

## Safety Data Sheet

according to Regulation (EC) No 1907/2006

### Müller's solution for determination of reducing substances in sugar

Revision date: 29.05.2024

Product code: 03243

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

### 1.1. Product identifier

Müller's solution for determination of reducing substances in sugar

UFI: DFY8-K05E-M00X-179E

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

#### Use of the substance/mixture

Laboratory chemical

Industrial uses: Uses of substances as such or in preparations at industrial sites

Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

#### Uses advised against

Do not use for private purposes (household).

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

|                         |                                  |                              |
|-------------------------|----------------------------------|------------------------------|
| Company name:           | AnalytiChem GmbH                 |                              |
|                         | ACD                              |                              |
| Street:                 | Stempelstraße 6                  |                              |
| Place:                  | D-47167 Duisburg                 |                              |
| Telephone:              | 0203/5194-0                      | Telefax: 0203/5194-290       |
| E-mail:                 | info@analytichem.de              |                              |
| Contact person:         | Abteilung Produktsicherheit      | Telephone: 0203/5194-107/117 |
| E-mail:                 | produktsicherheit@analytichem.de |                              |
| Internet:               | www.analytichem.de               |                              |
| Responsible Department: | Abteilung Produktsicherheit      |                              |

### 1.4. Emergency telephone number:

For Hazardous Materials [or Dangerous Goods] Incidents Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300 Outside USA and Canada: +1 703-741-5970 (collect calls accepted)

### Further Information

This product is a mixture. REACH Registration Number see section 3.

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

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

Eye Dam. 1; H318

Aquatic Acute 1; H400

Aquatic Chronic 1; H410

Full text of hazard statements: see SECTION 16.

### 2.2. Label elements

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

#### Hazard components for labelling

copper sulphate pentahydrate

Signal word: Danger

#### Pictograms:



#### Hazard statements

H318 Causes serious eye damage.

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H410 Very toxic to aquatic life with long lasting effects.

**Precautionary statements**

P273 Avoid release to the environment.  
 P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.  
 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.  
 P391 Collect spillage.

**2.3. Other hazards**

No data available

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

**3.2. Mixtures**

**Chemical characterization**

Mixtures in aqueous solution

**Relevant ingredients**

| CAS No    | Chemical name  |              |                  | Quantity  |
|-----------|--|--------------|------------------|-----------|
|           | EC No  | Index No     | REACH No         |           |
|           | Classification (Regulation (EC) No 1272/2008)  |              |                  |           |
| 7758-99-8 | copper sulphate pentahydrate   |              |                  | 1 - < 5 % |
|           | 231-847-6  | 029-023-00-4 | 01-2119520566-40 |           |
|           | Acute Tox. 4, Skin Irrit. 2, Eye Dam. 1, Aquatic Acute 1, Aquatic Chronic 1; H302 H315 H318<br>H400 H410 |              |                  |           |

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

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

| CAS No    | EC No  | Chemical name                | Quantity  |
|-----------|--|------------------------------|-----------|
|           | Specific Conc. Limits, M-factors and ATE   |                              |           |
| 7758-99-8 | 231-847-6  | copper sulphate pentahydrate | 1 - < 5 % |
|           | dermal: LD50 = > 2000 mg/kg; oral: ATE 481 mg/kg Aquatic Acute 1; H400: M=10<br>Aquatic Chronic 1; H410: M=1 |                              |           |

**Further Information**

This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of = 0.1 % (w/w).

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

**General information**

No data available

**After inhalation**

Provide fresh air.

**After contact with skin**

Wash immediately with: Water  
 Take off immediately all contaminated clothing and wash it before reuse.

**After contact with eyes**

Rinse immediately carefully and thoroughly with eye-bath or water.  
 Remove contact lenses, if present and easy to do. Continue rinsing.  
 Consult an ophthalmologist.

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#### After ingestion

Rinse mouth immediately and drink plenty of water.  
Call a physician immediately.

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

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  
Hazardous combustion products  
In case of fire may be liberated:  
Sulphur oxides  
Metal oxide smoke, toxic

### 5.3. Advice for firefighters

In case of fire: Wear self-contained breathing apparatus.  
Avoid contact with skin, eyes and clothes.

