Chemical Safety Data Sheet MSDS / SDS

Chloroform SDS

Revision Date:2024-04-25 Revision Number:1

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

Product identifier

Product name: Chloroform

CAS: 67-66-3

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

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Acute toxicity - Category 4, Oral
Skin irritation, Category 2

Eye irritation, Category 2
Acute toxicity - Category 3, Inhalation
Carcinogenicity, Category 2
Specific target organ toxicity – repeated exposure, Category 1
Reproductive toxicity, Category 2

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H302 Harmful if swallowed
H315 Causes skin irritation
H319 Causes serious eye irritation
H331 Toxic if inhaled
H351 Suspected of causing cancer
H372 Causes damage to organs through prolonged or repeated exposure

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P203 Obtain, read and follow all safety instructions before use.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.

Response

P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P321 Specific treatment (see ... on this label).
P332+P317 If skin irritation occurs: Get medical help.
P362+P364 Take off contaminated clothing and wash it before reuse.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316 Get emergency medical help immediately.
P318 IF exposed or concerned, get medical advice.
P319 Get medical help if you feel unwell.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Chloroform
Common names and synonyms:	Chloroform
CAS number:	67-66-3
EC number:	200-663-8
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Give one or two glasses of water to drink. Rest. Refer for medical attention .

Most important symptoms/effects, acute and delayed

It is classified as moderately toxic. Probable oral lethal dose for humans is 0.5 to 5 g/kg (between 1 ounce and 1 pint) for a 150 lb. person. The mean lethal dose is probably near 1 fluid ounce (44 g). It is a human suspected carcinogen. Also, it is a central nervous system depressant and a gastrointestinal irritant. It has caused rapid death attributable to cardiac arrest and delayed death from liver and kidney damage. (EPA, 1998)

Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Halogenated aliphatic hydrocarbons and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

Use water spray to keep fire-exposed containers cool. Extinguish fire using agent suitable for surrounding fire.

Specific hazards arising from the chemical

Container may explode in the heat of fire. When heated it liberates phosgene, hydrogen chloride, chlorine and toxic and corrosive oxides of carbon and chlorine. Chloroform explodes when in contact with aluminum powder or magnesium powder or with alkali metals (e.g., lithium, sodium, and potassium) and dinitrogen tetroxide. It reacts vigorously with acetone in the presence of potassium hydroxide or calcium hydroxide. It is oxidized by strong oxidizers such as chromic acid forming phosgene and chlorine. It reacts vigorously with triisopropylphosphine. It develops acidity from prolonged exposure to air and light. (EPA, 1998)

Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

1. Ventilate area of spill or leak. 2. Collect for reclamation or absorb in vermiculite, dry sand, earth, or a similar material.

SECTION 7: Handling and storage

Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Separated from food and feedstuffs and incompatible materials. See Chemical Dangers. Ventilation along the floor.Keep in tightly closed containers; storage code: LI

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 10 ppm as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans).MAK: 2.5 mg/m3, 0.5 ppm; peak limitation category: II(2); skin absorption (H); carcinogen category: 4; pregnancy risk group: C.EU-OEL: 10 mg/m3, 2 ppm as TWA; (skin)

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Chloroform is a clear colorless liquid with a characteristic odor. Denser (12.3 lb / gal) than water and slightly soluble in water. Hence sinks in water. Nonflammable under most conditions, but burns under extreme conditions. May cause illness by inhalation, skin absorption or ingestion. Used as a solvent, to make other chemicals, as a fumigant.
Colour:	Clear, colorless liquid

Odour:	Pleasant, etheric, nonirritating
Melting point/freezing point:	-63 °C
Boiling point or initial boiling point and boiling range:	60.5-61.5°C(lit.)
Flammability:	Noncombustible Liquid
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	60.5-61.5°C
Auto-ignition temperature:	Not flammable (USCG, 1999)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	5.63 millipoises at 20 deg C; 5.10 millipoises at 30 deg C
Solubility:	less than 1 mg/mL at 66° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 1.97
Vapour pressure:	160 mm Hg (20 °C)
Density and/or relative density:	1.48g/mLat 25°C
Relative vapour density:	4.1 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

NIOSH considers chloroform be a potential occupational carcinogen.
Decomposes on contact with hot surfaces or flames. This produces toxic and corrosive fumes of hydrogen chloride (see ICSC 0163), phosgene (see ICSC 0007) and chlorine (see ICSC 0126). Reacts violently with strong bases, strong oxidants and some metals such as aluminium, magnesium and zinc. This generates fire and explosion hazard. Attacks plastics, rubber and coatings.

Chemical stability

Decomposes at ordinary temp in sunlight in the absence of air, and in the dark in the presence of air.

Possibility of hazardous reactions

Not combustible.The vapour is heavier than air.A mixture of acetone and CHLOROFORM in a residue bottle exploded. Since addition of acetone to chloroform in the presence of base will result in a highly exothermic reaction, it is thought that a base was in the bottle. [MCA Case History 1661(1970)]. Powdered aluminum and carbon tetrachloride (also methyl chloride and chloroform or mixtures of these chemicals) exploded when heated (to 153° C) and by impact, [Chem. Eng. News 32:258(1954); UL Bull. Research 34 (1945), ASESB Pot. Incid. 39(1968)]. An inadequately cooled addition of sodium to a chloroform-methanol mixture (sodium methoxide) caused a violent explosion, [MCA Case History No. 693]. It is incompatible with dinitrogen tetraoxide, fluorine, sodium metal and alcohols, nitromethane, and triisopropylphosphine.

