



# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

**Material name** PERCHLORIC ACID, 60%, REAGENT (ACS)  
**Catalog #** 69  
**Version #** 03  
**Revision date** 27-Aug-2008  
**CAS #** Mixture  
**Manufacturer information** GFS Chemicals, Inc.  
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## 2. Hazards Identification

**Emergency overview** DANGER -- OXIDIZER  
Contact with combustible material may cause fire.  
  
Corrosive. Causes skin and eye burns. Irritating to respiratory system.

**OSHA regulatory status** This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

**Potential health effects**

**Routes of exposure** Inhalation. Ingestion. Skin contact. Eye contact.

**Eyes** This product causes eye burns. Risk of serious damage to eyes. Do not get this material in contact with eyes.

**Skin** Causes skin burns. Do not get this material in contact with skin.

**Inhalation** Causes burns. Irritating to respiratory system. Do not breathe dust/fume/gas/mist/vapors/spray.

**Ingestion** Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. Do not ingest.

**Target organs** Thyroid.

**Potential environmental effects** Ecological injuries are not known or expected under normal use.

## 3. Composition / Information on Ingredients

Hazardous components	CAS #	Percent
PERCHLORIC ACID	7601-90-3	60
Non-hazardous components	CAS #	Percent
WATER	7732-18-5	40

## 4. First Aid Measures

### First aid procedures

**Eye contact** Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

**Skin contact** Immediately flush skin with plenty of water. Remove and isolate contaminated clothing and shoes. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.

**Inhalation** Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention immediately.

## **Ingestion**

If material is ingested, immediately contact a poison control center. Have victim rinse mouth thoroughly with water. Do not induce vomiting without advice from poison control center. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

## **Notes to physician**

In case of shortness of breath, give oxygen. Keep victim warm.

## **General advice**

Immediate medical attention is required. In case of shortness of breath, give oxygen. Keep victim warm. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

## **5. Fire Fighting Measures**

### **Flammable properties**

May explode from heat or contamination. Containers may explode when heated. Some will react explosively with hydrocarbons (fuels). Some may decompose explosively when heated or involved in a fire. Runoff may create fire or explosion hazard. These substances will accelerate burning when involved in a fire. Contact with combustible material may cause fire.

### **Extinguishing media**

#### **Suitable extinguishing media**

Water. Water spray.

### **Protection of firefighters**

#### **Protective equipment and precautions for firefighters**

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Do not move cargo or vehicle if cargo has been exposed to heat. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

### **Specific methods**

In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

## **6. Accidental Release Measures**

### **Personal precautions**

Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.

### **Environmental precautions**

Runoff from fire control or dilution water may cause pollution.

### **Methods for containment**

Stop leak if you can do so without risk. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewers, basements or confined areas.

### **Methods for cleaning up**

Dike far ahead of liquid spill for later disposal. Dilute with water. Neutralize with sodium hydroxide, soda ash or lime. Clean contaminated surface thoroughly. After removal flush contaminated area thoroughly with water.

Never return spills in original containers for re-use.

## **7. Handling and Storage**

### **Handling**

Do not handle or store near an open flame, heat or other sources of ignition. Keep away from clothing and other combustible materials. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get this material on clothing. Use only with adequate ventilation. Wash thoroughly after handling.

### **Storage**

Keep in a well-ventilated place. Keep container tightly closed. Do not store around flammable or combustible materials. Keep out of the reach of children. Use care in handling/storage.

## **8. Exposure Controls / Personal Protection**

### **Engineering controls**

Ensure adequate ventilation, especially in confined areas.

## Personal protective equipment

<b>Respiratory protection</b>	Do not breathe dust/fume/gas/mist/vapors/spray. In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.
<b>Hand protection</b>	Protective gloves.
<b>Eye / face protection</b>	Do not get this material in contact with eyes. Wear chemical goggles. Face-shield.
<b>Skin protection</b>	Do not get this material in contact with skin. Do not get this material on clothing. Wear appropriate chemical resistant gloves. Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations. Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Wear chemical protective equipment that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
<b>General hygiene considerations</b>	Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not get this material on clothing. When using, do not eat, drink or smoke. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.
<b>General</b>	Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations.

