

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

## 1 Identification

- **Product identifier**
- **Trade name:** Perchloric Acid 0.02 Normal  
NIST Traceable in Methyl Cellulose
- **Article number:** EV004
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Aqua Solutions, Inc.  
6913 Highway 225  
DEER PARK, TX 77536  
USA  
800-256-2586
- **Information department:**  
Technical Coordinator  
Sherman Nelson sherman@aquasolutions.org
- **Emergency telephone number:**  
Chemtrec: 800-424-9300  
Canutec: 613-996-6666



## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 3 H226 Flammable liquid and vapor.



GHS08 Health hazard

Repr. 1 H360 May damage fertility or the unborn child.



GHS07

Acute Tox. 4 H312 Harmful in contact with skin.

Acute Tox. 4 H332 Harmful if inhaled.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS02



GHS07



GHS08

- **Signal word** Danger
- **Hazard-determining components of labeling:**  
Ethylene Glycol Monomethyl Ether
- **Hazard statements**  
Flammable liquid and vapor.

(Contd. on page 2)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellulose**

(Contd. of page 1)

*Harmful in contact with skin or if inhaled.*

*May damage fertility or the unborn child.*

· **Precautionary statements**

*Obtain special instructions before use.*

*Do not handle until all safety precautions have been read and understood.*

*Keep away from heat/sparks/open flames/hot surfaces. - No smoking.*

*Keep container tightly closed.*

*Ground/bond container and receiving equipment.*

*Use explosion-proof electrical/ventilating/lighting/equipment.*

*Use only non-sparking tools.*

*Take precautionary measures against static discharge.*

*Avoid breathing dust/fume/gas/mist/vapors/spray*

*Use only outdoors or in a well-ventilated area.*

*Wear protective gloves/protective clothing/eye protection/face protection.*

*If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*

*IF INHALED: Remove person to fresh air and keep comfortable for breathing.*

*IF exposed or concerned: Get medical advice/attention.*

*Call a poison center/doctor if you feel unwell.*

*Specific treatment (see on this label).*

*Take off contaminated clothing and wash it before reuse.*

*In case of fire: Use for extinction: CO<sub>2</sub>, powder or water spray.*

*Store in a well-ventilated place. Keep cool.*

*Store locked up.*

*Dispose of contents/container in accordance with local/regional/national/international regulations.*

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 1

Fire = 2

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = \*1

Fire = 2

Reactivity = 0

· **Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

### 3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

Ethylene Glycol Monomethyl Ether	99.703%
----------------------------------	---------

· **Table of Nonhazardous Ingredients**

CAS: 7601-90-3   Perchloric acid 68 - 70% w/w	0.208%
---	--------

(Contd. on page 3)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellulosolve**

(Contd. of page 2)

CAS: 7732-18-5 | Water

0.0893%

## 4 First-aid measures

- **Description of first aid measures**
- **General information:**  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:**  
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

## 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**  
Dilute with plenty of water.  
Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

- **PAC-I:**

	Ethylene Glycol Monomethyl Ether	0.3 ppm
CAS: 7601-90-3	Perchloric acid 68 - 70% w/w	0.61 ppm

(Contd. on page 4)

US

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellulolve**

(Contd. of page 3)

· <b>PAC-2:</b>		
	Ethylene Glycol Monomethyl Ether	14 ppm
CAS: 7601-90-3	Perchloric acid 68 - 70% w/w	6.7 ppm
· <b>PAC-3:</b>		
	Ethylene Glycol Monomethyl Ether	2000* ppm
CAS: 7601-90-3	Perchloric acid 68 - 70% w/w	40 ppm

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling** Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:**  
 Keep ignition sources away - Do not smoke.  
 Protect against electrostatic charges.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

· <b>Components with limit values that require monitoring at the workplace:</b>	
<b>Ethylene Glycol Monomethyl Ether</b>	
PEL	Long-term value: 80 mg/m <sup>3</sup> , 25 ppm Skin
REL	Long-term value: 0.3 mg/m <sup>3</sup> , 0.1 ppm Skin
TLV	Long-term value: 0.3 mg/m <sup>3</sup> , 0.1 ppm Skin; BEI
WEEL	Skin; B

- **Ingredients with biological limit values:**

<b>Ethylene Glycol Monomethyl Ether</b>	
BEI	1 mg/g creatinine LD50 Intraperitoneal: urine Time: end of shift at end of workweek LD50: 2-Methoxyacetic acid

- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
 Keep away from foodstuffs, beverages and feed.  
 Wash hands before breaks and at the end of work.

