

according to Regulation (EC) No 1907/2006

## Perchlorsäure 3,36 mol/l

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

### 1.1. Product identifier

Perchlorsäure 3,36 mol/l

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

### Use of the substance/mixture

@0103.B010590

### Uses advised against

Any non-intended use.

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

Company name: MORPHISTO GmbH Street: Weismüllerstr. 45

Place: D-60314 Frankfurt am Main

Telephone: +49 (0) 69 / 400 3019-60 Telefax: +49 (0) 69 / 400 3019-64

e-mail: info@morphisto.de
Internet: http://www.morphisto.de

1.4. Emergency telephone Poison Information Center Mainz, Germany, Tel: +49(0)6131/19240

number:

#### **SECTION 2: Hazards identification**

### 2.1. Classification of the substance or mixture

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

Hazard categories:

Oxidising liquid: Ox. Liq. 2

Substance or mixture corrosive to metals: Met. Corr. 1

Acute toxicity: Acute Tox. 4

Skin corrosion/irritation: Skin Corr. 1B

Serious eye damage/eye irritation: Eye Dam. 1

Specific target organ toxicity - repeated exposure: STOT RE 2

Hazard Statements: May intensify fire; oxidiser. May be corrosive to metals. Harmful if swallowed.

Causes severe skin burns and eye damage.

Causes serious eye damage.

May cause damage to organs through prolonged or repeated exposure.

## 2.2. Label elements

## Regulation (EC) No. 1272/2008

# Hazard components for labelling

Perchloric acid ... %

Signal word: Danger

Pictograms:









## **Hazard statements**

H272 May intensify fire; oxidiser.
H290 May be corrosive to metals.
H302 Harmful if swallowed.



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H314 Causes severe skin burns and eye damage.

H373 May cause damage to organs through prolonged or repeated exposure.

### **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.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water

or shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if

present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor.

## 2.3. Other hazards

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

# **SECTION 3: Composition/information on ingredients**

#### 3.2. Mixtures

### **Hazardous components**

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	GHS Classification	•	•	
7601-90-3	Perchloric acid %	Perchloric acid %		
	231-512-4	017-006-00-4	01-2120066865-44	
	Ox. Liq. 1, Met. Corr. 1, Acute Tox. 4, Skin Corr. 1A, STOT RE 2; H271 H290 H302 H314 H373			

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

### **Further Information**

Product does not contain listed SVHC substances > 0,1 % according to Regulation (EC) No. 1907/2006 Article 59 (REACH)

# **SECTION 4: First aid measures**

## 4.1. Description of first aid measures

### **General information**

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

### After inhalation

@1501.B015819 In case of respiratory tract irritation, consult a physician. In the case of lung irritation: Primary treatment using corticoide spray, eg. Auxiloson spray, Pulmicort-dosage-spray. (Auxiloson and Pulmicort are registered trademarks.)

### After contact with skin

@0403.B004101 Take off immediately all contaminated clothing. In case of skin irritation, seek medical treatment.

## After contact with eyes

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

#### After ingestion

Do NOT induce vomiting. Rinse mouth thoroughly with water. Let water be drunken in little sips (dilution effect). Observe risk of aspiration if vomiting occurs. Never give anything by mouth to an unconscious person or a person with cramps. When in doubt or if symptoms are observed, get medical advice.





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

If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects). shortage of breath. Corrosion

### 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

Sand. Foam. Carbon dioxide (CO2). Extinguishing powder. In case of major fire and large quantities: Water spray jet. Water mist.

## Unsuitable extinguishing media

Full water jet

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

Can be released in case of fire: Material, rich in oxygen, oxidizing. Hydrogen chloride (HCI). Gas/vapours, irritant.

#### 5.3. Advice for firefighters

In case of fire and/or explosion do not breathe fumes. In case of fire: Wear self-contained breathing apparatus.

#### Additional information

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

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

#### **SECTION 6: Accidental release measures**

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

Wear personal protection equipment (refer to section 8).

@1501.B015718 Avoid contact with skin, eyes and clothes.

#### 6.2. Environmental precautions

Do not allow to enter into surface water or drains. Prevent spread over a wide area (e.g. by containment or oil barriers). Do not allow to enter into soil/subsoil. Explosion hazard.

