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**1. PRODUCT AND COMPANY IDENTIFICATION****1.1 Product identifiers**

Product name : Chloroform

Product Number : C2432

Brand : Sigma-Aldrich

Index-No. : 602-006-00-4

REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS-No. : 67-66-3

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

Identified uses : Laboratory chemicals, Manufacture of substances

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

Company : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

**1.4 Emergency telephone number**

Emergency Phone # : (314) 776-6555

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**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 4),  
H332 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 2), Liver, Kidney, H373  
Acute aquatic toxicity (Category 3), H402

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

Warning

Hazard statement(s)

H302 + H332

Harmful if swallowed or if inhaled

H315

Causes skin irritation.

H319

Causes serious eye irritation.

|                            |                                                                                                                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| H336                       | May cause drowsiness or dizziness.                                                                                               |
| H351                       | Suspected of causing cancer.                                                                                                     |
| H361                       | Suspected of damaging fertility or the unborn child.                                                                             |
| H373                       | May cause damage to organs (Liver, Kidney) through prolonged or repeated exposure.                                               |
| H402                       | Harmful to aquatic life.                                                                                                         |
| 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/ eye protection/ face protection.                                                                         |
| P301 + P312                | IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.                                                      |
| P302 + P352                | IF ON SKIN: Wash with plenty of soap and water.                                                                                  |
| P304 + P340                | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.                                 |
| 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.                                                                          |
| P321                       | Specific treatment (see supplemental first aid instructions on this label).                                                      |
| P330                       | Rinse mouth.                                                                                                                     |
| 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

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1 Substances

|                  |   |                                             |
|------------------|---|---------------------------------------------|
| Synonyms         | : | Trichloromethane<br>Methyldiyne trichloride |
| Formula          | : | CHCl <sub>3</sub>                           |
| Molecular Weight | : | 119.38 g/mol                                |
| CAS-No.          | : | 67-66-3                                     |
| EC-No.           | : | 200-663-8                                   |
| Index-No.        | : | 602-006-00-4                                |

| Component         | Classification                                                                                                                                             | Concentration |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Chloroform</b> | Acute Tox. 4; Skin Irrit. 2; Eye Irrit. 2A; Carc. 2; Repr. 2; STOT SE 3; STOT RE 2; Aquatic Acute 3; H302 + H332, H315, H319, H336, H351, H361, H373, H402 | 90 - 100 %    |

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

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## 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. 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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## 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, Phosgene, Chlorine  
Carbon oxides, Hydrogen chloride gas

### 5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

### 5.4 Further information

no data available

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## 6. ACCIDENTAL RELEASE MEASURES

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

Use personal protective equipment. 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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## 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.

### 7.3 Specific end use(s)

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

## 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/m <sup>3</sup> | USA. NIOSH Recommended Exposure Limits                                           |
|            |         | Potential Occupational Carcinogen<br>See Appendix A                                                                                      |                                 |                                                                                  |
|            |         | C                                                                                                                                        | 50 ppm<br>240 mg/m <sup>3</sup> | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |
|            |         | The value in mg/m <sup>3</sup> is approximate.<br>Ceiling limit is to be determined from breathing-zone air samples.                     |                                 |                                                                                  |
|            |         | TWA                                                                                                                                      | 2 ppm<br>9.78 mg/m <sup>3</sup> | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000                    |

### 8.2 Exposure controls

#### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

#### 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.

##### Full contact

Material: Fluorinated rubber

Minimum layer thickness: 0.7

mm Break through time: 480 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

##### Splash contact

Material: Fluorinated rubber

Minimum layer thickness: 0.7

mm Break through time: 480 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

### 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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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

- |                                                 |                                             |
|-------------------------------------------------|---------------------------------------------|
| a) Appearance                                   | Form: liquid, clear<br>Colour: colourless   |
| b) Odour                                        | no data available                           |
| c) Odour Threshold                              | no data available                           |
| d) pH                                           | no data available                           |
| e) Melting point/freezing point                 | Melting point/range: -63 °C (-81 °F)        |
| f) Initial boiling point and boiling range      | 60.5 - 61.5 °C (140.9 - 142.7 °F)           |
| g) Flash point                                  | no data available                           |
| 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                              | 213.3 hPa (160.0 mmHg) at 20.0 °C (68.0 °F) |
| l) Vapour density                               | no data available                           |
| m) Relative density                             | 1.492 g/mL at 25 °C (77 °F)                 |
| n) Water solubility                             | no data available                           |
| o) Partition coefficient: n-octanol/water       | log Pow: 1.97                               |
| p) Auto-ignition temperature                    | no data available                           |
| q) Decomposition temperature                    | no data available                           |
| r) Viscosity                                    | no data available                           |
| s) Explosive properties                         | no data available                           |
| t) Oxidizing properties                         | no data available                           |

### 9.2 Other safety information

- |                 |                                |
|-----------------|--------------------------------|
| Surface tension | 27.1 mN/m at 20.0 °C (68.0 °F) |
|-----------------|--------------------------------|

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## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

Stable under recommended storage conditions. Contains the following stabiliser(s):  
2-Methyl-2-butene ( $\geq 0.001$  -  $\leq 0.015$  %)

### 10.3 Possibility of hazardous reactions

no data available

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Strong oxidizing agents, Strong bases, Magnesium, Sodium/sodium oxides, Lithium

### 10.6 Hazardous decomposition products

Other decomposition products - no data available  
In the event of fire: see section 5

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## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - rat - 908 mg/kg

Remarks: Behavioral:Change in motor activity (specific assay). Behavioral:Ataxia. Lungs, Thorax, or Respiration:Respiratory stimulation.

