

Material Safety Data Sheet

Perchloric acid, 50-72%

ACC# 18230

Section 1 - Chemical Product and Company Identification

MSDS Name: Perchloric acid, 50-72%**Catalog Numbers:** AC223310010, AC223312500, AC424030010, AC424032500, S76875ACS-1, S76875ACS-2, S76875ACS-3, S76875ACS-4, A228-7LB, A228-7LB EMD, A2286, A2286-1LB, A228S-7LB, A229-8LB, A2296-1LB, A229S-8LB, A469-1, A469-2, A469-250, A469-500, A511-212, A511-500, A511SK-212**Synonyms:** Dioxonium perchlorate; Perchloric acid solution; Hydronium perchlorate.**Company Identification:**Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410**For information, call:** 201-796-7100**Emergency Number:** 201-796-7100**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7601-90-3	Perchloric acid	50-72	231-512-4
7732-18-5	Water	28-50	231-791-2

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid.

Danger! Strong oxidizer. Contact with other material may cause a fire. Heating may cause an explosion. Contact with other material may cause explosion. Causes eye and skin burns. Causes digestive and respiratory tract burns. Corrosive to metal.**Target Organs:** Eyes, thyroid, skin, mucous membranes.**Potential Health Effects****Eye:** Causes eye burns.**Skin:** Causes skin burns.**Ingestion:** Harmful if swallowed. Causes gastrointestinal tract burns.**Inhalation:** Causes severe respiratory tract irritation with possible burns.**Chronic:** Prolonged or repeated skin contact may cause dermatitis.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

Skin: Destroy contaminated shoes. In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

Ingestion: If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

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

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with other material may cause fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Some oxidizers may react explosively with hydrocarbons(fuel). Contact with metals may evolve flammable hydrogen gas. May decompose explosively when heated or involved in a fire. Fight fire from protected location or maximum possible distance.

Extinguishing Media: Use extinguishing media most appropriate for the surrounding fire. Use flooding quantities of water as spray.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 3; Special Hazard: OX

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Do not use combustible materials such as sawdust. Flush spill area with water. Wet area to prevent drying out. Provide ventilation. Keep combustibles (wood, paper, oil, etc.,) away from spilled material. Keep unnecessary and unprotected personnel away. Use only non-sparking tools and equipment. Spill may be carefully neutralized with soda ash (sodium carbonate).

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use spark-proof tools and explosion proof equipment. Avoid contact with clothing and other combustible materials. Do not get on skin or in eyes. Do not ingest or inhale. Use only with adequate ventilation. Do not allow perchloric acid to come into contact with strong dehydrating

agents (concentrated sulfuric acid, anhydrous phosphorous pentoxide, etc.). Keep the quantities of perchloric acid handled at the bare minimum for safety. Perchloric acid should be handled in a masonry building with concrete or tile floors. Handling acid on wooden floors is dangerous, especially after the acid has dried. The wooden floor will then become sensitive to ignition by friction. Perchloric acid mist and vapor can condense in ventilation systems to form metallic perchlorates, which can be explosive. Inform laundry personnel of contaminant's hazards.

Storage: Do not store near combustible materials. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Avoid storage on wood floors. Perchloric acid should be stored segregated from all other chemicals & inside secondary containment (such as pyrex baking dish). It must not be stored near organic acids, near bases, or near other organic or flammable material. Shelves and floor material should be non-combustible and acid-resistant. Protect from freezing.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Any procedure involving heating of perchloric acid must be conducted in a perchloric acid fume hood, with the sash down. No organic materials should be stored in the perchloric acid hood.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Perchloric acid	none listed	none listed	none listed
Water	none listed	none listed	none listed

OSHA Vacated PELs: Perchloric acid: No OSHA Vacated PELs are listed for this chemical. Water: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear chemical goggles and face shield.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear, colorless

Odor: strong odor

pH: Not available.

Vapor Pressure: 0.9 kPa @ 20 deg C

Vapor Density: 3.46 (air=1)

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 203 deg C @ 760 mm Hg

Freezing/Melting Point: -18 deg C

Decomposition Temperature: Not available.

Solubility: Soluble.

Specific Gravity/Density: 1.41-1.67

Molecular Formula: HClO₄

Molecular Weight:100.46

Section 10 - Stability and Reactivity

Chemical Stability: This material is a strongly acidic, powerful oxidizing substance. The anhydrous form of this material is an explosion hazard. Perchloric acid is stable at concentrations below 73%.

Conditions to Avoid: Excess heat, Do not allow water to evaporate from product..

Incompatibilities with Other Materials: Metals, strong reducing agents, bases, acetic acid, acetic anhydride, alcohols, dimethyl sulfoxide, fluorine, sulfuric acid, diethyl ether, hypophosphites, phosphorus pentoxide, hydrochloric acid, organic materials, ketones, wood, combustible materials.

Hazardous Decomposition Products: Chlorine dioxide, which may be spontaneously explosive.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 7601-90-3: SC7500000

CAS# 7732-18-5: ZC0110000

LD50/LC50:

CAS# 7601-90-3:

Oral, rat: LD50 = 1100 mg/kg;

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

Carcinogenicity:

CAS# 7601-90-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.

Teratogenicity: Administration of potassium perchlorate KClO₄ experimentally to pregnant guinea pigs, rabbits, & rats has been reported to result in enlarged fetal thyroids, consistent with transplacental passage of perchlorate. Administration of up to 1% KClO₄ in drinking water during early pregnancy did not interfere with blastocyst implantation or pregnancy success in rats.

Detailed morphologic evaluation of offspring was not reported. In both a 2-generation reproductive tox study in rats & a developmental tox study in rabbits, respective KClO₄ doses up to 30 & 100 mg/kg/day, were not found to have adverse

Reproductive Effects: No information available.

Neurotoxicity: No information available.

Mutagenicity: No information available.

Other Studies: See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity: No data available. LC100 Cyprinus carpio 180 ppm/24H @ 25°C.

Environmental: There has been concern that perchlorate environmental contamination could result in hypothyroidism in the population.

Physical: No information available.

Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	PERCHLORIC ACID	PERCHLORIC ACID
Hazard Class:	5.1	5.1(8)
UN Number:	UN1873	UN1873
Packing Group:	I	I

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 7601-90-3 is listed on the TSCA inventory.

CAS# 7732-18-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 7601-90-3: acute, flammable.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

CAS# 7601-90-3 is considered highly hazardous by OSHA.

STATE

CAS# 7601-90-3 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

O C

Risk Phrases:

R 35 Causes severe burns.

R 5 Heating may cause an explosion.

R 8 Contact with combustible material may cause fire.

Safety Phrases:

S 23 Do not inhale gas/fumes/vapour/spray.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 36 Wear suitable protective clothing.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 7601-90-3: 1

CAS# 7732-18-5: No information available.

Canada - DSL/NDSL

CAS# 7601-90-3 is listed on Canada's DSL List.

CAS# 7732-18-5 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of C, E.

Canadian Ingredient Disclosure List

CAS# 7601-90-3 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 5/13/1999

Revision #7 Date: 7/28/2004

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.