

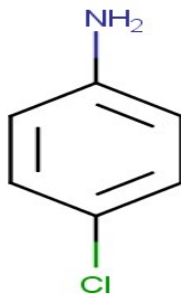
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### 1. General Statement

4-Chloroaniline is an organochlorine compound. This pale yellow solid is one of the three isomers of chloroaniline.

### 2. Chemical identity

Name : 4-chloroaniline  
 CAS number(s) : 106-47-8  
 EC number : 203-401-0  
 Molecular formula : C<sub>6</sub>H<sub>6</sub>ClN  
 Structure :



### 3. Uses and Benefits

4-Chloroaniline is used as an intermediate in the production of several urea herbicides and insecticides (e.g., monuron, diflubenzuron, monolinuron), azo dyes and pigments. The 4-chloroaniline based azo dyes and pigments are especially used for the dyeing and printing of textiles.

### 4. Physical / chemical properties

| Property         | Value                                               |
|------------------|-----------------------------------------------------|
| Physical state : | Solid                                               |
| Colour :         | White to light amber.                               |
| Odour :          | Sweet odour & Amine-like odour.                     |
| pH :             | No data available                                   |
| Melting point    | 73 °C (1013 hPa)                                    |
| Boiling point :  | 232 °C (1013 hPa, Practical experience/observation) |
| Flash point :    | 123 °C (Closed cup, 1013 hPa)                       |
| Density :        | 1430 kg/m <sup>3</sup> (20 °C)                      |

## GPS Safety Summary

### 4-Chloroaniline

|                      |                      |
|----------------------|----------------------|
| Solubility in Water: | 0.28 g/100ml (20 °C) |
|----------------------|----------------------|

#### 5. Health Effects

| Effect Assessment                                              | Result                                                             |
|----------------------------------------------------------------|--------------------------------------------------------------------|
| Acute toxicity (Oral / inhalation / dermal )                   | Toxic if swallowed,if contact with skin & toxic if inhaled.        |
| Irritation / corrosion<br>Skin / eye/ respiratory tract        | Causes serious eye irritation.                                     |
| Respiratory or skin sensitisation                              | May cause an allergic skin reaction.                               |
| Toxicity after repeated exposure<br>Oral / inhalation / dermal | May cause damage to organs through prolonged or repeated exposure. |
| Genotoxicity / Mutagenicity                                    | NA                                                                 |
| Carcinogenicity                                                | May cause cancer.                                                  |
| Toxicity for reproduction                                      | NA                                                                 |

#### 6. Environmental Effects

| Effect Assessment             | Result                                                                                    |
|-------------------------------|-------------------------------------------------------------------------------------------|
| Aquatic toxicity              | Yes                                                                                       |
| Fate and behavior             | Result                                                                                    |
| Persistence and degradability | Non degradable in the soil. Inherently biodegradable. Not readily biodegradable in water. |
| Bioaccumulative potential     | Low potential for bioaccumulation (BCF < 500).                                            |

#### 7. Exposure

##### Human health

4-chloroaniline can affect you when breathed in and by passing through skin. 4-chloroaniline should be handled as carcinogens with extreme caution. Contact can severely irritate and burn the skin and eyes, and cause skin blisters. High levels can interfere with the ability of the blood to carry oxygen causing headache, fatigue, dizziness and a blue color to the skin and lips (methemoglobinemia). Higher levels can cause trouble breathing, collapse and even death.4-chloroaniline may damage the livers and kidneys. Exposure to 4-chloroaniline may affect the nervous system

## GPS Safety Summary

### 4-Chloroaniline

The most likely route of human exposure (workers) is through skin. In industrial settings, ingestion is not an anticipated route of exposure. The probability of exposure to workers is expected to be low because this product is manufactured in an enclosed controlled environment and is transported in well sealed containers. Workers may be exposed during (un)loading, mixing, sampling, analysis or maintenance operations and particularly in case of batch processes. The exposure must be kept as minimum as possible by the use of appropriate risk management measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers. Workers whose clothing has been contaminated by 4-chloroaniline should change into clean clothing promptly. Careless handling or accidental spillage of the chemical could result in exposure to potentially hazardous levels of chemicals.

Industrial workers should ensure that they follow the advice found in the extended safety data sheet (SDS).

### Environment

Substance is very toxic to aquatic life with long lasting effects. Care should be taken to avoid releases of these products to sewage, drainage systems and water bodies. Spillage shall be quickly collected in the event of an accidental release. More information about release measures and accidental release measures are available in the extended safety data sheet.

## 8. Risk Management Recommendations

### Human health measures

|                                                                                                      |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Organizational</b>                                                                                | A basic standard of occupational hygiene is recommended. Ensure operatives are well informed of the hazards and trained to minimise exposures.Ensure regular inspection and maintenance of equipment and machines.Handle and store according to the indications of the Safety Data Sheet. |                                                                                                                                                                           |
| <b>Protection</b>                                                                                    | Eye protection:                                                                                                                                                                                                                                                                           | Face shield (EN 166). In case of dust production: protective goggles (EN 166))                                                                                            |
|                                                                                                      | Skin and body protection:                                                                                                                                                                                                                                                                 | Protective clothing (EN 14605 or EN 13034). In case of dust production: head/neck protection. In case of dust production: dustproof clothing (EN 13982)                   |
|                                                                                                      | Respiratory protection:                                                                                                                                                                                                                                                                   | Dust production: dust mask with filter type P3. On heating: full face mask with filter type A. High dust production: self-contained breathing apparatus (EN 136 + EN 137) |
| <b>Engineering controls</b>                                                                          | Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.Ensure good ventilation of the work station.                                                                                                                      |                                                                                                                                                                           |
| <b>Environment protective measures</b>                                                               |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                           |
| Product must not be released into water without pre-treatment. Neutralize wastewater before release. |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                           |

# GPS Safety Summary

## 4-Chloroaniline

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### 9. First-aid measures

**First-aid measures after inhalation** : Remove the victim into fresh air. Immediately consult a doctor/medical service.

