

### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Chloroform

Product Number : 372978  
Brand : Sigma-Aldrich  
Product Use : For laboratory research purposes.

Supplier : Sigma-Aldrich Canada Co.  
2149 Winston Park Drive  
OAKVILLE ON L6H 6J8  
CANADA

Manufacturer : Sigma-Aldrich Corporation  
3050 Spruce St.  
St. Louis, Missouri 63103  
USA

Telephone : +1 9058299500  
Fax : +1 9058299292  
Emergency Phone # (For both supplier and manufacturer) : 1-800-424-9300

Preparation Information : Sigma-Aldrich Corporation  
Product Safety - Americas Region  
1-800-521-8956

### 2. HAZARDS IDENTIFICATION

#### Emergency Overview

##### Target Organs

Central nervous system, Blood, Liver, Cardiovascular system., Kidney Cardiovascular system., Central nervous system, Blood, Liver, Kidney

##### WHMIS Classification

D1B	Toxic Material Causing Immediate and Serious Toxic Effects	Toxic by inhalation.
D2A	Very Toxic Material Causing Other Toxic Effects	Chronic toxicity
D2B	Toxic Material Causing Other Toxic Effects	Teratogen Carcinogen Specific target organ toxicity - single exposure Moderate skin irritant Moderate eye irritant Mutagen

##### GHS Classification

Acute toxicity, Oral (Category 4)  
Acute toxicity, Inhalation (Category 4)  
Skin irritation (Category 2)  
Eye irritation (Category 2A)  
Carcinogenicity (Category 2)  
Reproductive toxicity (Category 2)  
Specific target organ toxicity - single exposure (Category 3), Central nervous system  
Specific target organ toxicity - repeated exposure (Category 2), Liver, Kidney  
Acute aquatic toxicity (Category 3)

##### 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.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs (Liver, Kidney) through prolonged or repeated exposure.
H402	Harmful to aquatic life.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P281	Use personal protective equipment as required.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

#### HMIS Classification

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	0
Physical hazards:	0

#### Potential Health Effects

<b>Inhalation</b>	May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.
<b>Skin</b>	Harmful if absorbed through skin. Causes skin irritation.
<b>Eyes</b>	Causes eye irritation.
<b>Ingestion</b>	Harmful if swallowed.

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Trichloromethane  
Methylidyne trichloride

Formula : CHCl<sub>3</sub>

CAS-No.	EC-No.	Index-No.	Concentration
<b>Chloroform</b>			
67-66-3	200-663-8	602-006-00-4	>= 99.5 %
<b>2-Methyl-2-butene</b>			
513-35-9	208-156-3	-	>= 0.001 - <= 0.015 %

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### 4. 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.

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## 5. FIREFIGHTING MEASURES

### Conditions of flammability

Not flammable or combustible.

### Suitable extinguishing media

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

### Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

### Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Phosgene, Chlorine  
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas

### Explosion data - sensitivity to mechanical impact

no data available

### Explosion data - sensitivity to static discharge

no data available

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## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

### 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.

### 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.

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## 7. HANDLING AND STORAGE

### Precautions for safe handling

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

### Conditions for safe storage

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.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Chloroform	67-66-3	TWA	2 ppm	Canada. British Columbia OEL
Remarks	IARC '2B' applies to substances deemed possibly carcinogenic to humans. Adverse reproductive effect			
		TWA	10 ppm 49 mg/m <sup>3</sup>	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWAEV	5 ppm 24.4 mg/m <sup>3</sup>	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
	A substance which may not be recirculated in accordance with section 108 A substance to which exposure must be reduced to a minimum in accordance with section 42 Carcinogenic effect suspected in humans			

## Personal protective equipment

### 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).

### Hand 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.

### Eye 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 and 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.

### Hygiene measures

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

### Specific engineering controls

Use mechanical exhaust or laboratory fumehood to avoid exposure.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Form liquid, clear

Colour colourless

### Safety data

pH no data available

Melting point/freezing point Melting point/range: -63 °C (-81 °F)

Boiling point 60.5 - 61.5 °C (140.9 - 142.7 °F)

Flash point no data available

Ignition temperature no data available

Auto-ignition no data available

temperature	
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	213.3 hPa (160.0 mmHg) at 20.0 °C (68.0 °F)
Density	1.492 g/mL at 25 °C (77 °F)
Water solubility	no data available
Partition coefficient: n-octanol/water	log Pow: 1.97
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

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## 10. STABILITY AND REACTIVITY

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

no data available

### Conditions to avoid

no data available

### Materials to avoid

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

### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Phosgene, Chlorine  
 Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas  
 Other decomposition products - no data available

Contains the following stabiliser(s):

2-Methyl-2-butene ( $\geq 0.001$  -  $\leq 0.015$  %)

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## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

#### Oral LD50

LD50 Oral - rat - 908 mg/kg

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

#### Inhalation LC50

LOEC Inhalation - rat - male - 6 h - 500 ppm

#### Dermal LD50

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

#### Other information on acute toxicity

no data available

### Skin corrosion/irritation

Skin - rabbit - Irritating to skin. - 24 h

### Serious eye damage/eye irritation

Eyes - rabbit - 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)

**Reproductive toxicity**

no data available

**Teratogenicity**

Suspected of damaging the unborn child. Suspected human reproductive toxicant

**Specific target organ toxicity - single exposure (Globally Harmonized System)**

May cause drowsiness or dizziness.

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

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

**Aspiration hazard**

no data available

**Potential health effects**

<b>Inhalation</b>	May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.
<b>Ingestion</b>	Harmful if swallowed.
<b>Skin</b>	Harmful if absorbed through skin. Causes skin irritation.
<b>Eyes</b>	Causes eye irritation.

**Signs and Symptoms of Exposure**

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.

**Synergistic effects**

no data available

**Additional Information**

RTECS: FS9100000

**12. ECOLOGICAL INFORMATION****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

**Persistence and degradability**

no data available

**Bioaccumulative potential**

Bioaccumulation Lepomis macrochirus (Bluegill) - 14 d  
Bioconcentration factor (BCF): 6

**Mobility in soil**

no data available

**PBT and vPvB assessment**

no data available

**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**

**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**

**WHMIS Classification**

D1B	Toxic Material Causing Immediate and Serious Toxic Effects	Toxic by inhalation.
D2A	Very Toxic Material Causing Other Toxic Effects	Chronic toxicity
D2B	Toxic Material Causing Other Toxic Effects	Teratogen Carcinogen Specific target organ toxicity - single exposure Moderate skin irritant Moderate eye irritant Mutagen

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

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## 16. OTHER INFORMATION

### Text of H-code(s) and R-phrases mentioned in Section 3

H373	Gali pakenkti organams, jeigu medžiaga veikia ilgai arba dažnai.
Repr.	Toksiškumas reprodukcijai
Skin Irrit.	Odos dirginimas
STOT RE	Specifinis toksiškumas konkrečiam organui - kartotinis poveikis
STOT SE	Specifinis toksiškumas konkrečiam organui - vienkartinis poveikis

### Further information

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