

# SAFETY DATA SHEET



Kjeldahl Tablets Titanium

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

### 1.1 Product identifier

**Product name** : Kjeldahl Tablets Titanium  
**Other means of identification** : Article Number: 11057980

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

**Product use** : Industrial use as laboratory agent.

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

BÜCHI Labortechnik AG  
 Meierseggstrasse 40  
 CH - 9230 Flawil  
 Telephone: +41 71 394 63 63  
 FAX: +41 71 394 65 65  
 Email: buchi@buchi.com  
 Internet: www.buchi.com

**e-mail address of person responsible for this SDS** : application@buchi.com

### 1.4 Emergency telephone number

#### Supplier

**Telephone number** : Swiss Toxicological Information Centre: in Switzerland: 145, from abroad: +41 44 251 51 51 (24 h)

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Product definition** : Mixture

#### Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Eye Dam. 1, H318  
 Aquatic Acute 1, H400  
 Aquatic Chronic 2, H411

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

### 2.2 Label elements

#### Hazard pictograms



**Signal word** : Danger

**Hazard statements** : H318 - Causes serious eye damage.  
 H400 - Very toxic to aquatic life.  
 H411 - Toxic to aquatic life with long lasting effects.

#### Precautionary statements

**Prevention** : P280 - Wear eye or face protection.  
 P273 - Avoid release to the environment.

## SECTION 2: Hazards identification

<b>Response</b>	: P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician. P391 - Collect spillage.
<b>Storage</b>	: Not applicable.
<b>Disposal</b>	: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
<b>Hazardous ingredients</b>	: Copper(II) sulfate pentahydrate
<b>Supplemental label elements</b>	: Not applicable.
<b>Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles</b>	: Not applicable.

### 2.3 Other hazards

**Other hazards which do not result in classification** : None known.

## SECTION 3: Composition/information on ingredients

**3.2 Mixtures** : Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
Potassium sulfate	REACH #: 01-2119489441-34 EC: 231-915-5 CAS: 7778-80-5	60 - 100	Not classified.	[6]
Copper(II) sulfate pentahydrate	REACH #: 01-2119520566-40 EC: 231-847-6 CAS: 7758-99-8 Index: 029-023-00-4	1 - 5	Acute Tox. 4, H302 Eye Dam. 1, H318 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=1)	[1]
Titanium dioxide	REACH #: 01-2119489379-17 EC: 236-675-5 CAS: 13463-67-7	1 - 5	Not classified.  <b>See Section 16 for the full text of the H statements declared above.</b>	[2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

#### Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
- [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- [5] Substance of equivalent concern
- [6] Additional disclosure due to company policy

Occupational exposure limits, if available, are listed in Section 8.

**SECTION 4: First aid measures****4.1 Description of first aid measures**

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

**4.2 Most important symptoms and effects, both acute and delayed****Potential acute health effects**

- Eye contact** : Causes serious eye damage.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

**Over-exposure signs/symptoms**

- Eye contact** : Adverse symptoms may include the following:  
pain  
watering  
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:  
pain or irritation  
redness  
blistering may occur
- Ingestion** : Adverse symptoms may include the following:  
stomach pains

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

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam. Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : Do not use water jet.

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

- Hazards from the substance or mixture** : This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous combustion products** : Decomposition products may include the following materials:  
sulfur oxides  
metal oxide/oxides

### 5.3 Advice for firefighters

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
- Additional information (Explosibility)** : Not considered to be a product presenting a risk of explosion.

## SECTION 6: Accidental release measures

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

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

### 6.2 Environmental precautions

- : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

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

- Small spill** : Move containers from spill area. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor.

### 6.4 Reference to other sections

- : See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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

Store between the following temperatures: 15 to 25°C (59 to 77°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

#### Seveso Directive - Reporting thresholds (in tonnes)

##### Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
E1: Hazardous to the aquatic environment - Acute 1 or Chronic 1	100	200

### 7.3 Specific end use(s)

Section 7. Handling and storage: The information in this section contains generic advice and guidance.

## SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

### 8.1 Control parameters

#### Occupational exposure limits

Product/ingredient name	Exposure limit values
Titanium dioxide	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: inhalable dust TWA: 4 mg/m <sup>3</sup> 8 hours. Form: respirable dust

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

#### DNELs/DMELs

## SECTION 8: Exposure controls/personal protection

No DNELs/DMELs available.

