Material Safety Data Sheet
Phenol, Crystallized

MSDS# 18380

Section 1 - Chemical Product and Company Identification

MSDS Name: Phenol, Crystallized
Catalog Numbers: AC180780000, AC180780025, AC180781000, AC180785000, AC221750000, AC221750025, AC221750025, AC221755000, AC417170000, AC417170250, AC417175000, A911-212, A911-500, A92-100, A92-112, A92-500, BP226-100, BP226-500
Synonyms: Carbolic acid; Phenyllic acid; Hydroxybenzene; Monohydroxybenzene; Phenyl hydroxide

Company Identification:
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
For information in the US, call: 201-796-7100
Emergency Number US: 201-796-7100
CHEMTREC Phone Number, US: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#: 108-95-2
Chemical Name: Phenol
%
EINECS#: 203-632-7

Hazard Symbols: T
Risk Phrases: 23/24/25 34 48/20/21/22 68

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Danger! Possible risks of irreversible effects. May cause central nervous system depression. May cause liver and kidney damage. Causes burns by all exposure routes. May be fatal if inhaled, absorbed through the skin or swallowed. Readily absorbed through the skin. Target Organs: Blood, kidneys, central nervous system, liver, eyes, skin.

Potential Health Effects
Eye: Causes eye burns.
Skin: May be fatal if absorbed through the skin. Causes skin burns. May cause liver and kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. May cause perforation of the digestive tract. Causes digestive tract burns with immediate pain, swelling of the throat, convulsions, and possible coma. Methemoglobinemia is characterized by dizziness, drowsiness, headache, shortness of breath, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown colored blood. Overexposure may cause methemoglobinemia. Human fatalities have been reported from acute poisoning. May cause cardiac abnormalities. Toxic if swallowed.
Inhalation: Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma. May be fatal if exposed to high concentrations. Toxic if inhaled. Aspiration may lead to pulmonary edema. May Inhalation: also cause pallor, loss of appetite, nausea, vomiting, diarrhea, weakness, darkened urine, headache, sweating,
convulsions, cyanosis (bluish skin due to deficient oxygenation of the blood), unconsciousness, fatigue, pulmonary edema & coma. Inhalation at high concentrations may cause CNS depression and asphyxiation. Chronic inhalation and ingestion may cause effects similar to those of acute inhalation and ingestion. May cause reproductive and fetal effects. Effects may be delayed. Laboratory experiments have resulted in mutagenic effects. Repeated skin contact may cause dermatitis with dark pigmentation of the skin. Animal studies have reported the development of tumors. Possible risk of irreversible effects.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. 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. Discard contaminated clothing in a manner which limits further exposure. SPEEDY ACTION IS CRITICAL! Destroy contaminated shoes.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. SPEED IS ESSENTIAL. A DOCTOR MUST BE NOTIFIED AT ONCE.

Inhalation: 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. SPEED IS ESSENTIAL, OBTAIN MEDICAL AID IMMEDIATELY.

Notes to Physician: Persons with liver or kidney disease should not be exposed to phenol for any length of time. Treat symptomatically and supportively.

Section 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. Use water spray to keep fire-exposed containers cool. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion. Combustible solid. Containers may explode when heated.

Extinguishing Media: Use water spray to cool fire-exposed containers. Use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature: 605 deg C (1,121.00 deg F)
Flash Point: 79 deg C (174.20 deg F)
Explosion Limits: Lower: 1.7 vol %
Explosion Limits: Upper: 8.6 vol %
NFPA Rating: health: 4; flammability: 2; instability: 0;

Section 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. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation.

Section 7 - Handling and Storage

Handling: Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Do not ingest or inhale. Use only in a chemical fume hood. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Keep container closed when not in use. Store in a tightly closed container. Keep from contact with oxidizing materials. Store protected from moisture. Store protected from light. Elevated temperatures will tend to oxidize the product and "Fuse" the dry crystals. Phenol can be stored at room temperatures (60-80°F). It will tend to oxidize less at cooler temperatures. Long term storage at -4°C will not harm the product and may enhance stability.

