

Chemical Safety Data Sheet MSDS / SDS

Chloroacetic acid SDS

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

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

Product name: Chloroacetic acid

CAS: 79-11-8

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

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SECTION 2: Hazards identification**Classification of the substance or mixture**

Acute toxicity - Category 3, Oral

Acute toxicity - Category 3, Dermal

Skin corrosion, Sub-category 1B
Acute toxicity - Category 3, Inhalation
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H301 Toxic if swallowed
H311 Toxic in contact with skin
H314 Causes severe skin burns and eye damage
H331 Toxic if inhaled
H400 Very toxic to aquatic life

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/...
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.

Response

P301+P316 IF SWALLOWED: Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P316 Get emergency medical help immediately.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep 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.
P391 Collect spillage.

Storage

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

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:	Chloroacetic acid
Common names and synonyms:	Chloroacetic acid
CAS number:	79-11-8
EC number:	201-178-4
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer immediately for medical attention.

Following skin contact

Wear protective gloves when administering first aid. First rinse with plenty of water for at least 15 minutes, then remove

contaminated clothes and rinse again. See Notes. Refer immediately for medical attention.

Following eye contact

Rinse with plenty of water for several minutes (remove contact lenses if easily possible). Refer immediately for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer immediately for medical attention. See Notes.

Most important symptoms/effects, acute and delayed

Inhalation causes mucous membrane irritation. Contact with liquid causes severe irritation and burns of the eyes and irritation and burns of skin. Ingestion causes burns of mouth and stomach. (USCG, 1999)

This material is very toxic. The probable lethal oral dose is 50-500 mg/kg of body weight, between one teaspoon and one ounce, for a 150 lb. person. Chloroacetic acid is irritating to the skin, cornea, and respiratory tract and causes burns. It may severely damage skin and mucous membranes. Ingestion may interfere with essential enzyme systems and cause perforation and peritonitis. Burns to skin result in marked fluid and electrolyte loss. Death may follow if more than 3% of the skin is exposed to this material. Other health hazards include central nervous system depression, and respiratory system depression. Persons with lung diseases are at greater risk. (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. Organic acids and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

This material is extremely hazardous to health, but fire fighters may enter areas with extreme care. Full protective clothing including a self-contained breathing apparatus, coat, pants, gloves, boots and bands around legs, arms and waist should be provided. No skin surface should be exposed. Move container from fire area if you can do so without risk. Spray cooling water on containers that are exposed to flame until well after fire is out. This chemical may burn but does not readily ignite. Use dry chemical, carbon dioxide, water spray, or alcohol or foam extinguishers. Poisonous gases including chlorine and phosgene. /SRP: are produced during thermal breakdown/. If materials or contaminated runoff enter waterways, notify downstream users of potentially contaminated waters. Notify local health and fire officials and pollution control agencies. From a secure, explosion-proof location, use water spray to cool exposed containers. If cooling streams are ineffective (venting sound increases in volume

and pitch, tank discolors, or shows any signs of deforming), withdraw immediately to a secure position. If employees are expected to fight fires, they must be trained and equipped.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Toxic gases, such as hydrogen chloride, phosgene and carbon monoxide, may be generated. (USCG, 1999)

When heated to decomposition, it emits highly toxic fumes of phosgene and chlorides. Water may cause frothing if it gets below surface of the liquid and turns to steam. Flammable/poisonous gases may accumulate in tanks and hopper cars. Some of these materials may ignite combustibles, e.g., wood, paper, oil. It is corrosive to metals. Avoid heating. (EPA, 1998)

Special protective actions for fire-fighters

Use water spray, powder, alcohol-resistant foam, carbon dioxide. 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: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Do NOT wash away into sewer. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Do NOT wash away into sewer. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Stay upwind; keep out of low areas. Evacuate persons not wearing protective equipment from area of spill or leak until cleanup is complete. Neutralize spilled materials with crushed limestone, soad ash, or lime. Waste water containing chloroacetic acid can be treated with ammonia, ammonium salts, or amines followed by separation of suspended solids. Collect powdered material in the most convenient and safe manner and deposit in sealed containers. Dike large spills far ahead of spill for later disposal. Ventilate area of spill or leak after clean-up is complete. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your

