

**Holmium perchlorate solution**

Revision: 18.06.2025

Product code: AC14.01076

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Holmium perchlorate solution

UFI: NCNJ-G2HP-9WC5-VU6F

**1.2. Relevant identified uses of the substance or mixture and uses advised against****Use of the substance/mixture**

Reagents and laboratory chemicals

Only for laboratory and analysis purposes.

**Uses advised against**

Do not use for private purposes (household).

**1.3. Details of the supplier of the safety data sheet****Details of the supplier of the safety data sheet**

Company name: AnalytiChem Services, Unipessoal, Lda  
Street: Rua de Júlio Dinis 676 7º  
Place: N-4050-320 Porto  
Telephone: +351 226002917  
E-mail: info@analytichem.com  
Contact person: SDS service department  
E-mail: SDS@analytichem.com  
Internet: www.analytichem.com  
Responsible Department: SDS service department

**Supplier or manufacturer details**

Company name: AnalytiChem Belgium NV  
Street: Industriezone "De Arend" 2  
Place: B-8210 Zedelgem  
Telephone: +32 50 28 83 20  
E-mail: info.be@analytichem.com  
Contact person: SDS service department  
E-mail: SDS@analytichem.com  
Responsible Department: AnalytiChem:  
EU-Belgium: AnalytiChem Belgium, Industriezone "De Arend" 2, 8210 Zedelgem, Belgium, +32 50 28 83 20  
EU-Germany: AnalytiChem Germany, Stempelstrasse 6, 47167 Duisburg, Germany, +49 203 51 94 – 200  
EU-Netherlands: AnalytiChem Netherlands, Communicatieweg 7, 3641 SG Mijdrecht, The Netherlands, +31 297 286848  
UK: AnalytiChem UK, Unit 7 Launton Business Center, Murdock Road, Bicester, OX26 4XB, England, +44 1869 355 500  
USA: AnalytiChem USA, 227 China Road, Winslow, Maine, 04901, United States, +1 800-244-8378  
Canada: AnalytiChem Canada, 21800 Clark Graham Avenue, Baie d'Urfe, H9X 4B6, Canada, +1 514-457-0701  
Australia: ORE Research & Exploration Pty Ltd, 37A Hosie Street, Bayswater North, 3153, Australia, +61 3 9729 0333

**1.4. Emergency telephone****number:**

+44 20 3807 3798 (CHEMTREC)

**Further Information**

No data available

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### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Regulation (EC) No 1272/2008

Ox. Liq. 2; H272

Skin Irrit. 2; H315

Eye Irrit. 2; H319

Full text of hazard statements: see SECTION 16.

#### 2.2. Label elements

##### Regulation (EC) No 1272/2008

Signal word: Danger

Pictograms:



##### Hazard statements

H272 May intensify fire; oxidiser.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.

##### Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P220 Keep away from clothing and other combustible materials.  
P264 Wash hands and face thoroughly after handling.  
P280 Wear protective gloves/protective clothing and eye protection/face protection.  
P302+P352 IF ON SKIN: Wash with plenty of water.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337+P313 If eye irritation persists: Get medical advice/attention.  
P501 Dispose of contents/container to an appropriate recycling or disposal facility.

#### 2.3. Other hazards

No data available

### SECTION 3: Composition/information on ingredients

#### 3.2. Mixtures

##### Relevant ingredients

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification (Regulation (EC) No 1272/2008)			
7601-90-3	perchloric acid			5 - < 10 %
	231-512-4	017-006-00-4		
	Flam. Liq. 3, Ox. Liq. 1, Skin Corr. 1A; H226 H271 H314			

Full text of H and EUH statements: see section 16.

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**Specific Conc. Limits, M-factors and ATE**

CAS No	EC No	Chemical name	Quantity
	Specific Conc. Limits, M-factors and ATE		
7601-90-3	231-512-4	perchloric acid	5 - < 10 %
	oral: LD50 = 200 - 2000 mg/kg Ox. Liq. 1; H271: >= 50 - 100 Ox. Liq. 2; H272: >= 0 - < 50 Skin Corr. 1A; H314: >= 50 - 100 Skin Corr. 1B; H314: >= 10 - < 50 Skin Irrit. 2; H315: >= 1 - < 10 Eye Irrit. 2; H319: >= 1 - < 10		

**Further Information**

No data available

**SECTION 4: First aid measures****4.1. Description of first aid measures****General information**

First aider: Pay attention to self-protection!

**After inhalation**

Provide fresh air.

