



Chemical Fact Sheet

Phenol Chemical Safety Fact Sheet



Phenol, also known as Carboic Acid, is a white powder in pure form, and is also sold commercially as a solution. It has a distinct odor that can be characterized as sweet, medicinal, or tarry. In the laboratory, phenol is used in conjunction with other hazardous chemicals as a deoxyribonucleic acid (DNA) extraction agent. Phenol can cause third degree burns resulting in full thickness skin damage. As a result, work with phenol must be conducted using proper chemical handling procedures and engineering controls.

Training

Only individuals who have received proper training may use phenol at the Harvard Institutes of Medicine (HIM) and New Research Building (NRB). The training shall include review of this data sheet, understanding the chemical's material safety data sheet (MSDS), and receiving appropriate instruction from supervisors on laboratory procedures.

Exposure Risks from Phenol

- It can be readily absorbed through the skin and may cause severe burns.
- It has anesthetic properties.
- It is a systemic poison. Certain amounts as an oral dose may be fatal – refer to the MSDS.

The Following Practices Must Be Followed Within Laboratories Using Phenol

- Provide job-specific training to staff.
- Provide appropriate employee chemical hygiene plan training for all work processes.
- **Phenol is a poison. Exposure must be avoided by using engineering controls, such as a fume hood, and proper chemical handling.**
- **Phenol must be stored inside a glass or compatible container. Plastic containers may corrode and leak.**
- **Viton and butyl rubber gloves have excellent resistance to phenol. Nitrile gloves offer only a fair to poor resistance to phenol. All exposed skin must be protected. Arm sleeves may be required if laboratory coat and gloves do not meet.**
- In addition to gloves or arm sleeves, a laboratory coat and safety glasses or goggles must be worn when working with phenol. If there is a splash hazard, a face shield should be worn.
- Limit access to work areas with hazardous chemicals.
- Do not eat, drink, smoke, chew gum, apply cosmetics, or lip balm in laboratory areas, ever.
- Change disposable gloves frequently.
- Phenol needs to be disposed of as a toxic hazardous waste.
- Call 617-432-1901 if there has been a chemical spill.

Occupational Exposure Limits

U.S. Occupational Safety and Health Administration has an 8-hour permissible exposure limit, time weighted average of 5 parts per million (ppm) for phenol. Phenol has an odor threshold of 0.06 ppm.

Phenol is contained in TRIzol[®] and other DNA extraction kits. TRIzol[®] is 85% phenol and should be handled in the same manner as phenol, using the same engineering controls, including a chemical fume hood and proper chemical handling. PPE must also be used, consisting of laboratory coats, chemical-resistant gloves, safety glasses or goggles and a face shield when splashes are possible.

Also See:

- Full Phenol Operating Procedure available from the HIM/NRB EH&S office
- Phenol MSDS
- HIM-NRB Chemical Hygiene Plan available on the HIM/NRB EH&S Webpage:
<http://www.himnrbehs.com/himnrbehs/chemicalSafety.asp>

For more information contact the HIM/NRB EH&S Office, 617-432-2762