



Perchloric Acid Fact Sheet

For assistance, contact EHS 292-1284 or <http://www.ehs.ohio-state.edu/>

Purpose and Scope – Background - HClO₄

Perchloric acid is clear liquid that has no odor. Solutions below 73% at room temperature are strong non-oxidizing acids. Perchloric acid becomes a strong oxidizer when heated or at higher concentrations, at or above 73%. Organic, metallic and non-organic salts formed from oxidation are shock sensitive and pose a great fire and explosion hazard. There are many documented accidents resulting from perchloric acid.

Hazard Control

Perchloric acid is destructive to human tissue as well as very reactive. The lab should be properly equipped and certain guidelines followed to ensure safety.

1. The lab area must be equipped with an approved emergency eyewash/shower station.
2. Chemical splash and impact rated goggles or a face shield with safety glasses, gloves (vinyl are listed as excellent) and a protective apron.
3. Anhydrous or concentrated solutions of greater than 73% should not be purchased without notifying EHS at 292 1284.
4. Standard operating procedures (SOP) should be developed and a written copy placed or referenced in the Lab Safety Manual. The SOP should include engineering controls, work practice controls, necessary personal protective equipment and emergency procedures.
5. All lab personnel shall be trained on SOPs prior to working with perchloric acid.
6. Low temperature and low concentration perchloric acid protocols should always be done in a fume hood with no other chemicals present.
7. DO NOT perform perchloric acid digestions in a laboratory fume hood. Any heating of perchloric acid or 73% or greater concentrations require a special dedicated laboratory fume hood equipped with a wash down system. Contact EHS for more information.

Storage and Waste Disposal

Perchloric acid stored within the lab should be kept to a minimum.

1. The maximum limit within the lab should be kept below 450 grams (1 pound). It should be inspected monthly and if discolored should be disposed of immediately.
2. The storage of anhydrous perchloric acid is discouraged. Storage for a short time, even less than 10 days poses a severe risk.
3. Perchloric acid should be stored separately from many other compounds including acetic acid, acetic anhydride, alcohols, aniline, bismuth and bismuth alloys, combustible materials, dehydrating agents, ethyl benzene, hydriotic acid, hydrochloric acid, grease, iodides, ketones, other organic materials, oxidizers and pyridine.
4. Perchloric acid should be stored in its original container with its label intact and be placed in a ceramic or plastic container large enough to contain the entire contents. It should never be stored in a wooden cabinet or shelves lined with paper.
5. Waste should be collected in the original container if possible and not mixed. All guidelines within the Hazardous Waste Manual should be followed.

Accidents and Spills

Be prepared for accidents before they occur. Ensure all emergency equipment is ready for use, e.g. eyewashes are working and not blocked and spill kits are stocked.

1. If acid comes in contact with skin, remove clothing and wash exposed area for 15 minutes. If in eyes, they should be rinsed for at least 15 minutes in the nearest emergency eyewash station raising upper and lower lids periodically. While doing this, someone else should get medical assistance by calling 911.
2. Any spill can be hazardous if allowed to dry.
3. Do not mop up or soak up with a dry combustible, i.e. paper towels.
4. Neutralize with sodium bicarbonate solution and soak up with wet rags or spill pillows. These should be kept wet and sealed in a plastic bag and Hazardous Material Management 292 1284 contacted immediately.
5. When cleaning up spills chemical splash goggles or a face shield and chemical resistant gloves must be worn. If it is a larger spill, coveralls and protective shoe covers might be needed.

More Information

The following links provide more information on perchoric acid safety:

<http://www-ehs.ucsd.edu/lab/2008.htm>

<http://www.auburn.edu/administration/safety/crcperchloric.html>

<http://www.hhmi.org/research/labsafe/lcss/lcss69.html>

<http://www-ehs.ucdavis.edu/sftynet/sn-18.html>