**First-aid measures after skin contact** : Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Remove clothing before washing. Consult a doctor/medical service.

**First-aid measures after eye contact** : Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents.

**First-aid measures after ingestion** : Rinse mouth with water. Give nothing to drink. Immediately consult a doctor/medical service. Call Poison Information Centre. Take the container/vomit to the doctor/hospital. Ingestion of large quantities: immediately to hospital.

### 10. Fire-fighting measures

#### **Extinguishing media**

Suitable extinguishing media : Quick-acting ABC powder extinguisher. Quick-acting BC powder extinguisher. Quick-acting class B foam extinguisher. Quick-acting CO2 extinguisher. Class B foam (not alcohol-resistant).

Unsuitable extinguishing media : Water (quick-acting extinguisher, reel); risk of puddle expansion. Water; risk of puddle expansion.

Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : On heating/burning: release of toxic and corrosive gases/vapours (nitrous vapours, hydrogen chloride, phosgene, carbon monoxide - carbon dioxide).

#### **Advice for firefighters**

Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: seal off low-lying areas. Exposure to fire/heat: have neighbourhood close doors and windows.

Firefighting instructions : Cool tanks/drums with water spray/remove them into safety. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.

### 11. Accidental release measures

**Protective equipment** : Gloves (EN 374). Face shield (EN 166). Protective clothing (EN 14605 or EN 13034). Dust cloud production: self-contained breathing apparatus (EN 136 + EN 137). Dust cloud production: dust-tight suit (EN 13982).

**Environmental precautions**: Prevent soil and water pollution. Prevent spreading in sewers.

## GPS Safety Summary

### 4-Chloroaniline

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**For containment** : Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust clouds with water spray. Take account of toxic/corrosive precipitation water. Powdered form: no compressed air for pumping over spills.

### 12. Disposal consideration

**Regional legislation (waste)** : Disposal must be done according to official regulations.

**Waste treatment methods** : Dispose of contents/container in accordance with licensed collector's sorting instructions.

**Sewage disposal recommendations** : Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Remove to an incinerator for chlorinated waste materials with energy recovery.

### 13. Handling and storage

**Precautions for safe handling** : Avoid raising dust. Keep away from naked flames/heat. In a finely divided state: use spark /explosion proof appliances. Finely divided: keep away from ignition sources/sparks. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Powdered form: no compressed air for pumping over. Keep the container tightly closed.

**Hygiene measures** : Always wash hands after handling the product. Remove contaminated clothes. Wear personal protective equipment. Observe very strict hygiene - avoid contact.

# GPS Safety Summary

## 4-Chloroaniline

### 14. Classification and Labeling

|                                |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hazard pictograms (CLP)        | : |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                |   | GHS06      GHS08      GHS09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Signal word (CLP)              | : | Danger                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Contains                       | : | Ortho chloroaniline, aniline, 4-chloroaniline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Hazard statements (CLP)        | : | H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled.<br>H317 - May cause an allergic skin reaction.<br>H350 - May cause cancer.<br>H410 - Very toxic to aquatic life with long lasting effects.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Precautionary statements (CLP) | : | P201 - Obtain special instructions before use.<br>P202 - Do not handle until all safety precautions have been read and understood.<br>P261 - Avoid breathing dust, fume, gas, mist, spray, vapours.<br>P264 - Wash hands thoroughly after handling.<br>P270 - Do not eat, drink or smoke when using this product.<br>P271 - Use only outdoors or in a well-ventilated area.<br>P272 - Contaminated work clothing should not be allowed out of the workplace.<br>P273 - Avoid release to the environment.<br>P280 - Wear protective gloves, protective clothing, eye protection, face protection.<br>P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER, a doctor.<br>P302+P352 - IF ON SKIN: Wash with plenty of soap and water.<br>P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.<br>P308+P313 - IF exposed or concerned: Get medical advice/attention.<br>P311 - Call a POISON CENTER, doctor.<br>P321 - Specific treatment (see supplemental first aid instruction on this label).<br>P330 - Rinse mouth.<br>P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.<br>P361+P364 - Take off immediately all contaminated clothing and wash it before reuse.<br>P362+P364 - Take off contaminated clothing and wash it before reuse.<br>P391 - Collect spillage.<br>P403+P233 - Store in a well-ventilated place. Keep container tightly closed.<br>P405 - Store locked up. |

### 15. Conclusion

4-Chloroaniline is an organochlorine compound. This pale yellow solid is one of the three isomers of chloroaniline. 4-chloroaniline can affect you when breathed in and by passing through skin. 4-chloroaniline should be handled as carcinogens with extreme caution. Care should be taken to avoid releases of these products to sewage, drainage systems and water bodies. The exposure must be kept as minimum as possible by the use of appropriate risk management measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

### 16. Contact Information within company

#### Manufacturer

Aarti Industries Limited

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## **GPS Safety Summary**

### **4-Chloroaniline**

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This GPS safety summary is intended to give general information about the health, safety and environmental and not intended to provide in-depth details. To obtain the most accurate and current information, consult the appropriate Safety Data Sheet (SDS) prior to use of the material named herein.

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