

Material Safety Data Sheet

Perchloric Acid

Section 1. Product and Company Identification

Product name : Perchloric Acid
Product code : 512
Synonym : None.
Material uses : Other non-specified industry: Analytical reagent.
Manufacturer : EMD Chemicals Inc.
P.O. Box 70
480 Democrat Road
Gibbstown, NJ 08027
856-423-6300 Technical Service
Monday - Friday: 8:00 - 5:00 PM
Validation date : **7/24/2006.**
Print date : 9/5/2006.
In case of emergency : 800-424-9300 CHEMTREC (USA)
613-996-6666 CANUTEC (Canada)
24 Hours/Day: 7 Days/Week

Section 2. Hazards Identification

Physical state : Liquid.
Odor : Odorless.
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : DANGER!
CAUSES SEVERE EYE AND SKIN BURNS.
CAUSES RESPIRATORY TRACT BURNS.
OXIDIZER.
HARMFUL IF INHALED OR SWALLOWED.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
MUCOUS MEMBRANES, SKIN, EYE, LENS OR CORNEA.
CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.
Do not ingest. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist.
Store in tightly-closed container. Avoid contact with combustible materials. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes : Severely corrosive to the eyes.
Skin : Severely corrosive to the skin.
Inhalation : Toxic by inhalation. Corrosive to the respiratory system.
Ingestion : Toxic if swallowed. May cause burns to mouth, throat and stomach.
Carcinogenic effects : No known significant effects or critical hazards.
Mutagenic effects : No known significant effects or critical hazards.
Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Medical conditions aggravated by over-exposure : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (section 11)

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Section 3. Composition/Information on Ingredients

United States

<u>Name</u>	<u>CAS number</u>	<u>% by Weight</u>
Perchloric Acid	7601-90-3	60 - 70
Water	7732-18-5	30 - 40

Section 4. First Aid Measures

- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing or wear gloves.

Section 5. Fire Fighting Measures

- Flammability of the product** : This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire.
- Products of combustion** : These products are halogenated compounds, hydrogen chloride.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Not available.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental Release Measures

- Personal precautions** : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment. Do not touch or walk through spilled material.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7. Handling and Storage

- Handling** : Do not ingest. Do not get in eyes or on skin or clothing. Keep container closed. Use only with adequate ventilation. Do not breathe vapor or mist. Store in tightly-closed container. Avoid contact with combustible materials. Wash thoroughly after handling.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalis, reducing agents and combustibles.

Section 8. Exposure Controls/Personal Protection

Consult local authorities for acceptable exposure limits.

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Personal protection**
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.
Recommended: splash goggles , face shield
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Body: Recommended: safety apron
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: neoprene
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and Chemical Properties

- Physical state** : Liquid.
- Odor** : Odorless.
- Boiling/condensation point** : The lowest known value is 99.9°C (211.8°F) (Water).
- Melting/freezing point** : May start to solidify at -0.1°C (31.8°F) based on data for: Water.
- Relative density** : The only known value is 1.7 (Water = 1) (Perchloric Acid).
- Evaporation rate** : 0.36 (Water) compared with (n-BUTYL ACETATE=1)

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Section 10. Stability and Reactivity

- Stability and reactivity** : The product is stable.
- Incompatibility with various substances** : Reactive or incompatible with the following materials: oxidizing materials, reducing materials, combustible materials, organic materials and metals.
- Hazardous decomposition products** : Chlorine fumes
- Hazardous polymerization** : Will not occur.
- Conditions of reactivity** : Flammable in the presence of the following materials or conditions: heat, oxidizing materials, reducing materials and combustible materials.
Explosive in the presence of the following materials or conditions: heat, oxidizing materials and organic materials.

Section 11. Toxicological Information

Toxicity data

United States

<u>Product/ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Perchloric Acid	LD50	1100 mg/kg	Oral	Rat
	LD50	400 mg/kg	Oral	Dog

- Chronic effects on humans** : Contains material which causes damage to the following organs: mucous membranes, skin, eye, lens or cornea.

- Other toxic effects on humans** : Extremely hazardous in case of skin contact (corrosive), of eye contact (corrosive).
Very hazardous in case of ingestion, .
Hazardous in case of inhalation (lung corrosive).

Specific effects

- Carcinogenic effects** : No known significant effects or critical hazards.
- Mutagenic effects** : No known significant effects or critical hazards.
- Teratogenicity / Reproductive toxicity** : No known significant effects or critical hazards.

Sensitization

- Ingestion** : May cause burns to mouth, throat and stomach.
- Inhalation** : Corrosive to the respiratory system.
- Eyes** : Severely corrosive to the eyes.
- Skin** : Severely corrosive to the skin.

Section 12. Ecological Information

- Environmental precautions** : No known significant effects or critical hazards.
- Products of degradation** : These products are halogenated compounds.
- Toxicity of the products of biodegradation** : The products of degradation are as toxic as the product itself.

Section 13. Disposal Considerations

- Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.


Section 13. Disposal Considerations

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN1873	PERCHLORIC ACID	5.1	I		Not available.

PG* : Packing group

Section 15. Regulatory Information

United States

HCS Classification : Oxidizing material
Toxic material
Corrosive material
Target organ effects

U.S. Federal regulations : TSCA 8(b) inventory: Listed
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Perchloric Acid
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Perchloric Acid : Fire hazard, reactive, Immediate (acute) health hazard
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.
Clean Air Act (CAA) 112 accidental release prevention: No products were found.
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

State regulations : Pennsylvania RTK: Perchloric Acid : (generic environmental hazard)
Massachusetts RTK: Perchloric Acid
New Jersey: Water; Perchloric Acid

Canada

WHMIS (Canada) : Class C: Oxidizing material.
Class D-2B: Material causing other toxic effects (Toxic).
Class E: Corrosive material

CEPA DSL/CEPA NDSL : CEPA DSL: Water; Perchloric Acid

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Section 15. Regulatory Information

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

EU regulations

Hazard symbol/symbols :



Risk phrases : R35- Causes severe burns.

Safety phrases : S2- Keep out of the reach of children.
 S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.
 S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

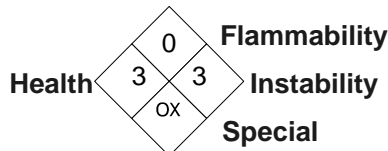
International regulations

International lists : Australia (NICNAS): Water; Perchloric Acid
 China: Perchloric Acid
 Germany water class: Perchloric Acid
 Japan (METI): Water; Perchloric Acid
 Korea (TCCL): Water; Perchloric Acid
 Philippines (RA6969): Water; Perchloric Acid

Section 16. Other Information

Label requirements : DANGER!
 CAUSES SEVERE EYE AND SKIN BURNS.
 CAUSES RESPIRATORY TRACT BURNS.
 OXIDIZER.
 HARMFUL IF INHALED OR SWALLOWED.
 CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
 MUCOUS MEMBRANES, SKIN, EYE, LENS OR CORNEA.
 CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.

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



Notice to reader

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