Conditions to avoid

no data available

Incompatible materials

Mixtures with dinitrogen tetraoxide are explosive when subjected to shock of 25 g TNT equiv or less.

Hazardous decomposition products

The products of oxidative breakdown include phosgene, hydrogen chloride, chlorine, carbon dioxide, and water.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 White rat oral 2180 mg/kg

Inhalation: LC50 Rat inhalation 47,702 mg/cu m/4 hr

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

EPA: Probable human carcinogen. IARC: Possibly carcinogenic to humans. NTP: Reasonably anticipated to be a human carcinogen

Reproductive toxicity

Little information is available on the reproductive or developmental effects of chloroform in humans, via any route of exposure. A possible association between certain birth outcomes (e.g., low birth weight, cleft palate) and consumption of contaminated drinking water was reported. However, because multiple contaminants were present, the role of chloroform is unclear. Animal studies have demonstrated developmental effects, such as decreased fetal body weight, fetal resorptions, and malformations in the offspring of animals exposed to chloroform via inhalation. Reproductive effects, such as decreased conception rates, decreased ability to maintain pregnancy, and an increase in the percentage of abnormal sperm were observed in animals exposed to chloroform through inhalation. Animal studies have noted decreased fetal weight, increased fetal resorptions, but no evidence of birth defects, in animals orally exposed to chloroform.

STOT-single exposure

The substance is irritating to the eyes. The substance may cause effects on the central nervous system, liver and kidneys. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

The substance defats the skin, which may cause dryness or cracking. The substance may have effects on the liver and kidneys. This substance is possibly carcinogenic to humans.

Aspiration hazard

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: Danio rerio (Zebra danio); Conditions: freshwater, flow through, 23 deg C, pH 8.15; Concentration: 121000 ug/L for 48 hr

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea); Conditions: freshwater, renewal, 25 deg C, pH >7; Concentration: 79000 ug/L for 24 hr; Effect: behavior, equilibrium

Toxicity to algae: EC50; Species: Scenedesmus subspicatus (Green algae, log growth phase); Conditions: freshwater, static, 24 deg C, pH 8.0-9.3; Concentration: 560000 ug/L for 48 hr; Effect: decreased population biomass

Toxicity to microorganisms: no data available

Persistence and degradability

Chloroform was reduced from 0.12 mg/L to <40 ug/L after anaerobic digestion at 25 deg C for 53 days and then was digested aerobically for 20 days which reduced chloroform to a not detected level(1). Chloroform was not degraded aerobically or anaerobically in an aquifer storage and recovery site(2).

Bioaccumulative potential

The BCF values for chloroform range from 2.9-10.35(1). A log bioconcentration factor <1 for 4 species of fish have been reported(2,3). An experimental log BCF of 0.78 was also reported for chloroform(4). According to a classification scheme(5), these BCF values suggest the potential for bioconcentration in aquatic organisms is low.

Mobility in soil

A soil sorption study was conducted on chloroform in three distinctly different soils(1). Soils used were from Missouri (composed of 11.4% sand, 52.7% silt, 33.4% clay, 2.4% organic matter, at pH 6.9), California (composed of 45.1% sand, 35.2% silt, 21.7% clay, organic matter 1.7%, at pH 8.1), and Florida (composed of 91.7% sand, 6.3% silt, 2.0% clay, 1.6% organic matter, at pH 4.7)(1). The ratio of the amount of contaminant adsorbed in micrograms per gram of soil to the equilibrium concn in ppm was used to calculate

a Kd value of 2.133 in the Missouri soil, 1.941 in the California soil, and 1.763 in the Florida soil(1). These values correspond to a Koc value ranging from 153-196 based upon the relationship between Kd and Koc(2). Chloroform is adsorbed most strongly to peat moss, less strongly to clay, very slightly to dolomite limestone and not at all to sand(3). The Koc values measured for 2 soils was 34; 3 other soils with the lowest organic carbon content in the same study gave no appreciable adsorption(4). Field experiments in which chloroform was injected into an aquifer and the concn in a series of observation wells determined, demonstrated that chloroform is very poorly retained by aquifer material (retardation factor 2-4), less so than other C1- and C2-halogenated compounds studied(4-5). Laboratory percolation studies with a sandy soil gave similar results (retardation factor <1.5)(6). Chloroform was reported to have a Koc of 65(7), 55(8), 47(9) and 34(10). According to a classification scheme(11), these Koc values suggest that chloroform is expected to have very high to moderate mobility in soil.

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1888 (For reference only, please check.)
IMDG: UN1888 (For reference only, please check.)
IATA: UN1888 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: CHLOROFORM (For reference only, please check.)

IMDG: CHLOROFORM (For reference only, please check.)
IATA: CHLOROFORM (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)
IMDG: 6.1 (For reference only, please check.)
IATA: 6.1 (For reference only, please check.)

Packing group, if applicable

ADR/RID: III (For reference only, please check.)
IMDG: III (For reference only, please check.)
IATA: III (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Turns combustible on addition of small amounts of a flammable substance or an increase in the oxygen content of the air. Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding.

Disclaimer: 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. We as supplier shall not be held liable for any