

MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Mixture
	:
EC Index-No.	: 017-006-004
EC-No.	: 231-512-4
CAS-No.	: 7601-90-3
Product code	: 00240
Formula	: HClO ₄

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

1.2.1. Relevant identified uses

Industrial/Professional use spec	: Industrial For professional use only
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1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP] Mixtures/Substances: SDS EU 2015: According to

Oxidising Liquids, Category 1	H271
Corrosive to metals, Category 1	H290
Acute toxicity (oral), Category 4	H302
Skin corrosion/irritation, Category 1A	H314
Specific target organ toxicity — Repeated exposure, Category 2	H373

Full text of H statements : see section 16

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Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS03

GHS05

GHS07

GHS08

Signal word (CLP) : Danger

Hazard statements (CLP) : H271 - May cause fire or explosion; strong oxidiser.
H290 - May be corrosive to metals.
H302 - Harmful if swallowed.
H314 - Causes severe skin burns and eye damage.
H373 - May cause damage to organs through prolonged or repeated exposure.

Precautionary statements (CLP) : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 - Wear protective clothing, face protection, eye protection, protective gloves.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310 - Immediately call a POISON CENTER/doctor
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P371+P380+P375 - In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Perchloric acid	(CAS-No.) 7601-90-3 (EC-No.) 231-512-4 (EC Index-No.) 017-006-00-4	60	Ox. Liq. 1, H271 Skin Corr. 1A, H314 Eye Dam. 1, H318

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ACETIC ACID GLACIAL AR	(CAS-No.) 64-19-7 (EC-No.) 200-580-7 (EC Index-No.) 607-002-00-6	40	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1A, H314 Eye Dam. 1, H318
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Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
- First-aid measures after skin contact : Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Rinse skin with water/shower. Immediately call a POISON CENTER/doctor.
- First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor.

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

- Symptoms/effects : Causes severe skin burns and eye damage. May cause damage to organs.
- Symptoms/effects after ingestion : Harmful if swallowed.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Carbon dioxide. Dry powder. Foam. Water spray.
- Unsuitable extinguishing media : Do not use extinguishing media containing water.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : May cause fire or explosion; strong oxidiser.
- Explosion hazard : Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. Heating may cause an explosion.

5.3. Advice for firefighters

- Firefighting instructions : In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. DO NOT fight fire when fire reaches explosives. Evacuate area.
- Protection during firefighting : Do not attempt to take action without suitable protective equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : No open flames. No smoking. Remove ignition sources. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Use personal protective equipment as required.
- Emergency procedures : Ventilate area.

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6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : On land, sweep or shovel into suitable containers. Collect spillage. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Hazardous waste due to potential risk of explosion. May be corrosive to metals.
Precautions for safe handling : Take precautionary measures against static discharge. Do not breathe vapours. Avoid contact during pregnancy/while nursing. Keep away from sources of ignition - No smoking. Avoid contact with skin and eyes.
Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep in fireproof place. Keep container tightly closed.
Incompatible materials : Heat sources. combustible materials.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Personal protective equipment : Wear fire/flame resistant/retardant clothing.
Hand protection : Protective gloves
Eye protection : Chemical goggles or face shield
Skin and body protection : Wear suitable protective clothing
Respiratory protection : Wear respiratory protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Molecular mass : 100.46 g/mol
Colour : Clear Colorless.
Odour : odourless.
Odour threshold : No data available

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pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: -18 °C
Freezing point	: No data available
Boiling point	: 203 °C
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: No data available
Relative vapour density at 20 °C	: 3.5
Relative density	: No data available
Density	: 1.5 - 1.6 g/cm ³
Solubility	: Water: Infinitely soluble
Log Pow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Heating may cause an explosion.
Oxidising properties	: The substance or mixture is classified as oxidizing with the subcategory 1. May cause fire or explosion; strong oxidiser.
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Heat. Sparks. Open flame.

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Thermal decomposition generates : Corrosive vapours.

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if swallowed.

ATE CLP (oral)	500 mg/kg bodyweight
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Skin corrosion/irritation : Causes severe skin burns and eye damage.

Serious eye damage/irritation : Serious eye damage, category 1, implicit

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

ACETIC ACID GLACIAL AR (64-19-7)

Persistence and degradability	Not established.
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12.3. Bioaccumulative potential

ACETIC ACID GLACIAL AR (64-19-7)

Log Pow	0.17
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Bioaccumulative potential	Not established.
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12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations	: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
Additional information	: Hazardous waste due to potential risk of explosion.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

UN-No. (ADR)	: 1873
UN-No. (IMDG)	: 1873
UN-No. (IATA)	: 1873
UN-No. (ADN)	: 1873
UN-No. (RID)	: 1873

14.2. UN proper shipping name

Proper Shipping Name (ADR)	: PERCHLORIC ACID
Proper Shipping Name (IMDG)	: PERCHLORIC ACID
Proper Shipping Name (IATA)	: Perchloric acid
Proper Shipping Name (ADN)	: PERCHLORIC ACID
Proper Shipping Name (RID)	: PERCHLORIC ACID
Transport document description (ADR)	: UN 1873 PERCHLORIC ACID, 5.1 (8), I, (B/E)
Transport document description (IMDG)	: UN 1873 PERCHLORIC ACID, 5.1 (8), I
Transport document description (IATA)	: UN 1873 Perchloric acid, 5.1, I
Transport document description (ADN)	: UN 1873 PERCHLORIC ACID, 5.1 (8), I
Transport document description (RID)	: UN 1873 PERCHLORIC ACID, 5.1 (8), I