### PNECs

No PNECs available

### 8.2 Exposure controls

**Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

### Individual protection measures

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

**Recommended:** Wear safety glasses with side protection in accordance with EN 166.

### Skin protection

**Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.  
**Recommended:** Wear suitable gloves tested to EN374.  
Material: polyvinyl chloride (PVC), natural rubber (latex).

**Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

**Recommended:** Particle filter device (DIN EN 143), Filter type: P1.

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

**Physical state** : Solid. [Tablet.]  
**Colour** : Blue.  
**Odour** : Odourless.  
**Odour threshold** : Not available.  
**pH** : 7 (main component).



**SECTION 9: Physical and chemical properties**

<b>Melting point/freezing point</b>	: 1067°C (main component).
<b>Initial boiling point and boiling range</b>	: Not available.
<b>Flash point</b>	: Not available.
<b>Evaporation rate</b>	: Not applicable.
<b>Flammability (solid, gas)</b>	: Not available.
<b>Upper/lower flammability or explosive limits</b>	: Not available.
<b>Vapour pressure</b>	: Not available.
<b>Vapour density</b>	: Not available.
<b>Relative density</b>	: Not available.
<b>Density</b>	: 2.66 g/cm <sup>3</sup> (main component).
<b>Solubility(ies)</b>	: Not available.
<b>Solubility in water</b>	: >10000 g/l (main component).
<b>Partition coefficient: n-octanol/ water</b>	: Not available.
<b>Auto-ignition temperature</b>	: Not available.
<b>Decomposition temperature</b>	: Not available.
<b>Viscosity</b>	: Not available.
<b>Explosive properties</b>	: Not considered to be a product presenting a risk of explosion.
<b>Oxidising properties</b>	: No oxidising ingredients present.

**9.2 Other information**

No additional information.

**SECTION 10: Stability and reactivity**

<b>10.1 Reactivity</b>	: No specific test data related to reactivity available for this product or its ingredients.
<b>10.2 Chemical stability</b>	: The product is stable.
<b>10.3 Possibility of hazardous reactions</b>	: Under normal conditions of storage and use, hazardous reactions will not occur.
<b>10.4 Conditions to avoid</b>	: Keep away from heat and direct sunlight. Protect from moisture.
<b>10.5 Incompatible materials</b>	: Reactive or incompatible with the following materials: Metal powder. magnesium powders.
<b>10.6 Hazardous decomposition products</b>	: 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**

## SECTION 11: Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure	Remarks
Potassium sulfate	LD50 Dermal [OECD 402]	Rat	>2000 mg/kg	-	Mortality: None.
	LD50 Oral [OECD 425]	Rat	>2000 mg/kg	-	test substance: CAS no. 17855-14-0 (read-across). Mortality: None.
Copper(II) sulfate pentahydrate	LD50 Dermal [OECD 402]	Rat - Male, Female	>2000 mg/kg	-	Mortality: None.
	LD50 Oral [OECD 401]	Rat - Male, Female	481 mg/kg	-	-
Titanium dioxide	LD50 Oral [OECD 425]	Rat - Female	>5000 mg/kg	-	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### Acute toxicity estimates

Route	ATE value
Oral	9615 mg/kg

### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation	Remarks
Potassium sulfate	Skin - Non-irritating to the skin. [In vitro]	Human	-	-	-	-
	Eyes - Non-irritating to the eyes. [OECD 405]	Rabbit	-	-	-	-
Copper(II) sulfate pentahydrate	Skin - Non-irritating to the skin. [OECD 404]	Rabbit	-	-	-	-
	Eyes - Severe irritant [OECD 405]	Rabbit	-	-	-	-
Titanium dioxide	Skin - Non-irritating to the skin. [OECD 404]	Rabbit	-	-	-	-
	Eyes - Non-irritating to the eyes. [OECD 405]	Rabbit	-	-	-	-

### Conclusion/Summary

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

**Eyes** : Causes serious eye damage.

### Sensitisation

Product/ingredient name	Route of exposure	Species	Result	Remarks
Potassium sulfate	skin	Mouse	Not sensitizing [OECD 429]	test substance: CAS no. 7487-88-9 (read-across).
Copper(II) sulfate pentahydrate	skin	Guinea pig	Not sensitizing [OECD 406]	-
Titanium dioxide	skin	Guinea pig	Not sensitizing [OECD 406]	-



