MATERIAL SAFETY DATA SHEET
p-CHLOROPHENOL

1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name: p-Chlorophenol
Synonyms: 4-Chlorophenol, 4-Hydroxychlorobenzene; p-Chlorophenic Acid.
Company Identification: Sisco Research Laboratories Pvt. Ltd.
Andheri (East), Mumbai – 400 099.
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Fax : +91 22 2687 8241
Website : www.srlchem.com

2 - COMPOSITION, INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name:</th>
<th>%</th>
<th>EINECS#</th>
</tr>
</thead>
<tbody>
<tr>
<td>106-48-9</td>
<td>p-Chlorophenol</td>
<td>98%</td>
<td>203-402-6</td>
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3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Warning! May cause methemoglobinemia. May cause adverse reproductive effects based upon animal studies. May cause liver and kidney damage. Harmful if swallowed, inhaled, or absorbed through the skin. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Target Organs: Blood, kidneys, liver, respiratory system, gastrointestinal system, blood forming organs, skin.

Potential Health Effects
Eye: May cause eye irritation. Exposure to solid may cause pain and redness.
Skin: Causes severe skin irritation. Harmful if absorbed through the skin. May cause blistering of the skin.
Ingestion: Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea.
Inhalation: May cause respiratory tract irritation. Harmful if inhaled.
Chronic: May cause liver and kidney damage. May cause methemoglobinemia, which is characterized by chocolatebrown colored blood, headache, weakness, dizziness, breath shortness, cyanosis (bluish skin due to deficient oxygenation of blood), rapid heart rate, unconsciousness and possible death. Adverse reproductive effects have been reported in animals.
### 4 - FIRST AID MEASURES

**Eyes:**
Get medical aid immediately. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

**Skin:**
Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

**Ingestion:**
Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:**
Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Notes to Physician:**
Treat symptomatically and supportively. For methemoglobinemia, administer oxygen alone or with Methylene Blue depending on the methemoglobin concentration in the blood.

**Antidote:**
Methylene blue, alone or in combination with oxygen is indicated as a treatment in nitrite induced methemoglobinemia.

### 5 - FIRE FIGHTING MEASURES

**General Information:**
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:**
Use water spray, dry chemical, carbon dioxide, or chemical foam. Do NOT get water inside containers.

### 6 - ACCIDENTAL RELEASE MEASURES

**General Information:**
Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:**
Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Keep unnecessary and unprotected personnel away.
7 – HANDLING AND STORAGE

Handling: Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Use with adequate ventilation. Use only in a chemical fume hood. Do not breathe dust.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture. Store under nitrogen.

8 – EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low. Use only under a chemical fume hood.

Exposure Limits
Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid
Melting Point: 40 - 43 deg C
Molecular Formula: C₆H₅ClO
Molecular Weight: 128.56

10 - STABILITY AND REACTIVITY

Chemical Stability: Air sensitive. Hygroscopic: absorbs moisture or water from the air.
Conditions to Avoid: Incompatible materials, dust generation, excess heat, exposure to moist air or water, air.
Incompatibilities with Other Materials: Strong oxidizing agents, acid chlorides, acid anhydrides.
Products: Hydrogen chloride, phosgene, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

11 - TOXICOLOGICAL INFORMATION

RTECS#: CAS# 106-48-9: SK2800000
LD50/LC50:
- Draize test, rabbit, eye: 250 ug/24H Severe;
- Draize test, rabbit, skin: 2 mg/24H Severe;
- Inhalation, rat: LC50 = 11 mg/m3;
- Oral, mouse: LD50 = 367 mg/kg;
- Oral, mouse: LD50 = 1373 mg/kg;
- Oral, mouse: LD50 = 605 mg/kg;
- Oral, rat: LD50 = 670 mg/kg;
- Oral, rat: LD50 = 261 mg/kg;
- Skin, rat: LD50 = 1500 mg/kg;
- Skin, rat: LD50 = 1000 mg/kg;

Carcinogenicity: 4-Chlorophenol - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Epidemiology: Experimental reproductive effects have been reported.
Teratogenicity: Not available
Reproductive: Adverse reproductive effects have occurred in experimental animals.
Neurotoxicity: Not available
Mutagenicity: Mutation in microorganisms:
Other: See actual entry in RTECS for complete information.

12 - ECOLOGICAL INFORMATION

Ecotoxicity:
- Fish: Bluegill/Sunfish: 3830ug/L; 96H
- Algae: 3650ug/L; 96H;
- Algae: EC50 = 29 mg/l; 96H;
- Algae: EC50 = 8.3-17.0 mg/l; 72H;
- Fish: Goldfish: LC50 = 9mg/l; 24H
- Daphnia: Daphnia: EC50 = 2.8-8.6 mg/l; 24H
- Fish: Fathead Minnow: LC50 = 3.5-4.6 mg/l; 96H

Other: For more information, see "Handbook Of Environmental Fate And Exposure Data." Do not empty into drains.
- log Pow = 3.5. Biodegradation: 2 % (OECD 301C).
- Bioaccumulation: BCF = 11 -52 (OECD 305C).

13 - DISPOSAL CONSIDERATIONS

Not available

14 - TRANSPORT INFORMATION

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Shipping Name: Chlorophenols, Chlorophenols, Chlorophenols, Solid Solid Solid
Hazard Class: 6.1 6.1 6.1
UN Number: 2020 2020 2020
Packing Group: III III III

15 - REGULATORY INFORMATION

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols: XN N
Risk Phrases: R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety Phrases: S 28 After contact with skin, wash immediately with...
S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)CAS# 106-48-9: 2
Canada CAS# 106-48-9 is listed on Canada's DSL List

US Federal
TSCA CAS# 106-48-9 is listed on the TSCA Inventory.
Health & Safety Reporting List None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules None of the chemicals in this product are under a Chemical Test Rule.
Section 12b None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs None of the chemicals in this material have an RQ.
SARA Section 302 None of the chemicals in this product have a TPQ.
Extremely Hazardous Substances
SARA Codes CAS # 106-48-9: acute, chronic.
Section 313 This material contains 4-Chlorophenol (listed as Chlorinated phenols), 98%, (CAS# 106-48-9) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

Clean Air Act: This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act: None of the chemicals in this product are listed as Hazardous Substances under the CWA.
under the CWA. CAS#106-48-9 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA: None
STATE 4-Chlorophenol is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California Prop 65 California No Significant
Risk Level: None of the chemicals in this product are listed.

16 - ADDITIONAL INFORMATION

SISCO RESEARCH LABORATORIES provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.