,900 mg/m3 | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000                           |
|            |         | TWA  | 1,000 ppm<br>1,900 mg/m3 | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants        |
|            |         | The value in mg/m3 is approximate.   |                          |   |
|            |         | STEL   | 1,000 ppm                | USA. ACGIH Threshold Limit Values (TLV)   |
|            |         | Upper Respiratory Tract irritation<br>Confirmed animal carcinogen with unknown relevance to humans                                       |                          |   |
|            |         | TWA  | 1,000 ppm<br>1,900 mg/m3 | USA. NIOSH Recommended Exposure Limits  |
|            |         | PEL  | 1,000 ppm<br>1,900 mg/m3 | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |

## 8.2 Exposure controls

### Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

### Personal protective equipment

#### Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

### **Skin protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

### **Body Protection**

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### **Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### **Control of environmental exposure**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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## **SECTION 9: Physical and chemical properties**

### **9.1 Information on basic physical and chemical properties**

- |   |   |
|---|---|
| a) Appearance                                   | Form: liquid, clear<br>Colour: colourless                     |
| b) Odour  | sweet   |
| c) Odour Threshold                              | No data available   |
| d) pH   | No data available   |
| e) Melting point/freezing point                 | Melting point/range: 63 °C (145 °F) - lit.                    |
| f) Initial boiling point and boiling range      | 60.5 - 61.5 °C 140.9 - 142.7 °F - lit.                        |
| g) Flash point                                  | ( ) - Regulation (EC) No. 440/2008, Annex, A.9 does not flash |
| h) Evaporation rate                             | No data available   |
| i) Flammability (solid, gas)                    | No data available   |
| j) Upper/lower flammability or explosive limits | No data available   |
| k) Vapour pressure                              | 210 hPa at 20 °C (68 °F)                                      |
| l) Vapour density                               | 4.12 - (Air = 1.0)  |
| m) Relative density                             | 1.492 g/mL at 25 °C (77 °F)                                   |
| n) Water solubility                             | 8.7 g/l at 23 °C (73 °F) - OECD Test Guideline 105            |
| o) Partition coefficient: n-octanol/water       | No data available   |
| p) Auto-ignition                                | No data available   |

- temperature
- q) Decomposition temperature Distillable in an undecomposed state at normal pressure.
- r) Viscosity No data available
- s) Explosive properties No data available
- t) Oxidizing properties No data available

## 9.2 Other safety information

- Solubility in other solvents organic solvent at 20 °C (68 °F) - miscible
- Relative vapour density 4.12 - (Air = 1.0)

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.  
Contains the following stabiliser(s):  
ethanol ( $\geq 0.5$  -  $\leq 1$  %)

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

No data available

### 10.5 Incompatible materials

various plastics, Rubber Strong oxidizing agents

### 10.6 Hazardous decomposition products

Other decomposition products - No data available  
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas  
In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

No data available

LD50 Oral - Rat - male - 908 mg/kg  
(OECD Test Guideline 401)  
Inhalation: No data available

Dermal: No data available  
No data available

**Skin corrosion/irritation**

Skin - Rabbit

Result: Irritating to skin. - 24 h

Remarks: (ECHA)

Drying-out effect resulting in rough and chapped skin.

Skin - Rabbit

Result: slight irritation

Remarks: (IUCLID)

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Irritating to eyes.

Remarks: (ECHA)

(Regulation (EC) No 1272/2008, Annex VI)

**Respiratory or skin sensitisation**

Maximisation Test - Guinea pig

Result: negative

(Regulation (EC) No. 440/2008, Annex, B.6)

**Germ cell mutagenicity**

Ames test

Escherichia coli/Salmonella typhimurium

Result: negative

(ECHA)

unscheduled DNA synthesis assay

Liver

Result: negative

(ECHA)

OECD Test Guideline 474

Rat - male and female - Red blood cells (erythrocytes)

Result: negative

OECD Test Guideline 486

Rat - male - Liver cells

Result: negative

Mouse - female

Result: negative

(ECHA)

**Carcinogenicity**

Suspected of causing cancer.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Chloroform)

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**Reproductive toxicity**

Suspected of damaging the unborn child.

