

Perchloric acid is usually found as a colorless, odorless liquid. When chilled or diluted, it can be used as an oxidizing agent. As perchloric acid is heated, any interaction with organics, bases, and reducing agents may result in a fire or explosion.

Perchloric Acid Engineering Controls

Perchloric acid must not be heated inside a standard chemical fume hood. Heating of perchloric acid may only be done inside a chemical fume hood with washdown capabilities specifically designed for such work. A wash-down hood is especially needed when heating perchloric acid, which can condense in standard ductwork and form explosive perchlorates, or using it at high concentrations. Purpose-built perchloric acid hoods are currently only available at LDEO. Please contact EH&S if the laboratory is planning to use perchloric acid at concentrations greater than 70% or heating perchloric acid in a standard chemical fume hood.

Perchloric Acid Incompatibilities



Though perchloric acid is not flammable, it can increase the intensity of a fire. It may also spontaneously combust when in contact with organic materials like wood, paper, or spill pads.

Perchloric acid is incompatible with most chemicals and can react violently with organic and oxidizing agents. **Do not mix with other chemicals.**

Perchloric Acid Properties

- Perchloric acid is an extremely corrosive superacid (an acid stronger than sulfuric acid) with a pKa lower than -9.
- Notify EH&S immediately if perchloric acid appears discolored.
- At concentrations higher than 70%, perchloric acid becomes unstable and is shock-sensitive when dry. Concentrations >72% perchloric acid are forbidden for transportation.
- Industrial-grade perchloric acid (70-72%) acts like a strong, non-oxidizing acid at cold or room temperatures.

Fun Fact

Perchloric acid becomes unstable and a strong oxidizer when heated to temperatures over 160°C.



Have more questions? Reach out to EH&S at Labsafety@columbia.edu or give us a call

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