Department of Environmental Protection or your regional office of the federal EPA for specific recommendations. If employees are required to clean-up spills, they must be properly trained and equipped.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames. NO contact with incompatible substances. See Chemical Dangers. 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 incompatible materials and food and feedstuffs. See Chemical Dangers. Dry. Store only in original container. Well closed. Ventilation along the floor. Store in an area without drain or sewer access. Prior to working with chloroacetic acid you should be trained on its proper handling and storage. Store in tightly closed containers in a cool, well-ventilated area away from metals, combustibles, strong oxidizers, strong bases, and reducing agents. Where possible, automatically pump liquid from drums or other storage containers to process containers. Drums must be equipped with self-closing valves, pressure vacuum bungs, and flame arresters. Use only non-sparking tools and equipment, especially when opening and closing containers of this chemical. Sources of ignition such as smoking and open flames are prohibited where this chemical is handled, used, or stored in a manner that could create a potential fire or explosion hazard.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 0.5 ppm as TWA; (skin); A4 (not classifiable as a human carcinogen). MAK: 2.0 mg/m³, 0.5 ppm; peak limitation category: I(2); pregnancy risk group: C

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 if powder.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Chloroacetic acid, solution is a colorless solution of the white crystalline solid. The acid concentration can be up to 80%. It is toxic by inhalation, ingestion and skin contact. It is corrosive to metals and tissue. It is used as an herbicide, preservative and bacteriostat.
Colour:	Monoclinic prisms
Odour:	Characteristic penetrating odor similar to vinegar
Melting point/freezing point:	197°C(lit.)
Boiling point or initial boiling point and boiling range:	189°C(lit.)
Flammability:	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 8.0% by volume
Flash point:	113°C(lit.)

Auto-ignition temperature:	Greater than 932 deg F (greater than 500 deg C).
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	2.16 millipascal-sec at 70 deg C, 1.32 millipascal-sec at 100 deg C, 1.30 millipascal-sec at 130 deg C
Solubility:	greater than or equal to 100 mg/mL at 68° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 0.22
Vapour pressure:	0.75 mm Hg (20 °C)
Density and/or relative density:	1.58
Relative vapour density:	3.26 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces toxic fumes including hydrogen chloride and phosgene. The solution in water is a medium strong acid. Attacks metals. This produces a combustible/explosive gas (hydrogen - see ICSC 0001). Reacts with bases, oxidizing substances and reducing agents. This produces toxic and flammable gases. This generates toxic, fire and explosion hazard. Attacks some forms of plastic, some forms of rubber and coatings.

Chemical stability

no data available

Possibility of hazardous reactions

Combustible liquid when exposed to heat or flame. The vapour is heavier than air. These organic compounds donate hydrogen ions

if a base is present to accept them. They react in this way with all bases, both organic (for example, the amines) and inorganic. Their reactions with bases, called "neutralizations", are accompanied by the evolution of substantial amounts of heat. Neutralization between an acid and a base produces water plus a salt. Soluble carboxylic acid dissociate to an extent in water to yield hydrogen ions. The pH of solutions of carboxylic acids is therefore less than 7.0. Carboxylic acids in aqueous solution and liquid or molten carboxylic acids can react with active metals to form gaseous hydrogen and a metal salt. Such reactions occur in principle for solid carboxylic acids as well, but are slow if the solid acid remains dry. Even "insoluble" carboxylic acids may absorb enough water from the air and dissolve sufficiently in it to corrode or dissolve iron, steel, and aluminum parts and containers. Carboxylic acids, like other acids, react with cyanide salts to generate gaseous hydrogen cyanide. The reaction is slower for dry, solid carboxylic acids. Flammable and/or toxic gases and heat are generated by the reaction of carboxylic acids with diazo compounds, dithiocarbamates, isocyanates, mercaptans, nitrides, and sulfides. Carboxylic acids, especially in aqueous solution, also react with sulfites, nitrites, thiosulfates (to give H₂S and SO₃), dithionites (SO₂), to generate flammable and/or toxic gases and heat. Their reaction with carbonates and bicarbonates generates a harmless gas (carbon dioxide) but still heat. Like other organic compounds, carboxylic acids can be oxidized by strong oxidizing agents and reduced by strong reducing agents. These reactions generate heat. A wide variety of products is possible. Like other acids, carboxylic acids may initiate polymerization reactions; like other acids, they often catalyze (increase the rate of) chemical reactions.

Conditions to avoid

no data available

Incompatible materials

The solution in water is a strong acid. Contact with strong oxidizers, strong bases, and strong reducing agents can cause violent reactions.