## SECTION 11: Toxicological information

### Conclusion/Summary

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

### Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Potassium sulfate	OECD 471	Experiment: In vitro Subject: Bacteria	Negative	-
	OECD 473	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative	-
Copper(II) sulfate pentahydrate	OECD 471	Experiment: In vitro Subject: Bacteria	Negative	-
	OECD 486	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative	-
Titanium dioxide	OECD 473	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative	-
	OECD 474	Experiment: In vitro Subject: Mammalian-Animal	Negative	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure	Remarks
Potassium sulfate	Negative - Oral [OECD 453]	Rat - Male	256 mg/kg NOAEL	104 weeks	test substance: CAS no. 7704-34-9 (read-across).
Titanium dioxide	Negative - Oral	Mouse - Male, Female	7500 mg/kg NOEL	103 weeks; 7 days per week	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure	Remarks
Potassium sulfate	Negative	Negative	Negative	Rat - Male, Female	Oral: >1500 mg/kg NOAEL	-	OECD 422
Copper(II) sulfate pentahydrate	Negative	Negative	Negative	Rat	Oral: 23.6 mg/kg NOAEL	-	OECD 416
Titanium dioxide	Negative	Negative	Negative	Rat	Oral: 1000 mg/kg NOAEL	-	OECD 414

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

## SECTION 11: Toxicological information

### Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure	Remarks
Copper(II) sulfate pentahydrate	Negative - Oral [OECD 414]	Rat - Female	6 mg/kg NOAEL	28 days	test substance: CAS no. 1344-69-0 (read-across).
Titanium dioxide	Negative - Oral [OECD 414]	Rat - Female	1000 mg/kg NOAEL	20 days; 7 days per week	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### Specific target organ toxicity (single exposure)

Not available.

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

**Information on likely routes of exposure** : Not available.

### Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

### Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:  
pain  
watering  
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:  
pain or irritation  
redness  
blistering may occur
- Ingestion** : Adverse symptoms may include the following:  
stomach pains

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

#### Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

#### Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

### Potential chronic health effects

## SECTION 11: Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure	Remarks
Potassium sulfate	Sub-chronic NOAEL Oral [OECD 422]	Rat - Male, Female	>1500 mg/kg	-	-
Copper(II) sulfate pentahydrate	Sub-chronic NOAEL Oral	Mouse - Male, Female	1000 ppm	92 days; 7 days per week	-
Titanium dioxide	Sub-chronic NOAEL Oral [OECD 408]	Rat - Male, Female	>962 mg/kg	92 days; 7 days per week	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

**General** : No known significant effects or critical hazards.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

**Teratogenicity** : No known significant effects or critical hazards.

**Developmental effects** : No known significant effects or critical hazards.

**Fertility effects** : No known significant effects or critical hazards.

**Other information** : Not available.

## SECTION 12: Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure	Remarks
Potassium sulfate	IC50 2900 mg/l Fresh water	Algae	72 hours	-
	Acute EC50 890 mg/l Fresh water	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 3550 mg/l Fresh water	Fish	96 hours	-
Copper(II) sulfate pentahydrate	Acute EC50 0.024 mg/l Fresh water	Daphnia	48 hours	-
	Acute LC50 0.6 mg/l Fresh water	Fish	96 hours	-
Titanium dioxide	EC50 >1000 mg/l Fresh water	Algae	72 hours	-
	Acute LC50 >100 mg/l Fresh water	Daphnia	48 hours	-

**Conclusion/Summary** : Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

### 12.2 Persistence and degradability

**Conclusion/Summary** : Not applicable.

### 12.3 Bioaccumulative potential

Not available.

### 12.4 Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Mobility** : Not available.

## SECTION 12: Ecological information

### 12.5 Results of PBT and vPvB assessment

**PBT** : Not applicable.  
**vPvB** : Not applicable.

**12.6 Other adverse effects** : No known significant effects or critical hazards.

## SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance.

### 13.1 Waste treatment methods

#### Product

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

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

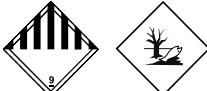
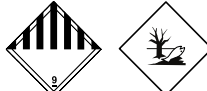
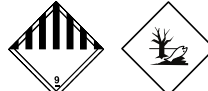
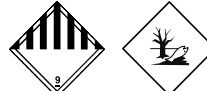
**Hazardous waste** : The classification of the product may meet the criteria for a hazardous waste.