(Contd. on page 5)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellulosolve**

(Contd. of page 4)

Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

· **Body protection:** Protective work clothing

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

<b>Form:</b>	Liquid
<b>Color:</b>	Clear
<b>Odor:</b>	Characteristic
<b>Odor threshold:</b>	Not determined.

· **pH-value at 20 °C (68 °F):** 4

· **Change in condition**

<b>Melting point/Melting range:</b>	-85 °C (-121 °F)
<b>Boiling point/Boiling range:</b>	124 °C (255.2 °F)

· **Flash point:** 38 °C (100.4 °F)

· **Flammability (solid, gaseous):** Not applicable.

· **Ignition temperature:** 310 °C (590 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

(Contd. on page 6)

US

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellulosolve**

(Contd. of page 5)

· <b>Danger of explosion:</b>	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
· <b>Explosion limits:</b>	
<b>Lower:</b>	2.4 Vol %
<b>Upper:</b>	20.6 Vol %
· <b>Vapor pressure at 20 °C (68 °F):</b>	10 hPa (7.5 mm Hg)
· <b>Density at 20 °C (68 °F):</b>	0.96649 g/cm <sup>3</sup> (8.06536 lbs/gal)
· <b>Relative density</b>	Not determined.
· <b>Vapor density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.
· <b>Solubility in / Miscibility with Water:</b>	Fully miscible.
· <b>Partition coefficient (n-octanol/water):</b>	Not determined.
· <b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
· <b>Solvent content:</b>	
<b>Organic solvents:</b>	99.7 %
<b>Water:</b>	0.1 %
<b>VOC content:</b>	99.70 %
	963.6 g/l / 8.04 lb/gl
<b>Solids content:</b>	0.0 %
· <b>Other information</b>	No further relevant information available.

## 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

· <b>LD/LC50 values that are relevant for classification:</b>		
<b>ATE (Acute Toxicity Estimate)</b>		
Oral	LD50	2,377 mg/kg (rat)
Dermal	LD50	1,284 mg/kg (rabbit)
Inhalative	LC50/4 h	11 mg/l

(Contd. on page 7)

US

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellulosolve**

(Contd. of page 6)

### Ethylene Glycol Monomethyl Ether

Oral	LD50	2,370 mg/kg (rat)
Dermal	LD50	1,280 mg/kg (rabbit)
Inhalative	LC50/4 h	11 mg/l (ATE)
	Intraperitoneal	2,500 mg/kg (rat)

- **Primary irritant effect:**

- **on the skin:** No irritant effect.

- **on the eye:** No irritating effect.

- **Sensitization:** No sensitizing effects known.

- **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:  
 Harmful

- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

- **NTP (National Toxicology Program)**

None of the ingredients is listed.

- **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

## 12 Ecological information

- **Toxicity**

- **Aquatic toxicity:** No further relevant information available.

- **Persistence and degradability** No further relevant information available.

- **Behavior in environmental systems:**

- **Bioaccumulative potential** No further relevant information available.

- **Mobility in soil** No further relevant information available.

- **Additional ecological information:**

- **General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

- **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

- **Waste treatment methods**

- **Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- **Uncleaned packagings:**

- **Recommendation:** Disposal must be made according to official regulations.

(Contd. on page 8)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellusolve**

· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

(Contd. of page 7)

## 14 Transport information

· **UN-Number**  
 · **DOT, IMDG, IATA**

UN1993

· **UN proper shipping name**  
 · **DOT**  
 · **IMDG, IATA**

Flammable liquids, n.o.s. (Ethylene glycol monomethyl ether)  
 FLAMMABLE LIQUID, N.O.S. (ETHYLENE GLYCOL  
 MONOMETHYL ETHER)

· **Transport hazard class(es)**

· **DOT**



· **Class**  
 · **Label**

3 Flammable liquids  
 3

· **IMDG, IATA**



· **Class**  
 · **Label**

3 Flammable liquids  
 3

· **Packing group**  
 · **DOT, IMDG, IATA**

III

· **Environmental hazards:**  
 · **Marine pollutant:**

No

· **Special precautions for user**  
 · **Danger code (Kemler):**  
 · **EMS Number:**  
 · **Stowage Category**

Warning: Flammable liquids  
 30  
 F-E, S-E  
 A

· **Transport in bulk according to Annex II of  
 MARPOL73/78 and the IBC Code**

Not applicable.