Section 8 - Exposure Controls, Personal Protection
### Chemical Name | ACGIH | NIOSH | OSHA - Final PELs
Phenol | 5 ppm; Skin potential significant contribution to overall exposure by the cutaneous route | 5 ppm TWA; 19 mg/m³ TWA 250 ppm IDLH | 5 ppm TWA; 19 mg/m³ TWA

OSHA Vacated PELs: Phenol: 5 ppm TWA; 19 mg/m³ TWA

**Engineering Controls:**
Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

**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.

**Section 9 - Physical and Chemical Properties**

- **Physical State:** Solid
- **Color:** white
- **Odor:** sweet, fruity odor - sharp odor
- **pH:** 6 aqueous solution
- **Vapor Pressure:** 0.4 mbar @20 deg C
- **Vapor Density:** 3.2
- **Evaporation Rate:** 0.01 (butyl acetate=1)
- **Viscosity:** 12.7 centipoise
- **Boiling Point:** 182 deg C @760mmHg (359.60°F)
- **Freezing/Melting Point:** 39-41 deg C
- **Decomposition Temperature:** Not available
- **Solubility in water:** 8g/100ml
- **Specific Gravity/Density:** 1.07 (water=1)
- **Molecular Formula:** C₆H₅OH
- **Molecular Weight:** 94.0414

**Section 10 - Stability and Reactivity**

- **Chemical Stability:** Hygroscopic: absorbs moisture or water from the air. Prone to redden on exposure to air and light. Phenol may liquify on exposure to moist air.
- **Conditions to Avoid:** Incompatible materials, light, ignition sources, dust generation, excess heat, exposure to moist air or water.
- **Incompatibilities with Other Materials:** Strong oxidizing agents, acids, bases, aluminum, halogens, magnesium, nitric acid, zinc, isocyanates, acetaldehyde, nitriles (e.g. potassium nitride, sodium nitrile), calcium hypochlorite, lead, peroxomonosulfuric acid, nitrobenzene, sodium nitrite, moisture, aluminum chloride, peroxysulfuric acid, 1,3-butadiene, boron trifluoride diethyl ether.
- **Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide.
- **Hazardous Polymerization:** Has not been reported.

**Section 11 - Toxicological Information**
RTECS#: CAS# 108-95-2: SJ3325000

RTECS:

**CAS# 108-95-2:** Draize test, rabbit, eye: 5 mg Severe;
Draize test, rabbit, skin: 500 mg/24H Severe;
Draize test, rabbit, skin: 100 mg Mild;
Inhalation, mouse: LC50 = 177 mg/m3;
Inhalation, mouse: LC50 = 177 mg/m3/4H;
Inhalation, rat: LC50 = 316 mg/m3;

**LD50/LC50:**

- Inhalation, rat: LC50 = 316 mg/m3/4H;
- Oral, mouse: LD50 = 270 mg/kg;
- Oral, rat: LD50 = 317 mg/kg;
- Oral, rat: LD50 = 512 mg/kg;
- Skin, rabbit: LD50 = 630 mg/kg;
- Skin, rat: LD50 = 669 mg/kg;
- Skin, rat: LD50 = 1500 mg/kg;

Carcinogenicity: Phenol - IARC: Group 3 (not classifiable)

Other:

- Administration into the eye (rabbit) = 5 mg (Severe). Phenol is not considered carcinogenic to rats or mice following oral exposure in drinking water. It was found to be a promotor of skin cancer in mice.

Section 12 - Ecological Information

Ecotoxicity:

- Water flea Daphnia: EC50=12 mg/l; 48-hour; CAS# 108-95-2: Unspecified
- Water flea Daphnia: EC50=4.0 mg/l; 96-hour; CAS# 108-95-2: Unspecified
- Fish: Fathead Minnow: LC50 > 50 mg/l; 1 Hr; CAS# 108-95-2 Static @ 18-22°C
- Fish: Fathead Minnow: TLm = 41 mg/L; 48-hour; CAS# 108-95-2: Flow-through @ 15°C
- Fish: Bluegill/Sunfish: TLm = 19 / 5.7 mg/L; 96 Hr; CAS# 108-95-2: Flow-through

Other: Do not empty into drains.

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

**US DOT**

Shipping Name: PHENOL, SOLID
Hazard Class: 6.1
UN Number: UN1671
Packing Group: II
Canada TDG
Shipping Name: PHENOL, SOLID
Hazard Class: 6.192
UN Number: UN1671
Packing Group: II

USA RQ: CAS# 108-95-2: 1000 lb final RQ; 454 kg final RQ

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T
Risk Phrases:

- R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
- R 34 Causes burns.
- R 48/20/21/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
- R 68 Possible risk of irreversible effects.

Safety Phrases:
S 53 Avoid exposure - obtain special instructions before use.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 60 This material and its container must be disposed of as hazardous waste.
S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)
CAS# 108-95-2: 2

Canada
CAS# 108-95-2 is listed on Canada's DSL List
Canadian WHMIS Classifications: D1A, E, D2B
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
CAS# 108-95-2 is listed on Canada's Ingredient Disclosure List

US Federal
TSCA
CAS# 108-95-2 is listed on the TSCA Inventory.

Section 16 - Other Information
MSDS Creation Date: 7/15/1999
Revision #9 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

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