Call a physician immediately.

**After contact with skin**

Wash immediately with: Water

Take off immediately all contaminated clothing and wash it before reuse.

Call a physician immediately.

**After contact with eyes**

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

Remove contact lenses, if present and easy to do. Continue rinsing.

Protect uninjured eye.

**After ingestion**

If swallowed, immediately drink: Water

Do NOT induce vomiting.

Do not allow a neutralisation agent to be drunk.

Call a physician immediately.

**4.2. Most important symptoms and effects, both acute and delayed**

Causes burns.

Irritant

**4.3. Indication of any immediate medical attention and special treatment needed**

No data available

**SECTION 5: Firefighting measures****5.1. Extinguishing media****Suitable extinguishing media**

Co-ordinate fire-fighting measures to the fire surroundings.

**Unsuitable extinguishing media**

no restriction

**5.2. Special hazards arising from the substance or mixture**

Non-combustible liquids

oxidising

In case of fire, dangerous combustion gases or vapors may be released.

**5.3. Advice for firefighters**

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Wear a self-contained breathing apparatus and chemical protective clothing.

### Additional information

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

Move undamaged containers from immediate hazard area if it can be done safely.

Use water spray jet to protect personnel and to cool endangered containers.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### General advice

May be corrosive to metals.

#### For non-emergency personnel

Provide adequate ventilation.

Use personal protection equipment.

Avoid contact with skin, eyes and clothes.

Remove persons to safety.

To follow: Emergency procedures

Do not breathe dust/fume/gas/mist/vapours/spray.

#### For emergency responders

Precautionary statements For emergency responders : Personal protection equipment: see section 8

### 6.2. Environmental precautions

Do not allow to enter into surface water or drains.

### 6.3. Methods and material for containment and cleaning up

#### For containment

Cover drains.

Prevent spread over a wide area (e.g. by containment or oil barriers).

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

Collect in closed and suitable containers for disposal.

#### For cleaning up

Clean contaminated articles and floor according to the environmental legislation.

#### Other information

Provide adequate ventilation.

Do not breathe dust/fume/gas/mist/vapours/spray.

Wear breathing apparatus if exposed to vapours/dusts/aerosols.

### 6.4. Reference to other sections

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

#### Advice on safe handling

Read label before use.

Handle and open container with care.

Use personal protection equipment.

Avoid contact with skin, eyes and clothes.

Do not breathe dust/fume/gas/mist/vapours/spray.

Provide adequate ventilation.

Use extractor hood (laboratory).

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**Advice on protection against fire and explosion**

Usual measures for fire prevention.

**Advice on general occupational hygiene**

Keep away from: Food and feedingstuffs

When using do not eat, drink, smoke, sniff.

Provide eye shower and label its location conspicuously

In the immediate working surroundings there must be: Emergency shower installed

**Further information on handling**

Draw up and observe skin protection programme.

Wash hands and face before breaks and after work and take a shower if necessary.

Take off immediately all contaminated clothing and wash it before reuse.

**7.2. Conditions for safe storage, including any incompatibilities****Requirements for storage rooms and vessels**

Keep container tightly closed.

Corrosive to metals.

Unsuitable container/equipment material: Metal

**Hints on joint storage**

Take national regulations into account. /National regulations

**Further information on storage conditions**

Store in a dry place.

Store in a well-ventilated place.

**7.3. Specific end use(s)**

The product is intended for research, analysis and scientific education.

**SECTION 8: Exposure controls/personal protection****8.1. Control parameters****DNEL/DMEL values**

CAS No	Substance	Exposure route	Effect	Value
DNEL type	perchloric acid			
7601-90-3	Consumer DNEL, long-term	oral	systemic	0,0167 mg/kg bw/day

**PNEC values**

CAS No	Substance	Value
Environmental compartment	perchloric acid	
7601-90-3	Freshwater	0,021 mg/l
	Freshwater (intermittent releases)	147 mg/l
	Marine water	0,002 mg/l
	Freshwater sediment	4,67 mg/kg
	Marine sediment	0,467 mg/kg
	Micro-organisms in sewage treatment plants (STP)	8,2 mg/l
	Soil	0,021 mg/kg

**Additional advice on limit values**

Observe in addition any national regulations!

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### **8.2. Exposure controls**

#### **Appropriate engineering controls**

Provide adequate ventilation as well as local exhaust at critical locations.

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.

#### **Individual protection measures, such as personal protective equipment**

##### **Eye/face protection**

goggles

Face protection umbrella

##### **Hand protection**

Tested protective gloves must be worn

The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

##### **Skin protection**

Wear suitable protective clothing.

