

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

#### 1.1. Product identifier

Product form	: Substance
Substance name	: Zinc Sulfate Monohydrate
EC-No.	: 231-793-3
CAS-No.	: 7446-19-7
Formula	: ZnSO <sub>4</sub> • H <sub>2</sub> O

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

##### 1.2.1. Relevant identified uses

Use of the substance/mixture : Nutrient; Dietary Supplement

##### 1.2.2. Uses advised against

No additional information available

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

##### Manufacturer

Jost Chemical Co.  
8150 Lackland Rd.  
63114 Saint Louis, Missouri  
T 314-428-4300 - F 314-428-4366  
[sds@jostchemical.com](mailto:sds@jostchemical.com) - [www.jostchemical.com](http://www.jostchemical.com)

##### Distributor

JOST CHEMICAL EUROPE SPRL  
rue du Bois Portal n° 30/1-3  
B - 5300 Andenne - BELGIQUE  
T +32 85-552655 - F +32 85-552654  
[info@jostchemical.com](mailto:info@jostchemical.com)

#### 1.4. Emergency telephone number

Emergency number : For Hazardous Materials [or Dangerous Goods] Incident Spill, Leak, Fire, Exposure, or Accident  
Call CHEMTREC Day or Night  
United States and Canada: 1-800-424-9300 / +1 703-527-3887  
Global: +1 703-741-5970

### 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 Regulation (EU) 2015/830 (REACH Annex II)

Acute toxicity (oral), Category 4	H302
Serious eye damage/eye irritation, Category 1	H318
Hazardous to the aquatic environment — Acute Hazard, Category 1	H400
Hazardous to the aquatic environment — Chronic Hazard, Category 1	H410
Full text of H statements : see section 16	

#### 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)



Signal word (CLP)

: Danger

Hazard statements (CLP)

: H302 - Harmful if swallowed.  
H318 - Causes serious eye damage.  
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements (CLP)

: P264 - Wash hands thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product.  
P273 - Avoid release to the environment.  
P280 - Wear eye protection.  
P301+P312 - IF SWALLOWED: Call a POISON CENTRE or doctor if you feel unwell.  
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 or doctor.  
P330 - Rinse mouth.  
P391 - Collect spillage.  
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

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## Safety Data Sheet

according to Regulation (EC) No. 453/2010

### 2.3. Other hazards

Other hazards not contributing to the classification : None under normal conditions.

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%
Zinc Sulfate Monohydrate	(CAS-No.) 7446-19-7 (EC-No.) 231-793-3	100

Full text of H-statements: see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general	: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Call a poison center or a doctor if you feel unwell.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
First-aid measures after skin contact	: Rinse with water. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists. Wash skin with plenty of water.
First-aid measures after eye contact	: Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
First-aid measures after ingestion	: Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Call Poison Information Centre ( <a href="http://www.big.be/antigif.htm">www.big.be/antigif.htm</a> ). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Rinse mouth. Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects after inhalation	: Coughing. Dry/sore throat. Respiratory difficulties.
Symptoms/effects after skin contact	: No effects known.
Symptoms/effects after eye contact	: Corrosion of the eye tissue. Visual disturbances. Serious damage to eyes.
Symptoms/effects after ingestion	: AFTER INGESTION OF HIGH QUANTITIES: Gastrointestinal complaints. Nausea. Vomiting. Abdominal pain. Blood in stool. Decreased renal function. Change in the haemogramme/blood composition. Weakening of the immune system.
Chronic symptoms	: No effects known.

### 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 : Adapt extinguishing media to the environment for surrounding fires. Water spray. Dry powder. Foam.

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

Fire hazard	: DIRECT FIRE HAZARD: Non combustible.
Explosion hazard	: DIRECT EXPLOSION HAZARD: No direct explosion hazard.
Hazardous decomposition products in case of fire	: On burning: release of toxic and corrosive gases/vapours (sulphur oxides, zinc oxide) and formation of metallic fumes.

### 5.3. Advice for firefighters

Precautionary measures fire	: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions	: Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water. Take account of environmentally hazardous firefighting water. Use water moderately and if possible collect or contain it.