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

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

Treat the recovered material as prescribed in the section on waste disposal.

Clean contaminated objects and areas thoroughly observing environmental regulations.

#### 6.4. Reference to other sections

Safe handling: see section 7
Disposal: see section 13

### **SECTION 7: Handling and storage**

## 7.1. Precautions for safe handling

#### Advice on safe handling

Wear suitable protective clothing. (See section 8.)

Conditions to avoid: aerosol or mist formation

Avoid contact with skin, eyes and clothes.

# Advice on protection against fire and explosion

Usual measures for fire prevention.

## Further information on handling

Advices on general occupational hygiene: See section 8.

## 7.2. Conditions for safe storage, including any incompatibilities



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## Requirements for storage rooms and vessels

Keep container tightly closed in a cool, well-ventilated place. Only use containers specifically approved for the substance/product.

Unsuitable materials for Container: metal.

#### Hints on joint storage

Do not store together with: Gas. Aerosol dispensers. Explosives. Pyrophoric liquids and solids. Self-heating substances and mixtures. Substances or mixtures which, in contact with water, emit flammable gases. Organic peroxides. Self-reactive substances and mixtures. Radioactive substances. Infectious substances.

### Further information on storage conditions

Recommended storage temperature: 20°C

Protect against: frost. UV-radiation/sunlight. heat. Humidity

### 7.3. Specific end use(s)

See section 1.

## **SECTION 8: Exposure controls/personal protection**

# 8.1. Control parameters

#### **DNEL/DMEL values**

CAS No	Substance			
DNEL type		Exposure route	Effect	Value
7601-90-3	Perchloric acid %			
Consumer DNEL, long-term		oral	1 *	0,0167 mg/kg bw/day

# **PNEC** values

CAS No	Substance	
Environment	al compartment	Value
7601-90-3	Perchloric acid %	
Freshwater		0,021 mg/l
Freshwater (	intermittent releases)	147 mg/l
Marine water	r	0,002 mg/l
Freshwater s	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

To date, no national critical limit values exist.

# 8.2. Exposure controls







### Appropriate engineering controls

Provide adequate ventilation.

## Protective and hygiene measures

When using do not eat, drink or smoke.

### Eye/face protection

Wear eye/face protection. DIN EN 166



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### Hand protection

Wear suitable gloves.

Suitable material:

FKM (fluororubber). - Thickness of glove material: 0,4 mm

Breakthrough time >= 8 h

Butyl rubber. - Thickness of glove material: 0,5 mm

Breakthrough time >= 8 h

CR (polychloroprenes, Chloroprene rubber). - Thickness of glove material: 0,5 mm

Breakthrough time >= 8 h

NBR (Nitrile rubber). - Thickness of glove material: 0,35 mm

Breakthrough time >= 8 h

PVC (Polyvinyl chloride). - Thickness of glove material: 0,5 mm

Breakthrough time >= 8 h

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard

EN 374 derived from it.

Before using check leak tightness / impermeability. In the case of wanting to use the gloves again, clean them

before taking off and air them well.

#### Skin protection

Suitable protective clothing: Lab apron.

Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500 (D).

### Respiratory protection

With correct and proper use, and under normal conditions, breathing protection is not required.

Respiratory protection necessary at:

- -exceeding exposure limit values
- -insufficient ventilation and aerosol or mist formation

Suitable respiratory protective equipment: Combination filtering device (EN 14387) Type B-P2

The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.

#### **Environmental exposure controls**

No information available.

# SECTION 9: Physical and chemical properties

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

Physical state: Liquid

Colour: No information available.

Odour: characteristic

pH-Value: No information available.

Changes in the physical state

Melting point:

Initial boiling point and boiling range:

Sublimation point:

No information available.

Flash point:

No information available.

Sustaining combustion:

No data available

**Flammability** 

Solid: No information available.

Gas: No information available.



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**Explosive properties** 

No information available.

Lower explosion limits:

Upper explosion limits:

No information available.

No information available.

No information available.

**Auto-ignition temperature** 

Solid: No information available.
Gas: No information available.
Decomposition temperature: No information available.

**Oxidizing properties** 

Oxidising agent none

Vapour pressure: No information available.

(at 20 °C)

Vapour pressure: No information available.