#### Additional information

Use water spray jet to protect personnel and to cool endangered containers.  
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

## SECTION 6: Accidental release measures

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

#### For non-emergency personnel

Provide adequate ventilation.  
Use personal protection equipment.  
Avoid contact with skin, eyes and clothes.  
Remove persons to safety.  
Emergency procedures  
Consult an expert  
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).  
Collect in closed and suitable containers for disposal.  
Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

#### For cleaning up

Clean contaminated articles and floor according to the environmental legislation.

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#### 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

- Do not breathe vapour/aerosol.
- Read label before use.

#### Advice on protection against fire and explosion

- No special fire protection measures are necessary.

#### Advice on general occupational hygiene

- Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme.
- Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink.

#### 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

- Store in a dry place.

#### Further information on storage conditions

- Keep container tightly closed.

### 7.3. Specific end use(s)

- Laboratory chemicals

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### PNEC values

| CAS No    | Substance  | Value       |
|-----------|--|-------------|
| 7758-99-8 | copper sulphate pentahydrate                     |             |
|           | Environmental compartment                        |             |
|           | Freshwater                                       | 0,0078 mg/l |
|           | Marine water                                     | 0,0052 mg/l |
|           | Freshwater sediment                              | 87 mg/kg    |
|           | Marine sediment                                  | 676 mg/kg   |
|           | Micro-organisms in sewage treatment plants (STP) | 0,23 mg/l   |
|           | Soil   | 65 mg/kg    |

### 8.2. Exposure controls

#### Appropriate engineering controls

- Technical measures and the application of suitable work processes have priority over personal protection

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equipment.

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

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

##### Eye/face protection

Suitable eye protection: goggles.

##### Hand protection

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

Protective gloves are recommended Company KCL GmbH, D-36124 Eichenzell, email: [vertrieb@kcl.de](mailto:vertrieb@kcl.de) With specification (test according to EN374):

By long-term hand contact

Trade name/designation KCL 741 Dermatril® L

Recommended material: NBR (Nitrile rubber) 0,11 mm

Wearing time with permanent contact: > 480 min

By short-term hand contact

Trade name/designation KCL 741 Dermatril® L

Recommended material: NBR (Nitrile rubber) 0,11 mm

Wearing time with occasional contact (splashes): > 480 min

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types. This recommendation applies only to the product stated in the safety data sheet supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

##### Skin protection

Wear suitable protective clothing.

The choice of body protection depends on the concentration and quantity of hazardous substances. The chemical resistance of protective agents must be clarified with their suppliers.

##### Respiratory protection

Respiratory protection necessary at: aerosol or mist formation

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

##### 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:   | blue           |                |
| Odour:  | odourless      |                |
| Odour threshold:  | not determined |                |
| Melting point/freezing point:                             |                | not determined |
| Boiling point or initial boiling point and boiling range: |                | not determined |
| Flammability:   |                | not applicable |

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|  |                          |
|--|--------------------------|
| Lower explosion limits:                | not applicable           |
| Upper explosion limits:                | not applicable           |
| Flash point:                           | not applicable           |
| Auto-ignition temperature:             | not determined           |
| Decomposition temperature:             | No data available        |
| pH-Value:                              | 10,0                     |
| Viscosity / kinematic:                 | not determined           |
| Water solubility:                      | completely miscible      |
| Solubility in other solvents           | not determined           |
| Dissolution rate:                      | not determined           |
| Partition coefficient n-octanol/water: | No data available        |
| Dispersion stability:                  | not determined           |
| Vapour pressure:                       | No data available        |
| Vapour pressure:                       | not determined           |
| Density:                               | 1,1469 g/cm <sup>3</sup> |
| Relative density:                      | not determined           |
| Bulk density:                          | No data available        |
| Relative vapour density:               | not determined           |
| Particle characteristics:              | not determined           |

#### **9.2. Other information**

##### **Information with regard to physical hazard classes**

|                           |                   |
|---------------------------|-------------------|
| Explosive properties      | No data available |
| Sustaining combustion:    | No data available |
| Self-ignition temperature |                   |
| Solid:                    | not determined    |
| Gas:                      | not applicable    |
| Oxidizing properties      |                   |
| No data available         |                   |

##### **Other safety characteristics**

|                          |                |
|--------------------------|----------------|
| Evaporation rate:        | not determined |
| Solvent separation test: | not determined |
| Solvent content:         | not determined |
| Solid content:           | not determined |
| Sublimation point:       | not determined |
| Softening point:         | not determined |
| Pour point:              | not determined |
| not determined:          |                |
| Viscosity / dynamic:     | not determined |
| Flow time:               | not determined |

##### **Further Information**

not determined

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

### **10.1. Reactivity**

No data available

### **10.2. Chemical stability**

The product is stable under storage at normal ambient temperatures.