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Protection during firefighting

: Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

### SECTION 6: Accidental release measures

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

##### 6.1.1. For non-emergency personnel

Protective equipment

: Gloves. Safety glasses. Protective clothing. Dust cloud production: compressed air/oxygen apparatus.

Emergency procedures

: Ventilate spillage area. Mark the danger area. Prevent dust cloud formation. No naked flames. Wash contaminated clothes. Avoid contact with skin and eyes.

Measures in case of dust release

: In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

##### 6.1.2. For emergency responders

Protective equipment

: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

#### 6.2. Environmental precautions

Avoid release to the environment. Prevent soil and water pollution. Prevent spreading in sewers.

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

For containment

: Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray.

Methods for cleaning up

: Mechanically recover the product. Stop dust cloud by covering with sand/earth. Scoop solid spill into closing containers. Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

Other information

: Dispose of materials or solid residues at an authorized site.

#### 6.4. Reference to other sections

For further information refer to section 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling

: Ensure good ventilation of the work station. Avoid raising dust. Keep away from naked flames/heat. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Avoid contact with skin and eyes. Wear personal protective equipment.

Hygiene measures

: Observe strict hygiene. Keep container tightly closed. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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

Storage conditions

: Store in a clean, dry warehouse in the original unopened containers.

Incompatible products

: Oxidizing agent. Strong acids. Strong bases.

Heat and ignition sources

: KEEP SUBSTANCE AWAY FROM: heat sources.

Information on mixed storage

: KEEP SUBSTANCE AWAY FROM: (strong) bases. water/moisture.

Storage area

: Store at ambient temperature. Store in a dry area. Keep container in a well-ventilated place. Meet the legal requirements.

Special rules on packaging

: SPECIAL REQUIREMENTS: closing. watertight. dry. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials

: lead.

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

No additional information available

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### Zinc Sulfate Monohydrate (7446-19-7)

##### DNEL/DMEL (Workers)

Long-term - systemic effects, dermal	8.3 mg/kg bw/day
Long-term - systemic effects, inhalation	1 mg/m <sup>3</sup>

##### DNEL/DMEL (General population)

Long-term - systemic effects, oral	0.83 mg/kg bw/day
Long-term - systemic effects, inhalation	1.3 mg/m <sup>3</sup>

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### Zinc Sulfate Monohydrate (7446-19-7)

Long-term - systemic effects, dermal	8.3 mg/kg bw/day
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#### PNEC (Water)

PNEC aqua (freshwater)	20.6 µg/l
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PNEC aqua (marine water)	6.1 µg/l
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#### PNEC (Sediment)

PNEC sediment (freshwater)	117.8 mg/kg dwt
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PNEC sediment (marine water)	56.5 mg/kg dwt
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#### PNEC (Soil)

PNEC soil	35.6 mg/kg dwt
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#### PNEC (STP)

PNEC sewage treatment plant	52 µg/l
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### 8.2. Exposure controls

#### Appropriate engineering controls:

Ensure good ventilation of the work station.

#### Personal protective equipment:

Dust production: dust mask with filter type P2. Safety glasses. Gloves. In case of dust production: protective goggles.

#### Materials for protective clothing:

GIVE GOOD RESISTANCE: butyl rubber. PVC

#### Hand protection:

Gloves

#### Eye protection:

Safety glasses. In case of dust production: protective goggles. Safety glasses

#### Skin and body protection:

Protective clothing

#### Respiratory protection:

Dust production: dust mask with filter type P2

#### Personal protective equipment symbol(s):



#### Environmental exposure controls:

Avoid release to the environment.

