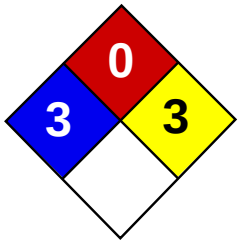

Health	3
Fire	0
Reactivity	3
Personal Protection	

Material Safety Data Sheet
Perchloric acid, 60% MSDS

Section 1: Chemical Product and Company Identification

Product Name: Perchloric acid, 60%

Catalog Codes: SLP2683

CAS#: Mixture.

RTECS: SC7500000

TSCA: TSCA 8(b) inventory: Perchloric acid; water

CI#: Not available.

Synonym:

Chemical Name: Perchloric Acid

Chemical Formula: HClO4

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Water	7732-18-5	29-40
Perchloric Acid	7601-90-3	60-71

Toxicological Data on Ingredients: Perchloric Acid LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant), of eye contact (irritant, corrosive), of ingestion, . Non-corrosive for lungs. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Hazardous in case of skin contact (sensitizer). Non-corrosive for skin. Non-irritant for skin. Non-permeator by skin. Non-irritating to the eyes. Non-hazardous in case of ingestion. Non-hazardous in case of inhalation. Non-irritant for lungs. Non-sensitizer for lungs. CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist

may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Combustible materials, organic materials, shock.

Explosion Hazards in Presence of Various Substances:
Explosive in presence of open flames and sparks, of heat, of combustible materials, of organic materials, of acids, of alkalis. Non-explosive in presence of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
May ignite other combustible materials. May deflagrate in contact with other oxidizable substances. Will increase the intensity of a fire. May cause fire on contact with combustibles. Anydrous acid ingnites on contact with sodium iodide or hydriodic acid. Mixtures of 2-methylpropene and perchloric acid vapor (5:1 molar) in nitrogen ignite spontaneously at 250 C. Anydrous acid ignites sulfinyl chloride.

Special Remarks on Explosion Hazards:
Decomposes when distilled at atmospheric pressure, sometimes with explosive violence. Undergoes spontaneous and explosive decomposition. Perchloric acid + acetic acid can cause explosion. Hot concentrated perchloric acid acid + alcohols

or cellulose is particularly dangerous. Perchloric acid + aniline and then formaldehyde gives resinous condensation product which burns with explosive violence. Drop of anhydrous perchloric acid +diethyl ether causes explosion. Drop of anhydrous perchloric acid on charcoal causes explosion. 70% Perchloric acid solution reacts instantly and explosively on contact with Dibutyl Sulfoxide. Perchloric acid + ethyl alcohol or methyl alcohol can cause explosion. Perchloric acid + most organic materials can cause explosion. Drop of anhydrous perchloric acid on paper can cause violent explosion. Explosion occurs when 70% perchloric acid contacts sulfoxides. Some inorganic materials, such as hypophosphites, tend to form explosive mixtures with perchloric acid when hot. Reaction of anhydrous perchloric acid and wood fibers or dust causes violent explosion. Contact of fluorine and 72% perchloric acid at ambient temperature produces a high yield of explosive gas, fluorine perchlorate. Perchloric acid + nitrogenous epoxides causes precipitaition of organic perchlorate which is highly explosive. Containers may explode in fire.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:
Corrosive liquid. Oxidizing material. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

Section 7: Handling and Storage

Precautions:
Keep container dry. Keep away from heat. Keep away from sources of ignition. Keep away from combustible material.. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Take precautionary measures against electrostatic discharges. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

Storage:
Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Oily liquid.)

Odor: Odorless.

Taste: Not available.

Molecular Weight: Not applicable.

Color: Colorless. Clear

pH (1% soln/water): Neutral.

Boiling Point: 203°C (397.4°F)

Melting Point: -19°C (-2.2°F)

Critical Temperature: Not available.

Specific Gravity: 1.67 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.46 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Easily soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: Unstable.

Instability Temperature: Not available.

Conditions of Instability:
Perchloric acid itself is unstable (volatile) in concentrated form. It may undergo spontaneous and explosive decomposition. It is also unstable if heated and in contact with incompatible materials, and moisture.

Incompatibility with various substances:
Highly reactive with combustible materials, organic materials, acids, alkalis. Reactive with reducing agents, metals.

Corrosivity:
Extremely corrosive in presence of aluminum, of copper. Highly corrosive in presence of stainless steel(304), of stainless steel(316). Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with acids, acetic anhydride, alcohols, aniline and formaldehyde, alkaline materials, organic materials, combustible materials (cellulose, paper, wood), Antimony III compounds, bismuth, charcoal, dibutyl sulfoxide, diethyl ether, dimethyl sulfoxide, fluorine, glycerine and lead oxide, glycol ethers, hydriodic acid, hydrogen, hypophosphites, ketones, methyl alcohol, nitrogen iodide, nitrosophenol, phosphorous pentoxide, phosphorus pentoxide and chloroform, sodium iodide, steel, sulfoxides, sulfur trioxide. May react violently or explosively with many of these compounds. Reaction with fuels may be violent. Mixtures of acetic acid, perchloric, and acetic anhydride have varying degrees of sensitivity to shock. Addition of acetic anhydride to aqueous solution of perchloric acid causes formation of acetic acid which can react violently with perchloric acid. Perchloric acid is very hydroscopic and combines vigorously with water with evolution of heat.

Special Remarks on Corrosivity:
The aqueous is very caustic. Minor corrosive effect on bronze.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 1100 mg/kg [Rat].

Chronic Effects on Humans: Causes damage to the following organs: lungs.

Other Toxic Effects on Humans:
Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant), of eye contact (corrosive), of ingestion, .

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin burns. May cause deep penetrating ulcers of the skin. Eyes: Causes eye burns. May cause retinal damage. Inhalation: May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Inhalation may fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Ingestion: Harmful if swallowed. Causes intestinal tract burns (corrosion or burns of the mouth, throat, esophagus). Symptoms may include pain, dysphagia, necrotic areas, epigastric pain, which may be associated with nausea, and vomiting, corrosive ulceration, gastric bleeding, profound thirst, scanty urine, shock and circulatory collapse. May also affect behavior, respiration(dyspnea), and metabolism, liver, kidneys, and cardiovascular system. Chronic Potential Health Effects: Skin: Repeated or prolonged skin contact may cause skin sensitization, an allergic reaction and possible destruction and/or ulceration. Inhalation: Prolonged or repeated inhalation may cause nosebleeds, nasal congestion, erosion of the teeth, perforation of the nasal septum, chest pain and bronchitis. Eyes: Prolonged or repeated eye contact may cause conjunctivitis. Ingestion: Chronic ingestion may cause effects similar to those of acute ingestion.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation: Possibly hazardous short/long term degradation products are to be expected.

Toxicity of the Products of Biodegradation: Not available.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification:
CLASS 5.1: Oxidizing material. Class 8: Corrosive material

Identification: : Perchloric acid UNNA: 1873 PG: I

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Perchloric acid Rhode Island RTK hazardous substances: Perchloric acid Pennsylvania RTK: Perchloric acid Massachusetts RTK: Perchloric acid Massachusetts spill list: Perchloric acid New Jersey: Perchloric acid TSCA 8(b) inventory: Perchloric acid; water

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS C: Oxidizing material. CLASS E: Corrosive liquid.

DSCL (EEC):
R5- Heating may cause an explosion. R8- Contact with combustible material may cause fire. R35- Causes severe burns. S23- Do not breathe gas/fumes/vapour/spray [***] S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36- Wear suitable protective clothing. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 3

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 3

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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