Hazardous decomposition products

Hazardous decomposition products include oxides of carbon as well as ionic or oxidized chlorine.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD₅₀ Rat oral 76 mg/kg Sodium salt

Inhalation: LC₅₀ Rat inhalation 180 mg/cu m/4 hr From table

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

A4: Not classifiable as a human carcinogen.

Reproductive toxicity

No information is available on the reproductive or developmental effects of chloroacetic acid in humans or animals.

STOT-single exposure

The substance is corrosive to the eyes, skin and respiratory tract. Inhalation of high concentrations may cause lung oedema, but only after initial corrosive effects on the eyes and the upper respiratory tract have become manifest. See Notes. The substance may cause effects on the metabolism. This may result in metabolic acidosis and multiple organ failure. Exposure could cause death. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

Repeated or prolonged inhalation may cause effects on the lungs.

Aspiration hazard

A harmful contamination of the air will be reached slowly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 *Pimephales promelas* (fathead minnow) 145 mg/L/96 hr; semi-static /From table

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water flea, age < or =24 hr); Conditions: freshwater, static, 25 deg C, pH > or =7.0, dissolved oxygen > or = 58%; Concentration: 96000 ug/L for 24 hr; Effect: intoxication, immobilization /formulated product

Toxicity to algae: EC50; Species: *Scenedesmus subspicatus* (Green algae); Conditions: freshwater, static, 24 deg C, pH 8.0-9.3; Concentration: 28 ug/L for 48 hr; Effect: decreased population biomass /formulated product

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: Chloroacetic acid, present at 100 mg/L, reached 65.0% of its theoretical BOD in 3 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(1). The test was repeated under the assumption that the test substance inhibited the sludge because only 1 replicate of 2 showed biodegradation tendency(1). After 4 weeks, 2 out of 5 replicates had degraded more than 90%, while the remaining 3 replicates had degraded more than 60%(1). CO₂ evolution was 14-24% and 73% of the theoretical amount possible at a chloroacetic acid concentration of 4.5 and 9.0 mg carbon/L, respectively, after a 7 day incubation with an activated sludge inoculum(2). Chloroacetic acid was completely degraded in the closed bottle test (at 5 mg/l), the Modified OECD Screening Test (at 5 mg C/L), and the Zahn-Wellens Test (at 1000 mg/L)(3). Chloroacetic acid is degraded in laboratory biodegradation tests using sewage or acclimated sludge inocula with greater than 70-90% degradation being reported in 5-10 days(4-7,9). Degradation is increased by acclimation(7,9) and involves dechlorination(7). Mineralization occurs in river water with 73% of the chemical being converted to carbon dioxide in 8-10 days at 29 deg C(8). The biodegradability of chloroacetic acid, at 10 ppm, was measured in both river water and seawater using the cultivation method; no biodegradation was reported for both samples after a 3 day incubation(10). Based on these results, this compound was determined to be difficult to degrade(10).

Bioaccumulative potential

An estimated BCF of 3.2 was calculated for chloroacetic acid(SRC), using a log Kow of 0.22(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

The Koc of chloroacetic acid is estimated as 31(SRC), using a log Kow of 0.22(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that chloroacetic acid is expected to have very high mobility in soil. The pKa of chloroacetic acid is 2.87(4), indicating that this compound will primarily exist in the anion form in the environment and anions generally do not adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(5).

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: UN1750 (For reference only, please check.)

IMDG: UN1750 (For reference only, please check.)

IATA: UN1750 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: CHLOROACETIC ACID SOLUTION (For reference only, please check.)

IMDG: CHLOROACETIC ACID SOLUTION (For reference only, please check.)

IATA: CHLOROACETIC ACID SOLUTION (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: II (For reference only, please check.)
IMDG: II (For reference only, please check.)
IATA: II (For reference only, please check.)

Environmental hazards

ADR/RID: Yes
IMDG: Yes
IATA: Yes

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

After skin contact, immediately rinsing with plenty of water is needed. Alternatively, emergency baths with 3 - 5 % sodium bicarbonate can be used to submerge the exposed skin. When > 5 % of the skin surface is affected a severe and even a life-threatening intoxication may occur. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. Consult a poison information centre or an expert for further information. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Immediate administration of an appropriate inhalation therapy by a doctor, or by an authorized person, should be considered. Other melting points: 63°C (alpha form), 56.2°C (beta form), 52.5°C (gamma form). Other UN numbers: 1750 Chloroacetic acid, solution; 3250 Chloroacetic acid, molten.

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