(at 50 °C)

Density (at 20 °C):

Bulk density:

No information available.

No information available.

Water solubility:

easily soluble.

Solubility in other solvents

No information available.

No information available. Partition coefficient: Viscosity / dynamic: No information available. Viscosity / kinematic: No information available. Flow time: No information available. Vapour density: No information available. Evaporation rate: No information available. Solvent separation test: No information available. No information available. Solvent content:

9.2. Other information

Solid content: No information available.

## **SECTION 10: Stability and reactivity**

#### 10.1. Reactivity

No information available.

## 10.2. Chemical stability

The product is chemically stable under recommended conditions of storage, use and temperature.

## 10.3. Possibility of hazardous reactions

Risk of explosion with: semimetals, Antimony oxide, Metals, Hydrogen, Impurities, organic combustible substances, acetic acid, Halogenated hydrocarbon, Hydrogen halides, Fluorine, Ether, sulfoxides, metallic oxides, Alcohols, acetonitrile, Lead oxides, Hydrogen chloride gas, chromium(VI) oxide, dimethyl sulfoxide, Iron, ferric oxide, Acetic anhydride, ethanol, glycerol, Methanol, dichloromethane, phenol, phosphine, Oxides of phosphorus, pyridine, Reducing agents, sulphuric acid, Sulphur trioxide, Halogenated compounds, iron/iron-containing compounds, Mild steel, carbon

### 10.4. Conditions to avoid

Protect against: UV-radiation/sunlight. heat.



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### 10.5. Incompatible materials

Materials to avoid: Rubber. Light metals. metal. Fat.

### 10.6. Hazardous decomposition products

Can be released in case of fire: Material, rich in oxygen, oxidizing. Hydrogen chloride (HCI). Gas/vapours, irritant.

# **SECTION 11: Toxicological information**

### 11.1. Information on toxicological effects

## Toxicocinetics, metabolism and distribution

No information available.

#### **Acute toxicity**

Harmful if swallowed.

## **ATEmix** calculated

ATE (oral) 1655,6 mg/kg

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

Causes severe skin burns and eye damage.

Causes serious eye damage.

## Sensitising effects

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

#### Carcinogenic/mutagenic/toxic effects for reproduction

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

Perchloric acid ... %:

In vitro mutagenicity/genotoxicity: Method: OECD 471 (Ames test). Result / evaluation: negative. Literature

information: ECHA Dossier

# STOT-single exposure

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

### STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure. (Perchloric acid ... %)

Perchloric acid ... %:

Subchronic oral toxicity: Method: OECD 408 Species: Rat. Result / evaluation: NOAEL = 1 mg/kg bw/day.

Literature information: ECHA Dossier

### **Aspiration hazard**

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

## **SECTION 12: Ecological information**

## 12.1. Toxicity

The product has not been tested.



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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		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	(> 1000	mg/l)	0,5 h	Activated sludge	Study report (1997)	ISO 8192

## 12.2. Persistence and degradability

The product has not been tested.

#### 12.3. Bioaccumulative potential

No indication of bioaccumulation potential.

### **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 information available.

### 12.5. Results of PBT and vPvB assessment

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

### 12.6. Other adverse effects

Harmful effects in the aquatic environment due to pH shifts.

## **SECTION 13: Disposal considerations**

### 13.1. Waste treatment methods

### **Disposal recommendations**

Dispose of waste according to applicable legislation. Consult the local waste disposal expert about waste disposal. Non-contaminated packages may be recycled. The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process. Control report for waste code/ waste marking according to (EWC) European Waste Catalogue:

### List of Wastes Code - residues/unused products

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances,

including mixtures of laboratory chemicals; hazardous waste

# List of Wastes Code - used product

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and

discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances,

including mixtures of laboratory chemicals; hazardous waste

# List of Wastes Code - contaminated packaging

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND

PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by

hazardous substances; hazardous waste

## Contaminated packaging

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



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## **SECTION 14: Transport information**

### Land transport (ADR/RID)

14.1. UN number:UN 180214.2. UN proper shipping name:Perchloric acid

14.3. Transport hazard class(es):814.4. Packing group:IIHazard 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: UN 1802 14.2. UN proper shipping name: Perchloric acid