**Specific target organ toxicity - single exposure**

May cause drowsiness or dizziness.

**Specific target organ toxicity - repeated exposure**

Oral - Causes damage to organs through prolonged or repeated exposure. - Liver, Kidney

Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)



### **Aspiration hazard**

No data available

### **Additional Information**

Repeated dose toxicity - Rat - female - Oral - No observed adverse effect level - 34 mg/kg  
RTECS: Not available

Vomiting, Cough, irritant effects, Shortness of breath, respiratory arrest, narcosis, Dizziness, Nausea, agitation, spasms, inebriation, Headache, Stomach/intestinal disorders, ataxia (impaired locomotor coordination), cardiovascular disorders  
Drying-out effect resulting in rough and chapped skin.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

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## **SECTION 12: Ecological information**

### **12.1 Toxicity**

Toxicity to algae      static test ErC50 - Chlamydomonas reinhardtii (green algae) - 13.3 mg/l - 72 h  
Remarks: (ECHA)(Chloroform)

Toxicity to bacteria      Remarks: (ECHA)(Chloroform)

### **12.2 Persistence and degradability**

No data available

### **12.3 Bioaccumulative potential**

No data available

### **12.4 Mobility in soil**

No data available

### **12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### **12.6 Other adverse effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic life with long lasting effects.

No data available

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## **SECTION 13: Disposal considerations**

### **13.1 Waste treatment methods**

#### **Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix

the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

**Contaminated packaging**

Dispose of as unused product.

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**SECTION 14: Transport information**

**DOT (US)**

UN number: 1888 Class: 6.1 Packing group: III  
Proper shipping name: Chloroform  
Reportable Quantity (RQ): 10 lbs  
Reportable Quantity (RQ): 10 lbs  
Poison Inhalation Hazard: No

**IMDG**

UN number: 1888 Class: 6.1 Packing group: III EMS-No: F-A, S-A  
Proper shipping name: CHLOROFORM

**IATA**

UN number: 1888 Class: 6.1 Packing group: III  
Proper shipping name: Chloroform

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**SECTION 15: Regulatory information**

**SARA 302 Components**

The following components are subject to reporting levels established by SARA Title III, Section 302:

|            |                    |                             |
|------------|--------------------|-----------------------------|
| Chloroform | CAS-No.<br>67-66-3 | Revision Date<br>2008-11-03 |
|------------|--------------------|-----------------------------|

**SARA 313 Components**

The following components are subject to reporting levels established by SARA Title III, Section 313:

|            |                    |                             |
|------------|--------------------|-----------------------------|
| Chloroform | CAS-No.<br>67-66-3 | Revision Date<br>2008-11-03 |
|------------|--------------------|-----------------------------|

**SARA 311/312 Hazards**

Acute Health Hazard, Chronic Health Hazard

**Reportable Quantity** : D022 lbs

**Massachusetts Right To Know Components**

|            |                    |                             |
|------------|--------------------|-----------------------------|
| Chloroform | CAS-No.<br>67-66-3 | Revision Date<br>2008-11-03 |
| ethanol    | 64-17-5            | 1993-04-24                  |

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know Components**

|            |                    |                             |
|------------|--------------------|-----------------------------|
| Chloroform | CAS-No.<br>67-66-3 | Revision Date<br>2008-11-03 |
| ethanol    | 64-17-5            | 1993-04-24                  |

|            |                    |                             |
|------------|--------------------|-----------------------------|
| Chloroform | CAS-No.<br>67-66-3 | Revision Date<br>2008-11-03 |
|------------|--------------------|-----------------------------|

**New Jersey Right To Know Components**

|            |                    |                             |
|------------|--------------------|-----------------------------|
| Chloroform | CAS-No.<br>67-66-3 | Revision Date<br>2008-11-03 |
| ethanol    | 64-17-5            | 1993-04-24                  |

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**SECTION 16: Other information**

**Further information**

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