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR)	: 5.1 (8)
Danger labels (ADR)	: 5.1, 8



IMDG

Transport hazard class(es) (IMDG)	: 5.1 (8)
Danger labels (IMDG)	: 5.1, 8



IATA

Transport hazard class(es) (IATA)	: 5.1 (8)
Hazard labels (IATA)	: 5.1, 8

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ADN

Transport hazard class(es) (ADN) : 5.1 (8)

Danger labels (ADN) : 5.1, 8



RID

Transport hazard class(es) (RID) : 5.1 (8)

Danger labels (RID) : 5.1, 8



14.4. Packing group

Packing group (ADR) : I

Packing group (IMDG) : I

Packing group (IATA) : I

Packing group (ADN) : I

Packing group (RID) : I

14.5. Environmental hazards

Dangerous for the environment : No

Marine pollutant : No

Other information : No supplementary information available

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : OC1

Special provisions (ADR) : 60

Limited quantities (ADR) : 0

Excepted quantities (ADR) : E0

Packing instructions (ADR) : P502

Special packing provisions (ADR) : PP28

Mixed packing provisions (ADR) : MP3

Portable tank and bulk container instructions (ADR) : T10

Portable tank and bulk container special provisions (ADR) : TP1

Tank code (ADR) : L4DN(+)

Tank special provisions (ADR) : TU3, TU28

Vehicle for tank carriage : AT

Transport category (ADR) : 1

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Special provisions for carriage - Loading, unloading and handling (ADR) : CV24

Special provisions for carriage - Operation (ADR) : S20

Hazard identification number (Kemler No.) : 558

Orange plates :



Tunnel restriction code (ADR) : B/E

EAC code : 2P

- Transport by sea

Special provisions (IMDG) : 900

Packing instructions (IMDG) : P502

Special packing provisions (IMDG) : PP28

Tank instructions (IMDG) : T10

Tank special provisions (IMDG) : TP1

EmS-No. (Fire) : F-A

EmS-No. (Spillage) : S-Q

Stowage category (IMDG) : D

Segregation (IMDG) : SG16

Properties and observations (IMDG) : Colourless liquid. Mixtures with combustible material may ignite spontaneously and, when involved in a fire, by shock or by friction, may cause an explosion. Highly corrosive to most metals. Causes burns to skin, eyes and mucous membranes. Transport of PERCHLORIC ACID with more than 72% acid, by mass is prohibited.

MFAG-No : 143

- Air transport

PCA Excepted quantities (IATA) : E0

PCA Limited quantities (IATA) : Forbidden

PCA limited quantity max net quantity (IATA) : Forbidden

PCA packing instructions (IATA) : Forbidden

PCA max net quantity (IATA) : Forbidden

CAO packing instructions (IATA) : 553

CAO max net quantity (IATA) : 2.5L

ERG code (IATA) : 5C

- Inland waterway transport

Classification code (ADN) : OC1

Special provisions (ADN) : 60

Limited quantities (ADN) : 0

Excepted quantities (ADN) : E0

Equipment required (ADN) : PP, EP

Number of blue cones/lights (ADN) : 0

- Rail transport

Classification code (RID) : OC1

Special provisions (RID) : 60

Limited quantities (RID) : 0

Excepted quantities (RID) : E0

Packing instructions (RID) : P502

Special packing provisions (RID) : PP28

Mixed packing provisions (RID) : MP3

Portable tank and bulk container instructions (RID) : T10

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Portable tank and bulk container special provisions (RID)	: TP1
Tank codes for RID tanks (RID)	: L4DN(+)
Special provisions for RID tanks (RID)	: TU3, TU28, TE16
Transport category (RID)	: 1
Special provisions for carriage - Loading, unloading and handling (RID)	: CW24
Hazard identification number (RID)	: 558

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

Contains no REACH substances with Annex XVII restrictions

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

15.1.2. National regulations

Germany

Reference to AwSV : Water hazard class (WGK) 1, Slightly hazardous to water (Classification according to AwSV, Annex 1)

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen : None of the components are listed

SZW-lijst van mutagene stoffen : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : None of the components are listed

Denmark

Recommendations Danish Regulation : Young people below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product

15.2. Chemical safety assessment

No additional information available

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SECTION 16: Other information

Full text of H- and EUH-statements:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Flam. Liq. 3	Flammable liquids, Category 3
Met. Corr. 1	Corrosive to metals, Category 1
Ox. Liq. 1	Oxidising Liquids, Category 1
Skin Corr. 1A	Skin corrosion/irritation, Category 1A
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
H226	Flammable liquid and vapour.
H271	May cause fire or explosion; strong oxidiser.
H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.