14.3. Transport hazard class(es):814.4. Packing group:IIHazard label:8+5.1



Classification code: CO1
Special Provisions: 522
Limited quantity: 1 L
Excepted quantity: E0

## Marine transport (IMDG)

14.1. UN number:UN 180214.2. UN proper shipping name:Perchloric acid

 14.3. Transport hazard class(es):
 8

 14.4. Packing group:
 II

Hazard label: 8+5.1



Marine pollutant:

Special Provisions:

Limited quantity:

Excepted quantity:

EmS:

NO

1 L

E0

F-H, S-Q

Air transport (ICAO-TI/IATA-DGR)

**14.1. UN number:** UN 1802



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14.2. UN proper shipping name: Perchloric acid

14.3. Transport hazard class(es):814.4. Packing group:IIHazard label:8+5



Special Provisions: A1

Limited quantity Passenger: Forbidden Passenger LQ: Forbidden Excepted quantity: E2

IATA-packing instructions - Passenger: Forbidden
IATA-max. quantity - Passenger: Forbidden
IATA-packing instructions - Cargo: 855
IATA-max. quantity - Cargo: 30 L

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

14.6. Special precautions for user

Safe handling: see section 7

Personal protection equipment: see section 8

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

not relevant

### **SECTION 15: Regulatory information**

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

## **EU** regulatory information

Restrictions on use (REACH, annex XVII):

Entry 3: Perchloric acid ... %

2010/75/EU (VOC): No information available. 2004/42/EC (VOC): No information available.

Information according to 2012/18/EU P8 OXIDISING LIQUIDS AND SOLIDS

(SEVESO III):

**Additional information** 

The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].

REACH 1907/2006 Appendix XVII, No (mixture): 3

**National regulatory information** 

Employment restrictions: Observe restrictions to employment for juvenils according to the 'juvenile

work protection guideline' (94/33/EC).

Water contaminating class (D): 1 - slightly water contaminating

15.2. Chemical safety assessment

For the following substances of this mixture a chemical safety assessment has been carried out:

Perchloric acid ... %

### **SECTION 16: Other information**

## Changes

Rev.: 1.0 - Initial release 06.08.2018



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#### Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route AwSV: Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen

AGW: Arbeitsplatzgrenzwert AVV: Abfallverzeichnisverordnung CAS Chemical Abstracts Service

CLP: Classification, Labelling and Packaging of substances and mixtures

DNEL: Derived No Effect Level

d: day(s)

EAKV: Europäisches Abfallverzeichnis gemäß Entwurf Abfallverzeichnisverordnung

EINECS: European INventory of Existing Commercial chemical Substances

ELINCS: European LIst of Notified Chemical Substances

ECHA: European Chemicals Agency EWC: European Waste Catalogue

IARC: INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals GefStoffV: Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)

h: hour

LOAEL: Lowest observed adverse effect level

LOAEC: Lowest observed adverse effect concentration

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NOAEL: No observed adverse effect level NOAEC: No observed adverse effect level

NLP: No-Longer Polymers N/A: not applicable

OECD: Organisation for Economic Co-operation and Development

PNEC: predicted no effect concentration PBT: Persistent bioaccumulative toxic

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de

fer (Regulations Concerning the International Transport of Dangerous Goods by Rail )

REACH: Registration, Evaluation, Authorisation of Chemicals

SVHC: substance of very high concern TRGS Technische Regeln fuer Gefahrstoffe

**UN: United Nations** 

VOC: Volatile Organic Compounds

VwVwS: Verwaltungsvorschrift wassergefaehrdender Stoffe

WGK: Wassergefaehrdungsklasse

### Classification for mixtures and used evaluation method according to Regulation (EC) No. 1272/2008 [CLP]

Classification procedure
On basis of test data
On basis of test data
Calculation method
Calculation method
Calculation method
Calculation method

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

H271 May cause fire or explosion; strong oxidiser.



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H272	May intensify fire; oxidiser.
H290	May be corrosive to metals.
H302	Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H373 May cause damage to organs through prolonged or repeated exposure.

#### **Further Information**

Classification according to Regulation (EC) No 1272/2008 [CLP] - Classification procedure:

Health hazards: Calculation method.

Environmental hazards: Calculation method.

Physical hazards: On basis of test data and / or calculated and / or estimated.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

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