· **Transport/Additional information:**

· **DOT**  
 · **Quantity limitations**

On passenger aircraft/rail: 60 L  
 On cargo aircraft only: 220 L

· **IMDG**  
 · **Limited quantities (LQ)**

5L

(Contd. on page 9)



# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellulosolve**

(Contd. of page 8)

· **Excepted quantities (EQ)**

Code: E1

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 1000 ml

· **UN "Model Regulation":**

UN 1993 FLAMMABLE LIQUIDS, N.O.S. (ETHYLENE GLYCOL  
 MONOMETHYL ETHER), 3, III

## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

Ethylene Glycol Monomethyl Ether

· **TSCA (Toxic Substances Control Act):**

Ethylene Glycol Monomethyl Ether

Perchloric acid 68 - 70% w/w

Water

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

Ethylene Glycol Monomethyl Ether

· **Chemicals known to cause developmental toxicity:**

Ethylene Glycol Monomethyl Ether

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS02

GHS07

GHS08

· **Signal word** Danger

(Contd. on page 10)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellulosolve**

(Contd. of page 9)

- **Hazard-determining components of labeling:**

*Ethylene Glycol Monomethyl Ether*

- **Hazard statements**

*Flammable liquid and vapor.*

*Harmful in contact with skin or if inhaled.*

*May damage fertility or the unborn child.*

- **Precautionary statements**

*Obtain special instructions before use.*

*Do not handle until all safety precautions have been read and understood.*

*Keep away from heat/sparks/open flames/hot surfaces. - No smoking.*

*Keep container tightly closed.*

*Ground/bond container and receiving equipment.*

*Use explosion-proof electrical/ventilating/lighting/equipment.*

*Use only non-sparking tools.*

*Take precautionary measures against static discharge.*

*Avoid breathing dust/fume/gas/mist/vapors/spray*

*Use only outdoors or in a well-ventilated area.*

*Wear protective gloves/protective clothing/eye protection/face protection.*

*If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*

*IF INHALED: Remove person to fresh air and keep comfortable for breathing.*

*IF exposed or concerned: Get medical advice/attention.*

*Call a poison center/doctor if you feel unwell.*

*Specific treatment (see on this label).*

*Take off contaminated clothing and wash it before reuse.*

*In case of fire: Use for extinction: CO2, powder or water spray.*

*Store in a well-ventilated place. Keep cool.*

*Store locked up.*

*Dispose of contents/container in accordance with local/regional/national/international regulations.*

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

- **Department issuing SDS:** Environment protection department.

- **Contact:**

- **Date of preparation / last revision**

*11-15-2017: review SDS for accuracy. STN*

*Creation date for SDS 12-17-2014. STN*

*11/15/2017 / -*

- **Abbreviations and acronyms:**

*ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)*

*IMDG: International Maritime Code for Dangerous Goods*

*DOT: US Department of Transportation*

*IATA: International Air Transport Association*

*ACGIH: American Conference of Governmental Industrial Hygienists*

*EINECS: European Inventory of Existing Commercial Chemical Substances*

*ELINCS: European List of Notified Chemical Substances*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*NFPA: National Fire Protection Association (USA)*

*HMIS: Hazardous Materials Identification System (USA)*

*VOC: Volatile Organic Compounds (USA, EU)*

*LC50: Lethal concentration, 50 percent*

*LD50: Lethal dose, 50 percent*

(Contd. on page 11)

**Safety Data Sheet**  
**acc. to OSHA HCS**

Printing date 11/15/2017

Reviewed on 11/15/2017

**Trade name: Perchloric Acid 0.02 Normal**  
**NIST Traceable in Methyl Cellusolve**

(Contd. of page 10)

*PBT: Persistent, Bioaccumulative and Toxic*  
*vPvB: very Persistent and very Bioaccumulative*  
*NIOSH: National Institute for Occupational Safety*  
*OSHA: Occupational Safety & Health*  
*TLV: Threshold Limit Value*  
*PEL: Permissible Exposure Limit*  
*REL: Recommended Exposure Limit*  
*BEI: Biological Exposure Limit*  
*Flam. Liq. 3: Flammable liquids – Category 3*  
*Acute Tox. 4: Acute toxicity – Category 4*  
*Repr. 1: Reproductive toxicity – Category 1*

US