

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

1 Identification

- **Product identifier**
- **Trade name:** Perchloric Acid 0.01 Normal in n-Butyl Alcohol
- **Article number:** SPE475
- **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
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.



GHS05 Corrosion

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Skin Irrit. 2 H315 Causes skin irritation.

STOT SE 3 H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

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



GHS02



GHS05



GHS07

- **Signal word** Danger

(Contd. on page 2)

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**

(Contd. of page 1)

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

n-Butyl Alcohol

Acetic Acid

· **Hazard statements**

Flammable liquid and vapor.

Harmful if swallowed.

Causes skin irritation.

Causes serious eye damage.

May cause respiratory irritation. May cause drowsiness or dizziness.

· **Precautionary statements**

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

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

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

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

If swallowed: Call a poison center/doctor if you feel unwell.

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 in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Immediately call a poison center/doctor.

Specific treatment (see on this label).

Rinse mouth.

Take off contaminated clothing and wash it before reuse.

If skin irritation occurs: Get medical advice/attention.

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

Store in a well-ventilated place. Keep container tightly closed.

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 = 3

Fire = 3

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



*Health = *3*

Fire = 3

Reactivity = 0

· **Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

(Contd. on page 3)

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**

· **vPvB:** Not applicable.

(Contd. of page 2)

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

CAS: 71-36-3	n-Butyl Alcohol	87.314%
CAS: 64-19-7	Acetic Acid	12.125%

· **Table of Nonhazardous Ingredients**

CAS: 108-24-7	Acetic Anhydride	0.389%
CAS: 7601-90-3	Perchloric acid 68 - 70% w/w	0.173%

4 First-aid measures

- **Description of first aid measures**
- **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Immediately call a 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:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** 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).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.

(Contd. on page 4)

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**

(Contd. of page 3)

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-1:**

CAS: 71-36-3	n-Butyl Alcohol	60 ppm
CAS: 64-19-7	Acetic Acid	5 ppm
CAS: 108-24-7	Acetic Anhydride	0.5 ppm
CAS: 7601-90-3	Perchloric acid 68 - 70% w/w	0.61 ppm

· **PAC-2:**

CAS: 71-36-3	n-Butyl Alcohol	800 ppm
CAS: 64-19-7	Acetic Acid	35 ppm
CAS: 108-24-7	Acetic Anhydride	15 ppm
CAS: 7601-90-3	Perchloric acid 68 - 70% w/w	6.7 ppm

· **PAC-3:**

CAS: 71-36-3	n-Butyl Alcohol	8000** ppm
CAS: 64-19-7	Acetic Acid	250 ppm
CAS: 108-24-7	Acetic Anhydride	100 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.

Prevent formation of aerosols.

· **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.

(Contd. on page 5)

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**

(Contd. of page 4)

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

CAS: 71-36-3 n-Butyl Alcohol

PEL Long-term value: 300 mg/m³, 100 ppm

REL Ceiling limit value: 150 mg/m³, 50 ppm
Skin

TLV Long-term value: 61 mg/m³, 20 ppm

CAS: 64-19-7 Acetic Acid

PEL Long-term value: 25 mg/m³, 10 ppm

REL Short-term value: 37 mg/m³, 15 ppm
Long-term value: 25 mg/m³, 10 ppm

TLV Short-term value: 37 mg/m³, 15 ppm
Long-term value: 25 mg/m³, 10 ppm

· **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.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the skin.

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

(Contd. on page 6)

US

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**

(Contd. of page 5)

· **Body protection:** Protective work clothing

9 Physical and chemical properties

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

· **General Information**

· **Appearance:**

Form:	Liquid
Color:	Clear
Odor:	Distinct
Odor threshold:	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	116 °C (240.8 °F)

· **Flash point:** 35 °C (95 °F)

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

· **Ignition temperature:** 340 °C (644 °F)

· **Decomposition temperature:** Not determined.

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

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· **Explosion limits:**

Lower:	1.5 Vol %
Upper:	17 Vol %

· **Vapor pressure at 20 °C (68 °F):** 16 hPa (12 mm Hg)

· **Density at 20 °C (68 °F):** 0.83492 g/cm³ (6.96741 lbs/gal)

· **Relative density** Not determined.

· **Vapor density** Not determined.

· **Evaporation rate** Not determined.

· **Solubility in / Miscibility with**

Water: Not miscible or difficult to mix.

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**

Dynamic:	Not determined.
Kinematic:	Not determined.

