Safe Use of Perchloric Acid

Perchloric acid is clear, odorless liquid. It is highly corrosive to all tissues and reacts violently with many oxidizers. Organic, metallic and non-organic salts formed from oxidation are shock-sensitive and pose a severe fire and explosion hazard. Many serious accidents have been documented involving improper storage and use of perchloric acid.

1. If possible, a less hazardous chemical should be used in place of perchloric acid.

2. Anhydrous perchloric acid should not be used or stored at KSU. Anhydrous perchloric acid may react violently with many organic materials posing a serious explosion hazard.

3. Only the minimum amount of perchloric acid necessary for work should be kept in the lab.

4. Perchloric acid reactions heated above ambient temperature should only be conducted in a dedicated perchloric acid fume hood with a functioning wash-down system. Organic materials may not be stored in perchloric acid hoods.

5. Perchloric acid hoods must be run through the wash-down cycle after each use to remove perchloric acid residuals present in the ductwork.

6. Perchloric acid should only be stored tightly-capped in its original container with all original labels intact. The main storage bottle should be stored within non-reactive secondary containment (ie. a glass tray) large enough to contain a spill of the entire contents of the main containment bottle.

7. Since perchloric acid is incompatible with many other chemicals, it should be stored separately. Perchloric acid is known to be incompatible with acetic acid, acetic anhydride, alcohols, aniline, bismuth, combustible materials (ie. paper and wood), dehydrating agents (ie. sulfuric acid), hydrochloric acid, organic chemicals, and oxidizers.

8. Do not store perchloric acid in paper-lined or wooden cabinets as contact may initialize an explosive reaction.

9. Perchloric acid should only be used in standard analytical procedures from well recognized sources unless specifically approved by PI for safety.

10. All lab personnel working with perchloric acid should read the MSDS prior to commencing work. A current MSDS should be kept in the laboratory for reference in case of emergency.