## SECTION 9: Physical and chemical properties

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

Physical state	: Solid
Appearance	: Powder.
Molecular mass	: 179.47 g/mol
Colour	: White.
Odour	: Odourless.
Odour threshold	: No data available
pH	: 3.7 - 4.07 (Literature, 20 °C)
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: > 229 °C (1 atm)
Freezing point	: Not applicable
Boiling point	: Not applicable
Flash point	: Not applicable

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Auto-ignition temperature	: Not applicable
Decomposition temperature	: > 229 °C (EU Method A.1: Melting/freezing point)
Flammability (solid, gas)	: Not flammable Non flammable.
Vapour pressure	: Not applicable
Vapour pressure at 50 °C	: No data available
Relative vapour density at 20 °C	: Not applicable
Relative density	: 3.35 (22 °C)
Density	: 3350 kg/m <sup>3</sup> (22 °C)
Solubility	: Soluble in water. Water: 210 g/l (20 °C)
Log Pow	: Not applicable (inorganic substance)
Log Kow	: Not applicable (inorganic substance)
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available.
Oxidising properties	: No data available.
Explosive limits	: Not applicable

### 9.2. Other information

VOC content	: Not applicable (inorganic)
Other properties	: Hygroscopic.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reacts violently with (strong) bases.

### 10.2. Chemical stability

Hygroscopic.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

Oxidizing agent.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral)	: Oral: Harmful if swallowed.
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified

### Zinc Sulfate Monohydrate (7446-19-7)

LD50 oral rat	1710 mg/kg bodyweight (OECD 401: Acute Oral Toxicity, Rat, Male, Experimental value)
LD50 dermal rat	> 2000 mg/kg
Causes serious eye damage.	: Not classified (Based on available data, the classification criteria are not met) pH: 3.7 - 4.07 (Literature, 20 °C)
Serious eye damage/irritation	: Causes serious eye damage. pH: 3.7 - 4.07 (Literature, 20 °C)
Respiratory or skin sensitisation	: Not classified (Lack of data)
Germ cell mutagenicity	: Not classified (Lack of data)
Carcinogenicity	: Not classified (Lack of data)
Reproductive toxicity	: Not classified (Lack of data)
STOT-single exposure	: Not classified (Lack of data)
STOT-repeated exposure	: Not classified (Lack of data)
Aspiration hazard	: Not classified (Not applicable)
Potential adverse human health effects and symptoms	: Harmful if swallowed. Causes serious eye damage.

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### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - general	: Dangerous for the environment.
Ecology - air	: Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
Ecology - water	: Toxic to crustacea. Very toxic to fishes. Inhibition of activated sludge. Toxic to algae. May cause eutrophication at very low concentration. pH shift.
Dangerous for the environment	: Very toxic to aquatic life.
Chronic aquatic toxicity	: Very toxic to aquatic life with long lasting effects.

#### Zinc Sulfate Monohydrate (7446-19-7)

LC50 fish 1	0.33 - 0.78 mg/l (96 h, Pimephales promelas, Static system, Fresh water, Experimental value)
EC50 Daphnia 1	1.13 mg/l (48 h, Ceriodaphnia dubia, Literature study)
EC50 72h algae (1)	3.73 mg/l (Selenastrum capricornutum, Literature study)

#### 12.2. Persistence and degradability

##### Zinc Sulfate Monohydrate (7446-19-7)

Persistence and degradability	Biodegradability: not applicable.
Biochemical oxygen demand (BOD)	Not applicable (inorganic)
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

#### 12.3. Bioaccumulative potential

##### Zinc Sulfate Monohydrate (7446-19-7)

BCF other aquatic organisms 1	38 - 28960 (28 day(s), Palaemon elegans, Semi-static system, Salt water, Read-across, Fresh weight)
Log Pow	Not applicable (inorganic substance)
Log Kow	Not applicable (inorganic substance)
Bioaccumulative potential	Bioaccumable.

#### 12.4. Mobility in soil

##### Zinc Sulfate Monohydrate (7446-19-7)

Mobility in soil	No additional information available
Ecology - soil	No (test)data on mobility of the substance available.

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

##### Zinc Sulfate Monohydrate (7446-19-7)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

#### 12.6. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Regional legislation (waste)	: LWCA (the Netherlands): KGA category 05.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Remove to an authorized dump (Class I). Precipitate/make insoluble.
Additional information	: Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.

