

### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : 4-Chloroaniline

Product Number : C22415  
Brand : Aldrich

Supplier : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832  
Fax : +1 800-325-5052  
Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation  
Product Safety - Americas Region  
1-800-521-8956

### 2. HAZARDS IDENTIFICATION

#### Emergency Overview

##### OSHA Hazards

Carcinogen, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Skin sensitiser

##### Target Organs

Blood, Central nervous system, Cardiovascular system.

##### GHS Classification

Acute toxicity, Dermal (Category 3)  
Acute toxicity, Oral (Category 3)  
Acute toxicity, Inhalation (Category 4)  
Eye irritation (Category 2B)  
Skin sensitization (Category 1)  
Carcinogenicity (Category 1B)  
Acute aquatic toxicity (Category 1)  
Chronic aquatic toxicity (Category 3)

##### GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H301 + H311 Toxic if swallowed or in contact with skin  
H317 May cause an allergic skin reaction.  
H320 Causes eye irritation.  
H332 Harmful if inhaled.  
H350 May cause cancer.  
H400 Very toxic to aquatic life.  
H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P201 Obtain special instructions before use.

P273 Avoid release to the environment.  
 P280 Wear protective gloves/ protective clothing.  
 P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.

**HMIS Classification**

**Health hazard:** 3  
**Chronic Health Hazard:** \*  
**Flammability:** 1  
**Physical hazards:** 0

**NFPA Rating**

**Health hazard:** 2  
**Fire:** 1  
**Reactivity Hazard:** 0

**Potential Health Effects**

**Inhalation** Toxic if inhaled. May cause respiratory tract irritation.  
**Skin** Toxic if absorbed through skin. May cause skin irritation.  
**Eyes** May cause eye irritation.  
**Ingestion** Toxic if swallowed.

---

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Formula : C<sub>6</sub>H<sub>6</sub>ClN  
 Molecular Weight : 127.57 g/mol

Component		Concentration
<b>4-Chloroaniline</b>		
CAS-No.	106-47-8	-
EC-No.	203-401-0	
Index-No.	612-137-00-9	

---

**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. Take victim immediately to hospital. 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. FIREFIGHTING MEASURES**

**Conditions of flammability**

Not flammable or combustible.

**Suitable extinguishing media**

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

**Special protective equipment for firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

### Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx), Hydrogen chloride gas

---

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

### Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

---

## 7. HANDLING AND STORAGE

### Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

### Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.  
Light sensitive. Store under inert gas. Air sensitive.

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
4-Chloroaniline	106-47-8	TWA	5 ppm 19 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
Remarks	Skin contact does contribute to exposure.			
		TWA	2 ppm 8 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	Skin contact does contribute to exposure.			

### Personal protective equipment

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) 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. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Immersion protection

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: > 480 min

Material tested: Dermatrill® (Aldrich Z677272, Size M)

#### Splash protection

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: > 30 min  
Material tested: Dermatrill® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

### Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

### Skin and body protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Form solid  
Colour no data available

### Safety data

pH 6.9 at 1.00000 g/l at 20.0 °C (68.0 °F)  
Melting point/freezing point Melting point/range: 67 - 70 °C (153 - 158 °F) - lit.  
Boiling point 232 °C (450 °F) - lit.  
Flash point 120.0 °C (248.0 °F) - closed cup  
Ignition temperature no data available  
Autoignition temperature no data available  
Lower explosion limit no data available  
Upper explosion limit no data available  
Vapour pressure 0.036 hPa (0.027 mmHg) at 26.0 °C (78.8 °F)  
0.4 hPa (0.3 mmHg) at 38.0 °C (100.4 °F)  
0.3 hPa (0.2 mmHg) at 25.0 °C (77.0 °F)  
Density 1.14 g/cm<sup>3</sup> at 100.00 °C (212.00 °F)  
Water solubility 2 g/l  
Partition coefficient: n-octanol/water log Pow: 2.12  
log Pow: 1.70  
Relative vapour density no data available  
Odour no data available  
Odour Threshold no data available  
Evaporation rate no data available

