Material Safety Data Sheet

Version 3.6
Revision Date 02/06/2009
Print Date 04/02/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Chloroform

Product Number : C2432
Brand : Sigma-Aldrich

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # : (314) 776-6555

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/m3	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 lilkely 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/m3	1989-03-01	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		CEIL	50 ppm 240 mg/m3	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: n-octanol/water	log Pow: 1.97

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

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
	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

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

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

SARA 313 Components

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

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

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

Pennsylvania Right To Know Components

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

New Jersey Right To Know Components

	CAS-No.	Revision Date
Chloroform	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

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 Co., 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.