

Phenol MSDS

Product Name and Identification

Product Name: [Phenol](#)

Synonyms: Carbolic Acid, Hydroxybenzene, Phenyl Alcohol

CAS Number: 108-95-2

Chemical Formula: C₆H₆O

Product Use: Common uses include production of resins, plasticizers, and as an intermediate in chemical synthesis. Also used in limited applications as a disinfectant and antiseptic.

Manufacturer Information: [Provide specific details if applicable]

Composition/Ingredients

Chemical Name: Phenol

Concentration: >99%

CAS Number: 108-95-2

EC Number: 203-632-7

Molecular Weight: 94.11 g/mol

Hazards Identification

Classification of the Substance:

- Acute Toxicity (Oral): Category 3
- Skin Corrosion/Irritation: Category 1B
- Eye Damage/Irritation: Category 1
- Specific Target Organ Toxicity (Single Exposure): Category 3

Labeling:

- **Signal Word:** Danger
- **Hazard Statements:**
 - H301: Toxic if swallowed.
 - H311: Toxic in contact with skin.
 - H314: Causes severe skin burns and eye damage.
 - H335: May cause respiratory irritation.
- **Precautionary Statements:**
 - P260: Do not breathe dust, fumes, or vapors.
 - P280: Wear protective gloves, protective clothing, and eye/face protection.

- P301 + P330 + P310: If swallowed, rinse mouth and consult a doctor immediately.
- P303 + P361 + P353: If on skin or hair, remove all contaminated clothing and rinse the skin or hair thoroughly with water.

Additional Hazards:

Vapors may form explosive mixtures with air. Heated phenol emits toxic and corrosive fumes.

First Aid Measures

General Advice: Immediate medical attention is critical for all exposure scenarios involving phenol.

- **Eye Contact:** Immediately flush eyes with plenty of lukewarm water for at least 15 minutes, holding eyelids open. Seek medical attention promptly.
- **Skin Contact:** Remove contaminated clothing immediately. Wash the affected area thoroughly with polyethylene glycol (PEG), if available, or soap and water. Seek medical attention.
- **Inhalation:** Move the affected individual to fresh air. If there are breathing difficulties, administer oxygen if properly trained. Seek medical attention immediately.
- **Ingestion:** Do not induce vomiting. Rinse mouth with water and give the person water to drink (if conscious). Seek emergency medical assistance immediately.

Key Symptoms and Effects: Phenol exposure may cause burns to the skin or eyes, dizziness, respiratory distress, and systemic organ damage if absorbed.

Handling and Storage

Handling:

- Always handle phenol in a well-ventilated area or fume hood.
- Use appropriate personal protective equipment (PPE). Avoid contact with skin, eyes, and clothing.
- Ensure proper control of spills as phenol is highly corrosive.

Storage:

- Store in a tightly sealed container made of compatible materials, such as glass or stainless steel.
- Keep in a cool, dry, and well-ventilated area, away from incompatible materials including strong oxidizers or bases.

- Protect from heat, sparks, open flames, and ignition sources.

Specific Storage Conditions: Protect from moisture and shield from direct sunlight. Store in segregated areas in accordance with local and national regulations.

Exposure Controls/Personal Protection

Exposure Limits:

- **OSHA PEL (Permissible Exposure Limit):** 5 ppm (19 mg/m³) (skin).
- **ACGIH TLV (Threshold Limit Value):** 5 ppm (19 mg/m³) (skin).

Engineering Controls:

Ensure proper local exhaust ventilation in areas handling phenol. Install safety showers and eyewash stations nearby.

Personal Protective Equipment (PPE):

- **Eye Protection:** Chemical safety goggles or face shield.
 - **Skin Protection:** Wear chemical-resistant gloves (e.g., neoprene or nitrile), and a full-coverage apron or suit.
 - **Respiratory Protection:** Use a NIOSH-approved respirator or air-purifying respirator if exposure limits may be exceeded.
 - **General Hygiene Measures:** Avoid eating, drinking, or smoking near phenol. Wash hands and face thoroughly after handling.
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Physical and Chemical Properties

- **Physical State:** Liquid (at room temperature) or solid (below 41°C/105.8°F)
 - **Appearance:** Colorless to light pink crystals or liquid
 - **Odor:** Characteristic, sweet, and medicinal
 - **Melting Point:** 40.5°C (104.9°F)
 - **Boiling Point:** 181.7°C (359.1°F)
 - **Density:** 1.07 g/cm³ (at 20°C)
 - **Solubility:** Soluble in water, alcohols, and organic solvents
 - **pH (1% solution):** Acidic (around 5)
 - **Flash Point:** 79°C (174°F) (closed cup)
 - **Vapor Pressure:** 0.4 mmHg (at 20°C)
 - **Autoignition Temperature:** 715°C (1319°F)
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Stability and Reactivity

Chemical Stability: Stable under recommended storage and handling conditions.

Conditions to Avoid: High temperatures, open flames, and prolonged exposure to light or air.

Materials to Avoid: Reacts violently with strong oxidizing agents, alkalis, and some metals.

Hazardous Decomposition Products: May release toxic fumes including carbon monoxide and carbon dioxide during decomposition.

Reactivity: Phenol can polymerize when exposed to concentrated acid or bases under specific conditions.

Toxicological Information

Routes of Exposure:

- Skin absorption
- Eye contact
- Dust inhalation
- Accidental ingestion

Acute Toxicity:

- **Oral LD50 (Rat):** 317 mg/kg
- **Dermal LD50 (Rabbit):** 630 mg/kg

Chronic Effects: Prolonged or repeated exposure can cause systemic organ damage, including effects on the liver, kidneys, and central nervous system.

Irritation: Phenol is corrosive and can damage skin layers after prolonged exposure. Vapors irritate the respiratory tract.

Carcinogenicity: Phenol is not classified as carcinogenic by IARC, OSHA, or NTP, but high exposure levels may still pose long-term risks.

Other Health Effects: Phenol is readily absorbed through the skin, which can lead to systemic toxicity, including reduced consciousness and difficulty breathing.

Disposal Considerations

General Disposal Guidelines:

Dispose of phenol in compliance with all local, national, and international regulations.

Specific Disposal Instructions:

- Do not release into the environment or drain systems.
- Use approved waste disposal containers and licensed facilities for incineration.
- Fully clean contaminated packaging as required or dispose of in accordance with hazardous waste regulations.

Recycling Information: Recycling may be possible for unused phenol, but consult regulatory guidelines for proper procedures.