---

## 10. STABILITY AND REACTIVITY

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

no data available

**Conditions to avoid**

no data available

**Materials to avoid**

acids, Acid chlorides, Acid anhydrides, Chloroformates, Strong oxidizing agents

**Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx), Hydrogen chloride gas

Other decomposition products - no data available

---

**11. TOXICOLOGICAL INFORMATION****Acute toxicity****Oral LD50**

LD50 Oral - rat - male - 256.0 mg/kg

**Inhalation LC50**

LC50 Inhalation - rat - 4 h - 2,340 mg/m<sup>3</sup>

Remarks: Behavioral:Somnolence (general depressed activity). Lungs, Thorax, or Respiration:Dyspnea. Cyanosis

**Dermal LD50**

LD50 Dermal - rat - male - 455.0 mg/kg

**Other information on acute toxicity**

no data available

**Skin corrosion/irritation**

Skin - rabbit - No skin irritation

**Serious eye damage/eye irritation**

Eyes - rabbit - Mild eye irritation

**Respiratory or skin sensitization**

May cause sensitization by skin contact.

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

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.

Possible human carcinogen

IARC: 2B - Group 2B: Possibly carcinogenic to humans (4-Chloroaniline)

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

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.

**Reproductive toxicity**

no data available

**Teratogenicity**

no data available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**

no data available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

no data available

**Aspiration hazard**

no data available

**Potential health effects**

<b>Inhalation</b>	Toxic if inhaled. May cause respiratory tract irritation.
<b>Ingestion</b>	Toxic if swallowed.
<b>Skin</b>	Toxic if absorbed through skin. May cause skin irritation.
<b>Eyes</b>	May cause eye irritation.

**Signs and Symptoms of Exposure**

May cause cyanosis., Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Synergistic effects**

no data available

**Additional Information**

RTECS: BX0700000

---

**12. ECOLOGICAL INFORMATION**

**Toxicity**

Toxicity to fish	LC50 - Lepomis macrochirus (Bluegill) - 1.8 - 3.2 mg/l - 96.0 h
	LC50 - Oncorhynchus mykiss (rainbow trout) - 9.7 - 16 mg/l - 96.0 h
	LC50 - Pimephales promelas (fathead minnow) - 7 - 18 mg/l - 96.0 h
	LC50 - Danio rerio (zebra fish) - 33 mg/l - 96.0 h
	LC50 - Leuciscus idus (Golden orfe) - 23 mg/l - 48.0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 0.04 - 0.06 mg/l - 48 h
Toxicity to algae	EC50 - Desmodesmus subspicatus (green algae) - 2.20 - 6.30 mg/l - 72 h

**Persistence and degradability**

Biodegradability	aerobic
	Result: > 90 % - Readily biodegradable.

**Bioaccumulative potential**

no data available

**Mobility in soil**

no data available

**PBT and vPvB assessment**

no data available

**Other adverse effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life.

**13. DISPOSAL CONSIDERATIONS****Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. 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: 2018 Class: 6.1 Packing group: II

Proper shipping name: Chloroanilines, solid

Reportable Quantity (RQ): 1000 lbs

Marine pollutant: No

Poison Inhalation Hazard: No

**IMDG**

UN number: 2018 Class: 6.1 Packing group: II EMS-No: F-A, S-A

Proper shipping name: CHLOROANILINES, SOLID

Marine pollutant: No

**IATA**

UN number: 2018 Class: 6.1 Packing group: II

Proper shipping name: Chloroanilines, solid

**15. REGULATORY INFORMATION****OSHA Hazards**

Carcinogen, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Skin sensitiser

**SARA 302 Components**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
4-Chloroaniline	106-47-8	2007-07-01

**SARA 311/312 Hazards**

Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

	CAS-No.	Revision Date
4-Chloroaniline	106-47-8	2007-07-01

**Pennsylvania Right To Know Components**

	CAS-No.	Revision Date
4-Chloroaniline	106-47-8	2007-07-01

**New Jersey Right To Know Components**

	CAS-No.	Revision Date
4-Chloroaniline	106-47-8	2007-07-01

**California Prop. 65 Components**

WARNING! This product contains a chemical known to the State of California to cause cancer.  
4-Chloroaniline

CAS-No.  
106-47-8

Revision Date  
2007-09-28

---

**16. OTHER INFORMATION****Further information**

Copyright 2012 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only. 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 Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

---