· **Solvent content:**

Organic solvents:	99.8 %
VOC content:	99.83 %
	833.5 g/l / 6.96 lb/gal

Solids content: 0.0 %

(Contd. on page 7)

US

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**

(Contd. of page 6)

· **Other information** *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:**

- **LD/LC50 values that are relevant for classification:**

ATE (Acute Toxicity Estimate)

Oral	LD50	905 mg/kg (rat)
Dermal	LD50	8,743 mg/kg (rabbit)

CAS: 71-36-3 n-Butyl Alcohol

Oral	LD50	500 mg/kg (ATE)
------	------	-----------------

- **Primary irritant effect:**
- **on the skin:** *Irritant to skin and mucous membranes.*
- **on the eye:** *Strong irritant with the danger of severe eye injury.*
- **Sensitization:** *No sensitizing effects known.*
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Irritant

- **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.*

(Contd. on page 8)

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**



(Contd. of page 7)

- **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.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
- **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.

14 Transport information

- | | |
|---|---|
| · UN-Number | UN2924 |
| · DOT, IMDG, IATA | |
| · UN proper shipping name | Flammable liquids, corrosive, n.o.s. (Butanols, Acetic acid, glacial) |
| · DOT | FLAMMABLE LIQUID, CORROSIVE, N.O.S. (BUTANOLS, ACETIC ACID, GLACIAL) |
| · IMDG, IATA | |
| · Transport hazard class(es) | |
| · DOT | |
|  | |
| · Class | 3 Flammable liquids |
| · Label | 3, 8 |
| <hr style="border-top: 1px dashed black;"/> | |
| · IMDG | |
|  | |
| · Class | 3 Flammable liquids |

(Contd. on page 9)

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**

(Contd. of page 8)

· **Label** 3/8

· **IATA**



· **Class** 3 Flammable liquids
· **Label** 3 (8)

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

· **Environmental hazards:**
· **Marine pollutant:** No

· **Special precautions for user** Warning: Flammable liquids
· **Hazard identification number (Kemler code):** 38
· **EMS Number:** F-E,S-C
· **Segregation groups** Acids
· **Stowage Category** A
· **Stowage Code** SW2 Clear of living quarters.

· **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: 5 L
On cargo aircraft only: 60 L

· **IMDG**
· **Limited quantities (LQ)** 5L
· **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 2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S.
(BUTANOLS, ACETIC ACID, GLACIAL), 3 (8), III

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.

· **Sara**

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

None of the ingredients is listed.

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

CAS: 71-36-3 | n-Butyl Alcohol

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

n-Butyl Alcohol

ACTIVE

Acetic Acid

ACTIVE

(Contd. on page 10)

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**

(Contd. of page 9)

Acetic Anhydride

ACTIVE

Perchloric acid 68 - 70% w/w

ACTIVE

· **Hazardous Air Pollutants**

None of the ingredients is listed.

· **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:**

None of the ingredients is listed.

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

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

CAS: 71-36-3 | n-Butyl Alcohol

D

· **TLV (Threshold Limit Value)**

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

GHS05

GHS07

· **Signal word** Danger

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

n-Butyl Alcohol

Acetic Acid

· **Hazard statements**

Flammable liquid and vapor.

Harmful if swallowed.

Causes skin irritation.

Causes serious eye damage.

May cause respiratory irritation. May cause drowsiness or dizziness.

· **Precautionary statements**

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

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

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

(Contd. on page 11)

Safety Data Sheet

acc. to OSHA HCS

Printing date 04/14/2021

Reviewed on 04/14/2021

**Trade name: Perchloric Acid 0.01 Normal
in n-Butyl Alcohol**

(Contd. of page 10)

Use only outdoors or in a well-ventilated area.
 Wear protective gloves/protective clothing/eye protection/face protection.
 If swallowed: Call a poison center/doctor if you feel unwell.
 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 in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
 Continue rinsing.
 Immediately call a poison center/doctor.
 Specific treatment (see on this label).
 Rinse mouth.
 Take off contaminated clothing and wash it before reuse.
 If skin irritation occurs: Get medical advice/attention.
 In case of fire: Use for extinction: CO₂, powder or water spray.
 Store in a well-ventilated place. Keep container tightly closed.
 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**

Revision 2.0, 01-12-2020: Updated sections 1, 2 and 15 to meet Fanns new requirements

Revision 0.0, 03-17-2021: Creation date for SDS. STN

04/14/2021 / -

• **Abbreviations and acronyms:**

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

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

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

Flam. Liq. 3: Flammable liquids – Category 3

Acute Tox. 4: Acute toxicity – Category 4

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3