### **10.3. Possibility of hazardous reactions**

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No data available

**10.4. Conditions to avoid**

No data available

**10.5. Incompatible materials**

No data available

**10.6. Hazardous decomposition products**

In case of fire may be liberated:

SECTION 5: Firefighting measures

**Further information**

No data available

**SECTION 11: Toxicological information**

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

**Toxicokinetics, metabolism and distribution**

There are no data available on the mixture itself.

**Acute toxicity**

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

**ATEmix calculated**

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

| CAS No    | Chemical name                |                   |         |                     |                    |
|-----------|------------------------------|-------------------|---------|---------------------|--------------------|
|           | Exposure route               | Dose              | Species | Source              | Method             |
| 7758-99-8 | copper sulphate pentahydrate |                   |         |                     |                    |
|           | oral                         | ATE 481 mg/kg     |         |                     |                    |
|           | dermal                       | LD50 > 2000 mg/kg | Rat     | Study report (1993) | OECD Guideline 402 |

**Irritation and corrosivity**

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

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

**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**

There are no data available on the mixture itself.

**Specific effects in experiment on an animal**

There are no data available on the mixture itself.

**Additional information on tests**

There are no data available on the mixture itself.

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**Practical experience**

There are no data available on the mixture itself.

**11.2. Information on other hazards**

**Endocrine disrupting properties**

There are no data available on the mixture itself.

**Other information**

There are no data available on the mixture itself.

**Further information**

Irritant

**SECTION 12: Ecological information**

**12.1. Toxicity**

There are no data available on the mixture itself.

| CAS No    | Chemical name                |               |           |         |  |   |
|-----------|------------------------------|---------------|-----------|---------|--|---|
|           | Aquatic toxicity             | Dose          | [h]   [d] | Species | Source   | Method  |
| 7758-99-8 | copper sulphate pentahydrate |               |           |         |  |   |
|           | Acute fish toxicity          | LC50<br>mg/l  | 0,193     | 96 h    | Pimephales promelas                                | Study report (1996)<br>measurements were conducted by standard                        |
|           | Acute algae toxicity         | ErC50<br>mg/l | 0,152     | 72 h    | Pseudokirchneriella subcapitata                    | Publication (2005)<br>OECD Guideline 201  |
|           | Acute crustacea toxicity     | EC50<br>mg/l  | 0,007     | 48 h    | Daphnia magna                                      | Study report (1978)<br>- Test were conducted on Daphnia magna t                       |
|           | Fish toxicity                | NOEC<br>mg/l  | 0,123     | 12 d    | Atherinops affinis                                 | Mar. Environ. Res. 31: 17-35 (1991)<br>Three tests are reported, designed to de       |
|           | Algae toxicity               | NOEC<br>mg/l  | 0,0102    | 19 d    | other aquatic plant: giant kelp Macrocystis pyrife | Mar. Ecol. Prog. Ser. 68: 147 - 156 (199)<br>Tests were conducted to determine the ef |
|           | Crustacea toxicity           | NOEC<br>mg/l  | 0,033     | 14 d    | Penaeus mergulensis and Penaeus monodon            | Bull. Environ. Contain. Toxicol. (1995)<br>The effects of dissolved copper on the g   |

**12.2. Persistence and degradability**

There are no data available on the mixture itself.

**12.3. Bioaccumulative potential**

There are no data available on the mixture itself.

**BCF**

| CAS No    | Chemical name                | BCF       | Species         | Source               |
|-----------|------------------------------|-----------|-----------------|----------------------|
| 7758-99-8 | copper sulphate pentahydrate | 0,02 - 20 | Crangon crangon | Symp. Biologica. Hun |

**12.4. Mobility in soil**

There are no data available on the mixture itself.

**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. 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.



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**Further information**

Do not allow to enter into surface water or drains.

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

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

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

Do not mix with other wastes.