LOEC Inhalation - rat - male - 6 h - 500

ppm LD50 Dermal - rabbit -  $> 20,000$  mg/kg

no data available

#### Skin corrosion/irritation

Skin - rabbit

Result: Irritating to skin. - 24 h

#### Serious eye damage/eye irritation

Eyes - rabbit

Result: Irritating to eyes. - 24 h

#### Respiratory or skin sensitisation

Did not cause sensitisation on laboratory animals.

#### Germ cell mutagenicity

Laboratory experiments have shown mutagenic effects.

#### Carcinogenicity

Carcinogenicity - rat - Oral

Tumorigenic: Carcinogenic by RTECS criteria. Leukaemia

The National Cancer Institute (NCI) has found clear evidence for carcinogenicity. Limited evidence of a carcinogenic effect.

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

NTP: Reasonably anticipated to be a human carcinogen (Chloroform)

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

#### Reproductive toxicity

Suspected of damaging the unborn child. Suspected human reproductive toxicant

no data available

**Specific target organ toxicity - single exposure**

May cause drowsiness or dizziness.

**Specific target organ toxicity - repeated exposure**

May cause damage to organs through prolonged or repeated exposure. - Liver, Kidney

**Aspiration hazard**

no data available

**Additional Information**

RTECS: FS9100000

Vomiting, Gastrointestinal disturbance, 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.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

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## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

|                                                     |                                                                     |
|-----------------------------------------------------|---------------------------------------------------------------------|
| Toxicity to fish                                    | LC50 - Leuciscus idus (Golden orfe) - 162 mg/l - 48 h               |
|                                                     | LC100 - Leuciscus idus (Golden orfe) - 220 mg/l - 48 h              |
|                                                     | LC50 - other fish - 97 mg/l - 96 h                                  |
|                                                     | LC50 - Danio rerio (zebra fish) - 121 mg/l - 96 h                   |
|                                                     | NOEC - Oryzias latipes - 122 mg/l - 10 d                            |
|                                                     | NOEC - Oncorhynchus mykiss (rainbow trout) - 24 mg/l - 96 h         |
| Toxicity to daphnia and other aquatic invertebrates | EC50 - Daphnia magna (Water flea) - 79.00 mg/l - 24 h               |
|                                                     | Immobilization EC50 - Daphnia magna (Water flea) - 51.6 mg/l - 48 h |
|                                                     | NOEC - Daphnia magna (Water flea) - 120 mg/l - 11 d                 |
| Toxicity to algae                                   | EC50 - No information available. - 500.00 mg/l - 24 h               |

### 12.2 Persistence and degradability

no data available

### 12.3 Bioaccumulative potential

Bioaccumulation Lepomis macrochirus (Bluegill) - 14 d  
- 0.11 mg/l

Bioconcentration factor (BCF): 6

### 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.

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## 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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## 14. TRANSPORT INFORMATION

### DOT (US)

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

### IMDG

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

### IATA

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

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## 15. REGULATORY INFORMATION

REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

### SARA 302 Components

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

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

### SARA 313 Components

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

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

### SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

### Massachusetts Right To Know Components

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

### Pennsylvania Right To Know Components

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

### New Jersey Right To Know Components

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

### California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.

|  | CAS-No. | Revision Date |
|--|---------|---------------|
|  | 67-66-3 | 2011-09-01    |



Chloroform

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.  
Chloroform

CAS-No.  
67-66-3

Revision Date  
2011-09-01

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## 16. OTHER INFORMATION

### Full text of H-Statements referred to under sections 2 and 3.

|               |                                                                    |
|---------------|--------------------------------------------------------------------|
| Acute Tox.    | Acute toxicity                                                     |
| Aquatic Acute | Acute aquatic toxicity                                             |
| Carc.         | Carcinogenicity                                                    |
| Eye Irrit.    | Eye irritation                                                     |
| H302          | Harmful if swallowed.                                              |
| H302 + H332   | Harmful if swallowed or if inhaled                                 |
| H315          | Causes skin irritation.                                            |
| H319          | Causes serious eye irritation.                                     |
| H332          | Harmful if inhaled.                                                |
| H336          | May cause drowsiness or dizziness.                                 |
| H351          | Suspected of causing cancer.                                       |
| H361          | Suspected of damaging fertility or the unborn child.               |
| H373          | May cause damage to organs through prolonged or repeated exposure. |
| H402          | Harmful to aquatic life.                                           |
| Repr.         | Reproductive toxicity                                              |
| Skin Irrit.   | Skin irritation                                                    |
| STOT RE       | Specific target organ toxicity - repeated exposure                 |
| STOT SE       | Specific target organ toxicity - single exposure                   |

### HMIS Rating

|                        |   |
|------------------------|---|
| Health hazard:         | 2 |
| Chronic Health Hazard: | * |
| Flammability:          | 0 |
| Physical Hazard        | 0 |

### NFPA Rating

|                    |   |
|--------------------|---|
| Health hazard:     | 2 |
| Fire Hazard:       | 0 |
| Reactivity Hazard: | 0 |

### Further information

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### Preparation Information

Sigma-Aldrich Corporation  
Product Safety – Americas  
Region 1-800-521-8956

Version: 3.12

Revision Date: 02/21/2014

Print Date: 06/30/2014