## 9. Physical & Chemical Properties

<b>Appearance</b>	Clear.
<b>Color</b>	Colorless.
<b>Odor</b>	Odorless.
<b>Odor threshold</b>	Not available.
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>pH</b>	very acidic
<b>Melting point</b>	Not available.
<b>Freezing point</b>	Not available.
<b>Boiling point</b>	318.2 °F (159 °C)
<b>Flash point</b>	Not flammable
<b>Evaporation rate</b>	Not available.
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not flammable
<b>Flammability limits in air, lower, % by volume</b>	Not flammable
<b>Vapor pressure</b>	0 hPa estimated
<b>Vapor density</b>	Not available.
<b>Specific gravity</b>	1.54
<b>Relative density</b>	1.54 g/cm <sup>3</sup>
<b>Solubility (water)</b>	Completely miscible
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Molecular weight</b>	100.4700 g/mol
<b>Molecular formula</b>	HClO <sub>4</sub>

## 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	Stable at normal conditions. hygroscopic. Becomes oxidizing at elevated temperatures (>150 C).
<b>Conditions to avoid</b>	Avoid temperatures above 300°F (150°C). Drying of this product on clothing or combustible materials may cause fire.
<b>Incompatible materials</b>	Flammable materials and
<b>Hazardous decomposition products</b>	No hazardous decomposition products are known.

**Possibility of hazardous reactions** Hazardous polymerization does not occur.

## 11. Toxicological Information

**Acute effects** Causes burns.

### Toxicology data for the preparation

Acute LD50: 1100 mg/kg, Rat, Oral

**Local effects** Irritating to respiratory system.

**Carcinogenicity** This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

**Corrosivity** Hazardous by OSHA criteria.

**Human experience** The perchlorate ion competes with iodide in the mechanism that governs uptake into the thyroid gland for growth hormone production. This effect is routinely countered by ensuring sufficient dietary intake of iodine, as perchlorate does not accumulate in the body. Studies on workers in plants where perchlorates are manufactured have shown no thyroid abnormalities; various clinical studies are ongoing. Perchlorates occur naturally in trace amounts in the environment, and are not classified as carcinogenic.

## 12. Ecological Information

**Ecotoxicity** This product has no known eco-toxicological effects.

**Persistence and degradability** Not available.

## 13. Disposal Considerations

**Disposal instructions** Solutions with low pH-value must be neutralized before discharge. Dispose in accordance with all applicable regulations.

**Waste from residues / unused products** Taking into account local regulations the product may be disposed of as waste water after neutralisation.

## 14. Transport Information

### DOT

#### Basic shipping requirements:

**Proper shipping name** Perchloric acid with more than 50 percent but not more than 72 percent acid, by mass

**Hazard class** 5.1

**Subsidiary hazard class** 8

**UN number** UN1873

**Packing group** I

#### Additional information:

**Special provisions** A2, A3, N41, T10, TP1, TP12

**Packaging exceptions** None

**Packaging non bulk** 201

**Packaging bulk** 243

**ERG number** 143



## 15. Regulatory Information

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

### CERCLA (Superfund) reportable quantity

None

## Superfund Amendments and Reauthorization Act of 1986 (SARA)

**Hazard categories**  
Immediate Hazard - Yes  
Delayed Hazard - Yes  
Fire Hazard - Yes  
Pressure Hazard - No  
Reactivity Hazard - No

**Section 302 extremely hazardous substance** No

**Section 311 hazardous chemical** Yes

### Inventory status

<b>Country(s) or region</b>	<b>Inventory name</b>	<b>On inventory (yes/no)*</b>
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**State regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

#### US - Pennsylvania RTK - Hazardous Substances: Listed substance

PERCHLORIC ACID      7601-90-3      Listed.

## 16. Other Information

**Further information** HMIS® is a registered trade and service mark of the NPCA.

**HMIS® ratings**  
Health: 3  
Flammability: 0  
Physical hazard: 3

**NFPA ratings**  
Health: 3  
Flammability: 0  
Instability: 1  
Special hazards: OX

**Disclaimer** The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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