

Chemical Safety Data Sheet MSDS / SDS

2-chloroaniline 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: 2-chloroaniline

CAS: 95-51-2

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

Eye irritation, Category 2
Acute toxicity - Category 3, Inhalation
Germ cell mutagenicity, Category 2
Specific target organ toxicity - repeated exposure, Category 2
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H301+H311+H331 Toxic if swallowed, in contact with skin or if inhaled
H318 Causes serious eye damage
H341 Suspected of causing genetic defects
H373 May cause damage to organs through prolonged or repeated exposure
H410 Very toxic to aquatic life with long lasting effects

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.
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.

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.
P318 IF exposed or concerned, get medical advice.
P319 Get medical help if you feel unwell.
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:	2-chloroaniline
Common names and synonyms:	2-chloroaniline
CAS number:	95-51-2
EC number:	202-426-4
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 and then wash skin with water and soap. 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. Refer for medical attention .

Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include headache, nausea, vomiting, jaundice, convulsions, severe kidney damage, liver damage, methemoglobin formation and in sufficient concentrations, cyanosis; skin and eye irritation; and dermatitis. Onset may be delayed 2-4 hours or longer. ACUTE/CHRONIC HAZARDS: This compound is toxic by ingestion, inhalation and contact with the skin. It may cause irritation of the skin. (NTP, 1992)

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

Methylene blue, alone or in combination with oxygen, is indicated as treatment in nitrite-induced methemoglobinemia.

SECTION 5: Firefighting measures**Suitable extinguishing media**

Water, dry chemical, foam or carbon dioxide 4-chloroaniline

Specific hazards arising from the chemical

This chemical is combustible. (NTP, 1992)

Special protective actions for fire-fighters

Use powder. Use foam. Use carbon dioxide.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: chemical protection suit 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

Personal protection: chemical protection suit 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

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames. 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. Keep in the dark. Well closed.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

MAK skin absorption (H)

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 safety goggles or face shield.

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:	Liquid.
Colour:	Water-white to tan.
Odour:	Characteristic sweet odor
Melting point/freezing point:	-2 °C. Remarks:Melting point.
Boiling point or initial boiling point and boiling range:	205 °C. Atm. press.:1 013 hPa. Remarks:O-chloroaniline, raw.
Flammability:	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit:	no data available

Flash point:	105 °C. Atm. press.:1 013 hPa.
Auto-ignition temperature:	>= 500. Atm. press.:1 013 hPa.
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	kinematic viscosity (in mm ² /s) = 2.64. Temperature:20°C. Remarks:Kinetic viscosity.;dynamic viscosity (in mPa s) = 3.2. Temperature:20°C. Remarks:Dynamic viscosity.;sec = < 30. Temperature:20°C. Remarks:Flow-time; 3 mm ISO-Becher.
Solubility:	Insoluble in water
Partition coefficient n-octanol/water:	log Pow = 1.72. Temperature:20 °C.
Vapour pressure:	0.271 hPa. Temperature:25 °C. Remarks:Original report: 0.204 mm Hg at 25 °C.
Density and/or relative density:	1.21 g/cm ³ . Temperature:20 °C.
Relative vapour density:	4.4 (NTP, 1992) (Relative to Air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces toxic fumes including nitrogen oxides and hydrogen chloride (see ICSC 0163).

Chemical stability

Darkens on exposure to air.

Possibility of hazardous reactions

O-CHLOROANILINE is incompatible with acids, acid chlorides, acid anhydrides, chloroformates and strong oxidizing agents. (NTP, 1992)

Conditions to avoid

no data available

Incompatible materials

Darkens with exposure to air. (TOXNET HSDB)

Hazardous decomposition products

When heated to decomposition, it emits toxic fumes of /hydrogen chloride and nitrogen oxides/.

SECTION 11: Toxicological information**Acute toxicity**

Oral: LD50 Mouse oral 256 mg/kg

Inhalation: LC50 Rat inhalation 4000-6000 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

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes. The substance may cause effects on the blood. This may result in the formation of methaemoglobin. Medical observation is indicated. The effects may be delayed.

STOT-repeated exposure

The substance may have effects on the blood. This may result in the formation of methaemoglobin.

