



Perchloric acid (HClO_4) is a strong mineral acid. At low temperature and concentrations (72%), it is non-oxidizing. However, at high temperatures and concentrations (>72%), it becomes a very strong oxidizer. Organic, metallic, and inorganic salts formed from oxidation are shock sensitive and pose great fire and explosion hazards. All scientists using perchloric acid should notify EHS. It is recommended that alternatives for perchloric acid be found.

Health Effects

Acute Exposure:

Perchloric acid is highly corrosive and causes severe burns on contact with the skin eyes, and mucous membranes. Perchloric acid vapors can be fatal if inhaled. Perchloric vapor inhalation can cause burns to the mouth, pharynx, and gastrointestinal tract.

Chronic Exposure:

Prolonged or repeated inhalation may cause nosebleeds, nasal congestion, erosion of the teeth, perforation of the nasal septum, chest pain, and bronchitis.

Emergency Procedures

In case of eye/skin exposure, wash the area for at least 30 minutes using the safety shower/eyewash stations. Seek medical attention. In case of ingestion, give the conscious victim milk or water and consult a physician immediately (do not give an unconscious victim anything to drink). In case of inhalation, remove patient from exposure to fresh air. Administer approved oxygen supply if breathing is difficult. Seek medical attention.

Safety Precautions

- Only laboratory personnel trained to use perchloric acid should handle it.
- Review the Material Safety Data Sheet (MSDS) for perchloric acid before handling the material.
- Always use appropriate personal protective equipment and follow safe laboratory practices.
- Neoprene gloves and a rubber apron are a must.
- Avoid the contact of perchloric acid with dehydrating agents (concentrated sulfuric acid, anhydrous phosphorous pentoxide, etc.), organics, and cellulose materials.
- All perchloric acid use must occur in a designated perchloric acid fume hood.
- Never heat perchloric acid in an oil bath or with an open flame.
- Be sure to understand the reactions that can occur when using perchloric acid. Perchloric acid reacts violently with many chemicals.
- Do not distill perchloric acid in a vacuum, because an unstable anhydride may be formed.
- Wash down perchloric acid hoods after each use.

Spills and Storage

Only clean perchloric acid spills if you have the appropriate training and equipment (call EHS for assistance). To clean a spill, neutralize it with soda ash or another neutralizing agent. Soak up the neutralized spill with an inorganic based absorbent. Put the absorbent into a sealable bag or container to remain wet. Label waste as flammable hazardous waste and call EHS. The quantities of perchloric acid kept in storage should be minimal. Perchloric acid should be stored in its original container within compatible secondary containment. It should be separate from other chemicals but may be stored with other inorganic acids. If a bottle containing perchloric acid has turned dark and has crystals forming around the bottom of the bottle, there is a potential explosion hazard. *Do NOT move the bottle and contact EHS for assistance.*