#### Packaging

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible.

**Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
<b>14.1 UN number</b>	UN3077	UN3077	UN3077	UN3077
<b>14.2 UN proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(II) sulfate pentahydrate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(II) sulfate pentahydrate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(II) sulfate pentahydrate)	Environmentally hazardous substance, solid, n.o.s. (Copper (II) sulfate pentahydrate)
<b>14.3 Transport hazard class(es)</b>	9	9	9	9
<b>Label</b>				
<b>14.4 Packing group</b>	III	III	III	III
<b>14.5 Environmental hazards</b>	Yes.	Yes.	Marine Pollutant: Yes	Yes.

#### Additional information

**SECTION 14: Transport information**

- ADR/RID** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.  
**Hazard identification number** 90  
**Limited quantity** 5 kg  
**Special provisions** 274, 335, 601, 375  
**Tunnel code** (-)
- ADN** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.  
**Special provisions** 274, 335, 375, 601
- IMDG** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.  
**Emergency schedules** F-A, S-F  
**Special provisions** 274, 335, 966, 967, 969
- IATA** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.  
**Quantity limitation** Passenger and Cargo Aircraft: 400 kg. Packaging instructions: 956. Cargo Aircraft Only: 400 kg. Packaging instructions: 956. Limited Quantities - Passenger Aircraft: 30 kg. Packaging instructions: Y956.  
**Special provisions** A97, A158, A179, A197

**14.6 Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**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****EU Regulation (EC) No. 1907/2006 (REACH)****Annex XIV - List of substances subject to authorisation****Annex XIV**

None of the components are listed.

**Substances of very high concern**

None of the components are listed.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** : Not applicable.

**Other EU regulations****Ozone depleting substances (1005/2009/EU)**

Not listed.

**Prior Informed Consent (PIC) (649/2012/EU)**

Not listed.

**Seveso Directive**

This product is controlled under the Seveso Directive.

**Danger criteria**

## SECTION 15: Regulatory information

### Category

E1: Hazardous to the aquatic environment - Acute 1 or Chronic 1

### National regulations

Hazchem code : 2Z

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol (Annexes A, B, C, E)

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants

Not listed.

#### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

#### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### Inventory list

**Australia inventory (AICS)** : All components are listed or exempted.

**Canada** : All components are listed or exempted.

**China** : All components are listed or exempted.

**Europe** : All components are listed or exempted.

**Japan** : **Japan inventory (ENCS):**  
All components are listed or exempted.

**New Zealand** : All components are listed or exempted.

**Philippines** : All components are listed or exempted.

**Republic of Korea** : All components are listed or exempted.

**Taiwan** : All components are listed or exempted.

**United States** : All components are listed or exempted.

**15.2 Chemical safety assessment** : Chemical Safety Assessments for all substances in this product are either Complete or Not applicable.

## SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

**Abbreviations and acronyms** :

- ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
- ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
- DMEL = Derived Minimal Effect Level
- DNEL = Derived No Effect Level
- EUH statement = CLP-specific Hazard statement
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- PBT = Persistent, Bioaccumulative and Toxic
- PNEC = Predicted No Effect Concentration

**SECTION 16: Other information**

RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail  
 RRN = REACH Registration Number  
 vPvB = Very Persistent and Very Bioaccumulative

**Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

Classification	Justification
Eye Dam. 1, H318	Calculation method
Aquatic Acute 1, H400	Calculation method
Aquatic Chronic 2, H411	Calculation method

**Full text of abbreviated H statements**

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.
H411	Toxic to aquatic life with long lasting effects.

**Full text of classifications [CLP/GHS]**

Acute Tox. 4, H302	ACUTE TOXICITY (oral) - Category 4
Aquatic Acute 1, H400	SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1
Aquatic Chronic 1, H410	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1
Aquatic Chronic 2, H411	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2
Eye Dam. 1, H318	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1

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