1. PRODUCT AND COMPANY IDENTIFICATION

Product name: 4-Chloroaniline
Product Number: C22415
Brand: Sigma-Aldrich
Supplier: Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63110
USA
Telephone: +1 800-355-5822
Fax: +1 800-355-5829
Emergency Phone # (For both supplier and manufacturer):
Preparation Information: Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-255-5822

2. HAZARDS IDENTIFICATION

Emergency Overview
OSHA Hazards
Carcinogen, Toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Skin sensitizer
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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula: C₇H₅ClN
Molecular Weight: 127.57 g/mol

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Chloroaniline</td>
<td>CAS-No. 106-47-8</td>
</tr>
<tr>
<td>EC-No. 203-401-0</td>
<td></td>
</tr>
<tr>
<td>Index-No. 612-137-09-9</td>
<td>-</td>
</tr>
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</table>

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

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
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<tr>
<td>4-Chloroaniline</td>
<td>106-47-8</td>
<td>5 ppm</td>
<td>TWA</td>
<td>USA, Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td>Skin contact does contribute to exposure.</td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td>2 ppm</td>
<td>3 mg/m³</td>
<td>USA, OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
<td>Skin contact does contribute to exposure.</td>
</tr>
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</table>

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 material and 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: Dermatrit® (Alpharm Z677727, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 480 min
Material tested: Dermatrit® (Alpharm Z677727, Size M)

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: 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 mm Hg) at 20.0 °C (68.0 °F)
Density: 1.14 g/cm³ at 100.00 °C (212.0 °F)
Water solubility: 2 g/l
Partition coefficient: log Pow: 2.12
n-Octanol/Water: 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
11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
LD50 Oral - male - 256.0 mg/kg

Inhalation LC50
LC50 Inhalation - rat - 4 h - 2,340 mg/m³

Remarks: Behavioral-Somnolence (general depressant 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

Inhalation
Toxic if inhaled. May cause respiratory tract irritation.

Ingestion
Toxic if swallowed. May cause skin irritation.

Skin
May cause sensitization by skin contact.

Eyes
May cause eye irritation.

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

Synergistic effects
no data available

Additional information
RTECS: BX070000S

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish
LC50 - Lepomis macrochirus (Buoy gill) - 1.8 - 3.2 mg/l - 96.0 h
LC50 - Oncorhynchus mykiss (rainbow trout) - 0.7 - 16 mg/l - 96.0 h
LC50 - Pinna nobilis (Acid flat fish) - 7 - 18 mg/l - 96.0 h
LC50 - Dario rigor (zebra fish) - 33 mg/l - 96.0 h
LC50 - Leiocbatus diobaeus (Golden eri) - 23 mg/l - 48.0 h

Toxicity to daphnia
EC50 - Daphnia magna (Water flea) - 0.04 - 0.06 mg/l - 48 h

Toxicity to algae
EC50 - Desmodesmus subspicatus (green algae) - 2.20 - 8.30 mg/l - 72 h

Persistence and degradability

Biodegradability
aerobic: > 90 % - Readily biodegradable.

Bioaccumulative potential
no data available

Mobility in soil
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 322: 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:

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

Massachusetts Right To Know Components

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Pennsylvania Right To Know Components

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New Jersey Right To Know Components

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