When handling with chemical substances, protective clothing with CE-labels including the four control digits must be worn.

Take off immediately all contaminated clothing and wash it before reuse.

##### **Respiratory protection**

Wear breathing apparatus if exposed to vapours/dusts/aerosols.

##### **Thermal hazards**

No data available

##### **Environmental exposure controls**

Do not allow to enter into surface water or drains.

## SECTION 9: Physical and chemical properties

### **9.1. Information on basic physical and chemical properties**

Physical state:	Liquid
Colour:	yellow
Odour:	No data available
Odour threshold:	No data available
Melting point/freezing point:	~0 °C
Boiling point or initial boiling point and boiling range:	~100 °C
Flammability:	No data available
Lower explosion limits:	No data available
Upper explosion limits:	No data available
Flash point:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
pH-Value:	1,3
Viscosity / kinematic:	No data available
Water solubility:	Yes.
Dissolution rate:	No data available
Partition coefficient n-octanol/water:	No data available
Dispersion stability:	No data available
Vapour pressure:	No data available
Vapour pressure:	No data available

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Density:	1,0954 g/cm <sup>3</sup>
Relative density:	No data available
Bulk density:	No data available
Relative vapour density:	No data available
Particle characteristics:	No data available

**9.2. Other information****Information with regard to physical hazard classes**

Explosive properties	No data available
Sustained combustibility:	No data available
Self-ignition temperature	
Solid:	No data available
Gas:	No data available
Oxidizing properties	
May intensify fire; oxidiser.	

**Other safety characteristics**

Evaporation rate:	No data available
Solvent separation test:	No data available
Solvent content:	No data available
Solid content:	No data available
Sublimation point:	No data available
Softening point:	No data available
Pour point:	No data available
No data available:	
Viscosity / dynamic:	No data available
Flow time:	No data available

**Further Information**

No data available

**SECTION 10: Stability and reactivity****10.1. Reactivity**

Corrosive to metals.  
May intensify fire; oxidiser.

**10.2. Chemical stability**

The product is stable under storage at normal ambient temperatures.

**10.3. Possibility of hazardous reactions**

Alkali (lye)  
Combustible substance

**10.4. Conditions to avoid**

No data available

**10.5. Incompatible materials**

Metal  
The product develops hydrogen in an aqueous solution in contact with metals.

**10.6. Hazardous decomposition products**

In case of fire may be liberated:  
SECTION 5: Firefighting measures

**Further information**

No data available

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**SECTION 11: Toxicological information****11.1. Information on hazard classes****Toxicokinetics, metabolism and distribution**

No data available

**Acute toxicity**

Based on available data, the classification criteria are not met.

**ATEmix calculated**

ATE (oral) &gt; 2000 mg/kg; ATE (dermal) &gt; 2000 mg/kg; ATE (inhalation vapour) &gt; 20 mg/l; ATE (inhalation dust/mist) &gt; 5 mg/l

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
7601-90-3	perchloric acid				
	oral	LD50 200 - 2000 mg/kg	Rat	Study report (2003)	OECD Guideline 423

**Irritation and corrosivity**

Skin corrosion/irritation: Causes skin irritation.

Serious eye damage/eye irritation: Causes serious eye irritation.

**Sensitising effects**

Based on available data, the classification criteria are not met.

**Carcinogenic/mutagenic/toxic effects for reproduction**

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met.

**STOT-single exposure**

Based on available data, the classification criteria are not met.

**STOT-repeated exposure**

Based on available data, the classification criteria are not met.

**Aspiration hazard**

Based on available data, the classification criteria are not met.

**Information on likely routes of exposure**

No data available

**Specific effects in experiment on an animal**

No data available

**Additional information on tests**

No data available

**Practical experience**

No data available

**11.2. Information on other hazards****Endocrine disrupting properties**

No data available

**Other information**

No data available

**Further information**

No data available

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**SECTION 12: Ecological information****12.1. Toxicity**

Based on available data, the classification criteria are not met.