**Contaminated packaging**

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

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

**SECTION 14: Transport information****Land transport (ADR/RID)**

|  |   |
|--|---|
| <b>14.1. UN number or ID number:</b>     | UN 3082   |
| <b>14.2. UN proper shipping name:</b>    | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(copper sulphate pentahydrate) |
| <b>14.3. Transport hazard class(es):</b> | 9   |
| <b>14.4. Packing group:</b>              | III   |
| Hazard label:                            | 9   |
| Classification code:                     | M6  |
| Special Provisions:                      | 274 335 375 601   |
| Limited quantity:                        | 5 L   |
| Excepted quantity:                       | E1  |
| Transport category:                      | 3   |
| Hazard No:                               | 90  |
| Tunnel restriction code:                 | -   |

**Inland waterways transport (ADN)**

|  |   |
|--|---|
| <b>14.1. UN number or ID number:</b>     | UN 3082   |
| <b>14.2. UN proper shipping name:</b>    | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(copper sulphate pentahydrate) |
| <b>14.3. Transport hazard class(es):</b> | 9   |
| <b>14.4. Packing group:</b>              | III   |
| Hazard label:                            | 9   |
| Classification code:                     | M6  |
| Special Provisions:                      | 274 335 375 601   |
| Limited quantity:                        | 5 L   |
| Excepted quantity:                       | E1  |

**Marine transport (IMDG)**

|  |   |
|--|---|
| <b>14.1. UN number or ID number:</b>     | UN 3082   |
| <b>14.2. UN proper shipping name:</b>    | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(copper sulphate pentahydrate) |
| <b>14.3. Transport hazard class(es):</b> | 9   |
| <b>14.4. Packing group:</b>              | III   |
| Hazard label:                            | 9   |
| Special Provisions:                      | 274, 335, 969   |
| Limited quantity:                        | 5 L   |
| Excepted quantity:                       | E1  |
| EmS:                                     | F-A, S-F  |

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#### Air transport (ICAO-TI/IATA-DGR)

|  |   |
|--|---|
| <b>14.1. UN number or ID number:</b>     | UN 3082   |
| <b>14.2. UN proper shipping name:</b>    | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(copper sulphate pentahydrate) |
| <b>14.3. Transport hazard class(es):</b> | 9   |
| <b>14.4. Packing group:</b>              | III   |
| Hazard label:                            | 9   |
| Special Provisions:                      | A97 A158 A197   |
| Limited quantity Passenger:              | 30 kg G   |
| Passenger LQ:                            | Y964  |
| Excepted quantity:                       | E1  |
| IATA-packing instructions - Passenger:   | 964   |
| IATA-max. quantity - Passenger:          | 450 L   |
| IATA-packing instructions - Cargo:       | 964   |
| IATA-max. quantity - Cargo:              | 450 L   |

#### 14.5. Environmental hazards

|                             |                              |
|-----------------------------|------------------------------|
| ENVIRONMENTALLY HAZARDOUS:  | Yes                          |
| Danger releasing substance: | copper sulphate pentahydrate |

#### 14.7. Maritime transport in bulk according to IMO instruments

not applicable

### 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, Entry 75

Information according to Directive 2012/18/EU (SEVESO III): E1 Hazardous to the Aquatic Environment

##### National regulatory information

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Water hazard class (D): 2 - obviously hazardous to water

#### 15.2. Chemical safety assessment

For this substance a chemical safety assessment has not been carried out.

### SECTION 16: Other information

#### Changes

This data sheet contains changes from the previous version in section(s): 1,9.

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**Abbreviations and acronyms**

- Acute Tox: Acute toxicity
- Skin Irrit: Skin irritation
- Eye Dam: Eye damage
- Aquatic Acute: Acute aquatic hazard
- Aquatic Chronic: Chronic aquatic hazard
- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- IATA: International Air Transport Association
- GHS: Globally Harmonized System of Classification and Labelling of Chemicals
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances
- CAS: Chemical Abstracts Service
- LC50: Lethal concentration, 50%
- LD50: Lethal dose, 50%

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

| Classification          | Classification procedure |
|-------------------------|--------------------------|
| Eye Dam. 1; H318        | Calculation method       |
| Aquatic Acute 1; H400   | Calculation method       |
| Aquatic Chronic 1; H410 | Calculation method       |

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

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H400 Very toxic to aquatic life.
- H410 Very toxic to aquatic life with long lasting effects.

**Further Information**

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 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. Provide appropriate information, instructions and training to users

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