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MSDS

Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



Mallinckrodt
CHEMICALS



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

PERCHLORIC ACID, 60%-70% SOLUTIONS

1. Product Identification

Synonyms: Perchloric acid; perchloric acid solution; dioxonium perchlorate solution; hydronium perchlorate

CAS No.: 7601-90-3

Molecular Weight: 100.46

Chemical Formula: HCL04, in water

Product Codes:

J.T. Baker: 4806, 9651, 9652, 9653, 9656

Mallinckrodt: 2764, 2766, 3999, 8828

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Perchloric Acid	7601-90-3	60 - 70%	Yes
Water	7732-18-5	30 - 40%	No

3. Hazards Identification

Emergency Overview

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE OR EXPLOSION. CORROSIVE. CAUSES SEVERE IRRITATION AND BURNS TO EVERY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: STOP SIGN - SEE SECTION 8 FOR PRECAUTIONS

Storage Color Code: Yellow (Reactive)

Potential Health Effects

Inhalation:

Corrosive. Inhalation of vapors or mists will cause irritation with coughing, choking, and inflammation of the nose, throat, and upper respiratory tract.

Ingestion:

Corrosive. May cause burns of mouth, throat, and stomach, nausea, vomiting and diarrhea.

Skin Contact:

Corrosive. Can cause severe burns with discoloration and pain.

Eye Contact:

Corrosive. Permanent visual damage may occur. Highly corrosive to tissue.

Chronic Exposure:

Repeated exposure to dilute solutions may cause skin rash and possible sensitization.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or impaired respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Can react with metals to release flammable hydrogen gas. Reactions may cause fire and explosion. In the event of a fire, assume that organic materials are involved and that an explosion may occur.

Explosion:

May form sensitive powerful explosive mixtures with organic materials.

Fire Extinguishing Media:

Water spray can be used to extinguish fires and cool fire-exposed containers.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Remove spilled perchloric acid by immediate and thorough washing with large amounts of water. Reduce with a weak reducing agent, (hypobisulfite or ferrous salt, plus sulfuric acid as an accelerator have been recommended), then neutralize with sodium carbonate or calcium oxide.

J. T. Baker NEUTRASORB® acid neutralizer is recommended for spills of this product.

7. Handling and Storage

Reagent bottle - maximum 1 pound, glass-stoppered, glass bottle; kept in a heavy glass tray with larger capacity. Additional laboratory storage should be in original bottles inside a glass container padded with glass wool and having greater capacity than the container. Carboys and large bottles should be stored on acid-resisting noncombustible shelves, in a noncombustible structure. All storage must be separated from combustible materials, organic materials, strong dehydrating agents; oxidizing and reducing agents. Perchloric acid must be stored where it will not freeze (freezing point about -4F). Protect against physical damage. Electrical wiring, etc., in storage areas must be of watertight type to protect against corrosive action of vapors. Containers of this material may be hazardous when empty since

they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

Do Not Use Perchloric Acid In A Hood Designed For Other Purposes. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practice*, most recent edition, for details on proper ventilation design.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to the substance is apparent and engineering controls are not feasible, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres. If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134).

Skin Protection:

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Colorless to yellowish liquid.

Odor:

Odorless.

Solubility:

Infinitely soluble.

Specific Gravity:

1.5-1.6

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

203C (397F)

Melting Point:

-18C (0F)

Vapor Density (Air=1):

3.5

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Unstable at ordinary temperature and pressure and can undergo explosive decomposition, especially at elevated temperatures or if allowed to dehydrate.

Hazardous Decomposition Products:

May emit toxic chloride fumes when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Incompatible with numerous materials, including combustible materials, organic chemicals, strong dehydrating agents, reducing and oxidizing agents. Reacts violently with benzene, calcium hydride, wood, acetic acid, charcoal, olefins, ethanol, sulfur and sulfuric acid. Do Not Use Perchloric Acid In A Hood Designed For Other Purposes.

Conditions to Avoid:

Heat, incompatibles.

11. Toxicological Information

Oral rat LD50: 1100 mg/kg.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Perchloric Acid (7601-90-3)	No	No	None
Water (7732-18-5)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

LC 20/2,000 ppm/goldfish/24hr. This material may be toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: PERCHLORIC ACID (WITH MORE THAN 50% BUT NOT MORE THAN 72% ACID, BY MASS)

Hazard Class: 5.1, 8

UN/NA: UN1873

Packing Group: I

Information reported for product/size: 2.5L

International (Water, I.M.O.)

Proper Shipping Name: PERCHLORIC ACID (WITH MORE THAN 50% BUT NOT MORE THAN 72% ACID, BY MASS)

Hazard Class: 5.1, 8

UN/NA: UN1873

Packing Group: I

Information reported for product/size: 2.5L

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Perchloric Acid (7601-90-3)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Perchloric Acid (7601-90-3)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----			
Ingredient	-SARA 302-		-----SARA 313-----
	RQ	TPQ	List Chemical Catg.

Perchloric Acid (7601-90-3)	No	No	No	No
Water (7732-18-5)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient	CERCLA	261.33	-RCRA-	-TSCA-
Perchloric Acid (7601-90-3)	No	No	8 (d)	No
Water (7732-18-5)	No	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
 Reactivity: Yes (Mixture / Liquid)

Australian Hazchem Code: 2P

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **3** Flammability: **0** Reactivity: **3** Other: **Oxidizer**

Label Hazard Warning:

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE OR EXPLOSION. CORROSIVE. CAUSES SEVERE IRRITATION AND BURNS TO EVERY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe mist.

Store in a tightly closed container.

Use only with adequate ventilation.

Keep from contact with clothing and other combustible materials.

Do not store near combustible materials.

Remove and wash contaminated clothing promptly.

Wash thoroughly after handling.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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