CAS No	Chemical name	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
7601-90-3	perchloric acid						
	Acute fish toxicity	LC50 mg/l	1470	96 h	Lepomis macrochirus	Publication (2004)	EPA OPPTS 850.1075
	Acute algae toxicity	ErC50 mg/l	> 435,7	72 h	Pseudokirchneriella subcapitata	Study report (1998)	OECD Guideline 201
	Acute crustacea toxicity	EC50 mg/l	> 100	48 h	Daphnia magna	Study report (2004)	OECD Guideline 202
	Acute bacteria toxicity	EC50 mg/l ( )	> 1000	0,5 h	Activated sludge	Study report (1997)	ISO 8192

**12.2. Persistence and degradability**

No data available

**12.3. Bioaccumulative potential**

No data available

**BCF**

CAS No	Chemical name	BCF	Species	Source
7601-90-3	perchloric acid	> 0,12 - < 0,14	Danio rerio	Chemosphere 65 (2006)

**12.4. Mobility in soil**

No data available

**12.5. Results of PBT and vPvB assessment**

The substances in the mixture do not meet the PBT/vPvB criteria according to UK REACH.

**12.6. Endocrine disrupting properties**

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

**12.7. Other adverse effects**

Discharge into the environment must be avoided.

**Further information**

Do not allow to enter into surface water or drains.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods****Disposal recommendations**

Send to a physico-chemical treatment facility under observation of official regulations.

Do not allow to enter into surface water or drains.

**Contaminated packaging**

Handle contaminated packages in the same way as the substance itself.

**SECTION 14: Transport information****Land transport (ADR/RID)****14.1. UN number or ID number:**

UN 1802

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**Holmium perchlorate solution****14.2. UN proper shipping name:** PERCHLORIC ACID**14.3. Transport hazard class(es):** 8**14.4. Packing group:** II

Hazard label: 8+5.1

Classification code: CO1

Special Provisions: 522

Limited quantity: 1 L

Excepted quantity: E0

Transport category: 2

Hazard No: 85

Tunnel restriction code: E

**Inland waterways transport (ADN)****14.1. UN number or ID number:** UN 1802**14.2. UN proper shipping name:** Perchloric acid**14.3. Transport hazard class(es):** 8**14.4. Packing group:** II

Hazard label: 8+5.1

Classification code: CO1

Special Provisions: 522

Limited quantity: 1 L

Excepted quantity: E0

**Marine transport (IMDG)****14.1. UN number or ID number:** UN 1802**14.2. UN proper shipping name:** PERCHLORIC ACID**14.3. Transport hazard class(es):** 8**14.4. Packing group:** II

Hazard label: 8+5.1

Special Provisions: -

Limited quantity: 1 L

Excepted quantity: E0

EmS: F-H, S-Q

Segregation group: 1 - acids

**Air transport (ICAO-TI/IATA-DGR)****14.1. UN number or ID number:** UN 1802**14.2. UN proper shipping name:** PERCHLORIC ACID**14.3. Transport hazard class(es):** 8**14.4. Packing group:** II

Hazard label: 8+5.1

Special Provisions: A1

Limited quantity Passenger: Forbidden

Passenger LQ: Forbidden

Excepted quantity: E0

IATA-packing instructions - Passenger: Forbidden

IATA-max. quantity - Passenger: Forbidden

IATA-packing instructions - Cargo: 855

IATA-max. quantity - Cargo: 30 L

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

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Restrictions on use (REACH, annex XVII):

Entry 3, Entry 40, Entry 75

Information according to Directive  
2012/18/EU (SEVESO III):

P8 OXIDISING LIQUIDS AND SOLIDS

**Additional information**

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC).

**National regulatory information**

Water hazard class (D): 3 - highly hazardous to water

**SECTION 16: Other information****Changes**

This data sheet contains changes from the previous version in section(s): 1,2,3,4,5,6,7,8,9,10,11,12,13,15,16.

**Abbreviations and acronyms**

Ox. Liq. 1: Oxidising liquids, hazard category 1

Ox. Liq. 2: Oxidising liquids, hazard category 2

Flam. Liq. 3: Flammable liquids, hazard category 3

Skin Corr. 1A: Skin corrosion, sub-category 1A

Skin Irrit. 2: Skin irritation, hazard category 2

Eye Irrit. 2: Eye irritation, hazard category 2

**Classification for mixtures and used evaluation method**

Classification	Classification procedure
Ox. Liq. 2; H272	On basis of test data
Skin Irrit. 2; H315	Calculation method
Eye Irrit. 2; H319	Calculation method

**Relevant H and EUH statements (number and full text)**

H226 Flammable liquid and vapour.

H271 May cause fire or explosion; strong oxidiser.

H272 May intensify fire; oxidiser.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

**Further Information**

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights.

The receiver of our product is singularly responsible for adhering to existing laws and regulations.

*(The data for the relevant ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*