

Principal Investigator: _____

Date Approved: _____

Perchloric Acid

Perchloric acid is a clear, odorless liquid with the chemical formula HClO_4 . It is a very strong acid and powerful oxidizer, but aqueous solutions up to 70% behave as strong, non-oxidizing acids at room temperature. When heated or at higher concentrations, perchloric acid is a potent oxidizing agent which can form explosive salts with nearby organic, inorganic, and metallic substances. These salts are shock sensitive and pose a risk of fire and/or violent explosion.



| Personal Protective Equipment & Personnel Monitoring | | |
|--|--|--|
|  Lab Coat |  Gloves |   Eye Protection Face Shield |
| Traditional lab coat. | Nitrile or neoprene gloves when handling small quantities. Use thicker polyvinyl chloride (vinyl) gloves for larger volumes. | ANSI Z87.1-compliant safety glasses or goggles, and face shield if a splash hazard is present. |

Labeling & Storage

Store in secondary containment in a cool, dry, well-ventilated area away from metals and combustible materials. Do not store with hygroscopic chemicals (concentrated sulfuric acid, anhydrous phosphorous pentoxide, etc.). Avoid storage on wood floors or in wooden cabinets. Keep away from organic acids, all bases, and all organic material. Shelves and floor material should be non-combustible and acid-resistant. Protect from freezing. Also, if not plainly visible (e.g. through a cabinet window), labeling must be applied to storage locations where perchloric acid is kept to avoid an inadvertent encounter.

Engineering Controls, Equipment, & Materials

Fume Hood

Any procedure involving **heating** of perchloric acid is **prohibited** at TWU as it must be conducted in a fume hood with a built-in wash-down system, which we do not have. Perchloric acid vapors have the potential to condense and crystallize in the fume hood exhaust system. **Crystallized perchloric acid is unstable and vibration in the duct and exhaust fans may result in an explosion.**

Do not store organic materials in the fume hood where perchloric acid is used. If your protocol does not permit the handling of perchloric acid in a fume hood, contact EH&S to determine whether additional respiratory protection is warranted.

Housekeeping

Spills

The level of response for a spill depends on the amount of spill, completion of the reaction and the location of the spill. If you do NOT have the training or materials to clean a small spill OR the spill occurs outside of the fume hood, do not clean the spill and follow the large spills procedure.

Small Spills (spills less than 1 liter)

Spills should be neutralized immediately with sodium bicarbonate or other acid neutralizer.

Do NOT use organic or combustible materials to clean un-neutralized perchloric acid.

Large Spills (spills over 1 liter) OR spills outside of the fume hood

Notify others in the area of the spill, including your supervisor. Evacuate the location where the spill occurred and place a “Do Not Enter- Corrosive Spill” sign on the door. Call TWU DPS (940-898-2911 in Denton; 214-689-6666 in Dallas; 832-870-6128 in Houston). Report any exposure to EH&S at 940-898-4001. Remain on-site (at a safe distance) to provide detailed information to first responders.

Decontamination

Clean contaminated surfaces with soap and water. Dispose of the paper towels as hazardous waste.

Waste

Perchloric acid should not be mixed with any other type of waste. Refer to the TWU Chemical Hygiene Plan for details.

First Aid & Emergencies

Skin or Eye Contact

Remove contaminated clothing and accessories; flush the affected area with water for at least 15 minutes. If symptoms persist, seek medical attention; **ALWAYS seek medical attention after eye contact with corrosives.**

Inhalation

Move affected individual(s) into fresh air. Seek medical attention.

Ingestion

Rinse mouth with water. Seek medical attention.