### SECTION 14: Transport information

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

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### 14.1. UN number

UN-No. (ADR)	: 3077
UN-No. (IMDG)	: 3077
UN-No. (IATA)	: 3077
UN-No. (ADN)	: 3077
UN-No. (RID)	: 3077

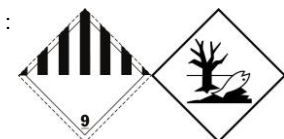
### 14.2. UN proper shipping name

Proper Shipping Name (ADR)	: Environmentally hazardous substance, solid, n.o.s.
Proper Shipping Name (IMDG)	: Environmentally hazardous substance, solid, n.o.s.
Proper Shipping Name (IATA)	: Environmentally hazardous substance, solid, n.o.s.
Proper Shipping Name (ADN)	: Environmentally hazardous substance, solid, n.o.s.
Proper Shipping Name (RID)	: Environmentally hazardous substance, solid, n.o.s.
Transport document description (ADR)	: UN 3077 Environmentally hazardous substance, solid, n.o.s. (Zinc Sulfate Monohydrate), 9, III, (-)
Transport document description (IMDG)	: UN 3077 Environmentally hazardous substance, solid, n.o.s. (Zinc Sulfate Monohydrate), 9, III, MARINE POLLUTANT
Transport document description (IATA)	: UN 3077 Environmentally hazardous substance, solid, n.o.s. (Zinc Sulfate Monohydrate), 9, III
Transport document description (ADN)	: UN 3077 Environmentally hazardous substance, solid, n.o.s. (Zinc Sulfate Monohydrate), 9, III
Transport document description (RID)	: UN 3077 Environmentally hazardous substance, solid, n.o.s. (Zinc Sulfate Monohydrate), 9, III

### 14.3. Transport hazard class(es)

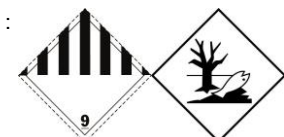
#### ADR

Transport hazard class(es) (ADR)	: 9
Danger labels (ADR)	: 9



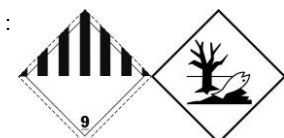
#### IMDG

Transport hazard class(es) (IMDG)	: 9
Danger labels (IMDG)	: 9



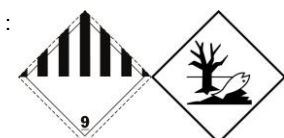
#### IATA

Transport hazard class(es) (IATA)	: 9
Hazard labels (IATA)	: 9



#### ADN

Transport hazard class(es) (ADN)	: 9
Danger labels (ADN)	: 9



#### RID

Transport hazard class(es) (RID)	: 9
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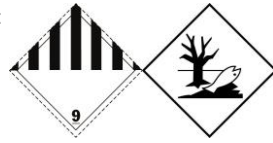


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Danger labels (RID) : 9



### 14.4. Packing group

Packing group (ADR) : III  
Packing group (IMDG) : III  
Packing group (IATA) : III  
Packing group (ADN) : III  
Packing group (RID) : III

### 14.5. Environmental hazards

Dangerous for the environment : Yes  
Marine pollutant : Yes  
Other information : No supplementary information available

### 14.6. Special precautions for user

#### Overland transport

Transport regulations (ADR) : Subject  
Classification code (ADR) : M7  
Hazard identification number (Kemler No.) : 90  
Orange plates :



Tunnel restriction code (ADR) : -

#### Transport by sea

Transport regulations (IMDG) : Subject  
EmS-No. (Fire) : F-A  
EmS-No. (Spillage) : S-F

#### Air transport

Transport regulations (IATA) : Subject to the provisions

#### Inland waterway transport

Classification code (ADN) : M7  
Carriage permitted (ADN) : T\* B\*\*

#### Rail transport

Transport regulations (RID) : Subject  
Classification code (RID) : M7

### 14.7. Transport in bulk according to Annex II of Marpol 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

No REACH Annex XVII restrictions  
Zinc Sulfate Monohydrate is not on the REACH Candidate List  
Zinc Sulfate Monohydrate is not on the REACH Annex XIV List

VOC content : Not applicable (inorganic)  
Directive 2012/18/EU (SEVESO III)

#### 15.1.2. National regulations

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out



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### SECTION 16: Other information

#### Indication of changes:

This sheet was updated (refer to the date at the top of this page).

#### Full text of H- and EUH-statements:

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
H302	Harmful if swallowed.
H318	Causes serious eye damage.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

*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*