

SIGMA-ALDRICH**Material Safety Data Sheet**Version 3.6
Revision Date 02/06/2009
Print Date 07/10/2010**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : Chloroform

Product Number : C2432
Brand : Sigma-Aldrich

Company : Sigma-Aldrich
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SAINT LOUIS MO 63103
USA

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Trichloromethane
Methylidyne trichloride

Formula : CHCl_3

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

3. HAZARDS IDENTIFICATION**Emergency Overview****OSHA Hazards**

Carcinogen, Target Organ Effect, Harmful by ingestion., Irritant

Target Organs

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

HMIS Classification

Health Hazard: 2
Chronic Health Hazard: *
Flammability: 0
Physical hazards: 1

NFPA Rating

Health Hazard: 2
Fire: 0
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.
Ingestion Harmful if swallowed.

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.

5. FIRE-FIGHTING MEASURES**Flammable properties**

Flash point no data available

Ignition temperature no data available

Suitable extinguishing media

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

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions**

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.

Environmental precautions

Do not let product enter drains.

Methods for cleaning up

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

7. HANDLING AND STORAGE**Handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Normal measures for preventive fire protection.

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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
Chloroform	67-66-3	TWA	10 ppm 49 mg/m ³	1996-05-18	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Confirmed animal carcinogen with unknown relevance to humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure. Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124):36338-33351, June 30, 1993, for revised OSHA PEL. Substance identified by other sources as a suspected or confirmed human carcinogen. Refers to Appendix A -- Carcinogens. 1996 Adoption				
		TWA	2 ppm 9.78 mg/m ³	1989-03-01	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		CEIL	50 ppm 240 mg/m ³	1993-06-30	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

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.

Eye protection

Safety glasses

Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form liquid, clear

Colour colourless

Safety data

pH no data available
Melting point -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
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: log Pow: 1.97
n-octanol/water

10. STABILITY AND REACTIVITY

Storage stability

Stable under recommended storage conditions.

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

Contains the following stabiliser(s):

2-Methyl-2-butene (>=0.001 - <=0.015 %)

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - rat - 695.0 mg/kg

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

LC50 Inhalation - rat - 4 h - 47,702 mg/m³

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

Irritation and corrosion

Skin - rabbit - Mild skin irritation - 24 h

Eyes - rabbit - Eye irritation - 24 h

Sensitisation

no data available

Chronic exposure

Carcinogenicity - rat - Oral

Tumorigenic:Carcinogenic by RTECS criteria. Leukaemia

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.

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 identified as a carcinogen or potential carcinogen by OSHA.

Laboratory experiments have shown mutagenic effects.

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.

Potential Health Effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	Harmful if swallowed.
Target Organs	Central nervous system, Blood, Liver, Cardiovascular system., Kidney, Cardiovascular system., Central nervous system, Blood, Liver, Kidney,

Additional Information

RTECS: FS9100000

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

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

Toxicity to fish	LC50 - Leuciscus idus (Golden orfe) - 162.00 mg/l - 48 h
	LC100 - Leuciscus idus (Golden orfe) - 220.00 mg/l - 48 h
	LC50 - No information available. - 97.00 mg/l - 96 h
	LC50 - Brachydanio rerio (zebra fish) - 121.00 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
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	Immobilization EC50 - Daphnia magna (Water flea) - 51.6 mg/l - 48 h
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	NOEC - Daphnia magna (Water flea) - 120 mg/l - 11 d
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Toxicity to algae	EC50 - No information available. - 500.00 mg/l - 24 h
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Further information on ecology

no data available

13. DISPOSAL CONSIDERATIONS

Product

Observe all federal, state, and local environmental regulations. 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.

14. TRANSPORT INFORMATION

DOT (US)

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

15. REGULATORY INFORMATION

OSHA Hazards

Carcinogen, Target Organ Effect, Harmful by ingestion., Irritant

DSL Status

All components of this product are on the Canadian DSL list.

SARA 302 Components

Chloroform

CAS-No.	Revision Date
67-66-3	1987-01-01

SARA 313 Components

Chloroform

CAS-No.	Revision Date
67-66-3	1987-01-01

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Chloroform

CAS-No.	Revision Date
67-66-3	1987-01-01

Pennsylvania Right To Know Components

Chloroform

CAS-No.	Revision Date
67-66-3	1987-01-01

New Jersey Right To Know Components

Chloroform

CAS-No.	Revision Date
67-66-3	1987-01-01

California Prop. 65 Components

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

CAS-No.
67-66-3

Revision Date
1992-11-09

16. OTHER INFORMATION**Further information**

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