Aspiration hazard

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - *Poecilia reticulata* - 6.25 mg/L - 14 d.

Toxicity to daphnia and other aquatic invertebrates: LC50 - *Daphnia magna* - 0.13 mg/L - 48 h.

Toxicity to algae: EC50 - *Scenedesmus pannonicus* - 32 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge - > 27 mg/L - 7 d. Remarks: Respiration rate.

Persistence and degradability

AEROBIC: The results of biodegradability screening studies for 2-chloroaniline are conflicting with results ranging from no degradation to rapid degradation using soil, sewage, activated sludge and fresh water inocula(SRC). 2-Chloroaniline was found to be resistant to microbial degradation using the standard biodegradability test of the Japanese Ministry International Trade and Industry (MITI), a BOD test utilizing a mixed inoculum of activated sludge, sewage, and surface water(1,2). Only 2.7% of the 2-chloroaniline (100 ppm) degraded in a 2-week period in the MITI test(2). A 36% BODT was measured over a 190 hour incubation period with a Warburg respirometer(3). Half-lives greatly in excess of 4 weeks in both adapted and non-adapted inoculum were observed using the Repetitive Die Away (semistatic system) and Pitter (dynamic system) tests(4). No biodegradation was observed

using modified procedures of the OECD and MITI test methods(5,6). Results of standard biodegradation tests were reported as follows: Coupled units, 5-6% DOC removal; Zahn-Wellens, 94% DOC removal; MITI, 0% BODT; Sturm, 0% CO₂ evolution, 9% DOC removal; Closed bottle, 0% BODT(7). Another investigator obtained 85% DOC removal in 11 days in the Zahn-Wellens test(8). 2-Chloroaniline (2 mg/L) was found to be not readily biodegradable with a 10% BOD observed after 5 days in a mixed inoculum of river water collected from the Songhua River in China(9). Incubation of 2-chloroaniline in soil for 14 days resulted in formation of dichloroazobenzene, but no dichloroazobenzene was formed using sterilized soil(10). 100% loss of UV absorbance by microbial degradation in a mineral salts solution, with a soil inoculum, required an excess of 64 days(11). When 2-chloroaniline (3 ppm) was incubated in Guelph loam with water added to 60% water-holding capacity, levels declined rapidly for 2 weeks after which time the rate of loss decreased(12). The percent of 2-chloroaniline remaining in soil after 2 and 8 weeks were 40 and 20%, respectively(12).

Bioaccumulative potential

The average BCFs in the whole body of carp exposed to 2-chloroaniline in flow-through experiments (25 deg C, 12L/hr) for 24 to 336 hours at high (16.1 ug/L) and low (0.83 ug/L) exposure levels were 2.0 and 3.7, respectively(1). Uptake was rapid in static tests (0.19 umol/L, 26 deg C) on zebrafish and a BCF of 15.3 was obtained for 24 hour exposure(2). Log BCF of 2-chloroaniline in fish were experimentally determined to be less than 2.0 using the Japanese MITI test procedures(3). In an 8-week test performed at two concentration levels, the BCF of 2-chloroaniline in carp was 5.4-9.0 (0.1 ppm) and <14-32 (0.01 ppm)(4). According to a classification scheme(5), these BCF values suggest that bioconcentration in aquatic organisms is low(SRC), provided the compound is not altered physically or chemically once released into the environment.

Mobility in soil

The Koc of 2-chloroaniline is estimated as 260(SRC), using a log Kow of 1.9(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that 2-chloroaniline is expected to have moderate mobility in soil. However, aromatic amines are expected to bind strongly to humus or organic matter in soils due to the high reactivity of the aromatic amino group(4,5), suggesting that mobility may be much lower in some soils(SRC).

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: UN2019 (For reference only, please check.)

IMDG: UN2019 (For reference only, please check.)

IATA: UN2019 (For reference only, please check.)

UN Proper Shipping Name

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

IMDG: CHLOROANILINES, LIQUID (For reference only, please check.)

IATA: CHLOROANILINES, LIQUID (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

Stabilized with 0.1% Hydrazine hydrate. Depending on the degree of exposure, periodic medical examination is suggested. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available.

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