

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

#### 1.1. Product identifier

Product name : KING

#### 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 : Plant protection product: fungicide.

##### 1.2.2. Uses advised against

Any other unidentified use is not recommended.

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

Manufacturer/Supplier: Diachem S.p.A  
Registered office: Via Tonale 15, 24061 - Albano Sant'Alessandro (BG), Italy  
Plant and offices: Via Mozzanica 9/11, 24043 - Caravaggio (BG), Italy  
T 0363/355611 - F 0363/355610  
E-mail address of competent person: [infosds@diachemagro.com](mailto:infosds@diachemagro.com)

#### 1.4. Emergency telephone number

Country	Body / company	Address	Emergency number
Italy	Centro Antiveleni di Bergamo Azienda Ospedaliera Papa Giovanni XXII	Piazza OMS - Organizzazione Mondiale della Sanità, 1 24127 Bergamo	800 88 33 00
Italy	Centro Antiveleni di Milano Ospedale Niguarda Ca' Granda	Piazza Ospedale Maggiore 3 20162 Milano	+39 02 6610 1029
Italy	Centro Antiveleni di Roma CAV Policlinico "A. Gemelli", Dipartimento di Tossicologia Clinica Universita Cattolica del Sacro Cuore	Largo Agostino Gemelli, 8 00168 Roma	+39 06 305 4343
Italy	Centro Antiveleni di Roma CAV Policlinico "Umberto I", Università di Roma	Viale del Policlinico, 155 00161 Roma	+39 06 4997 8000
Italy	Centro Antiveleni di Firenze Az. Osp. "Careggi" U.O. Tossicologia Medica, S.O.D. di Tossicologia Clinica	Largo Brambilla, 3 50134 Firenze	+39 055 794 7819
Italy	Centro Antiveleni di Pavia CAV Centro Nazionale di Informazione Tossicologica, IRCCS Fondazione Maugeri	Via Salvatore Maugeri, 10 27100 Pavia	+39 03 822 4444
Italy	Centro Antiveleni di Roma CAV "Osp. Pediatrico Bambino Gesù" Dip. Emergenza e Accettazione DEA	Piazza Sant'Onofrio, 4 00165 Roma	+39 06 6859 3726
Italy	Centro Antiveleni di Foggia Az. Osp. Univ. Foggia	V.le Luigi Pinto, 1 71122 Foggia	+39 800 183 459
Italy	Centro Antiveleni di Napoli Az. Osp. "A. Cardarelli"	Via A. Cardarelli, 9 80131 Napoli	+39 081 54 53 333
Italy	Centro Antiveleni di Verona Azienda Ospedaliera Integrata Verona	Piazzale Aristide Stefani, 1 37126 Verona	+39 800 011 858

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

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

Serious eye damage/eye irritation, Category 2	H319
Skin sensitisation, Category 1	H317
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

Causes serious eye irritation. May cause an allergic skin reaction. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

### 2.2. Label elements

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

Hazard pictograms (CLP)



GHS07

GHS09

Signal word (CLP)

: Warning

Contains

: 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol

Hazard statements (CLP)

: H317 - May cause an allergic skin reaction.

H319 - Causes serious eye irritation.

H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements (CLP)

: P102 - Keep out of reach of children.

P270 - Do not eat, drink or smoke when using this product.

P273 - Avoid release to the environment.

P280 - Wear protective gloves, protective clothing, eye protection, face 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.

P391 - Collect spillage.

P401 - Store away from food or feed and drinks.

P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

EUH-statements

: EUH401 - To avoid risks to human health and the environment, comply with the instructions for use.

### 2.3. Other hazards

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

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

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Name	Product identifier	Conc. % w/w	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Tribasic copper sulphate (in the form of tribasic copper sulfate (TBCS) <sup>[1]</sup> )	CAS-No.: 12527-76-3 EC-No.: 215-582-3 EC Index-No.: 029-018-00-7	24 (TBCS:45,28)	Acute Tox. 4 (Oral), H302 (ATE=300 mg/kg bodyweight) Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10)
2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol	CAS-No.: 4719-04-4 EC-No.: 225-208-0 EC Index-No.: 613-114-00-6	<0.2	Acute Tox. 4 (Oral), H302 (ATE=1000 mg/kg bodyweight) Acute Tox. 2 (Inhalation:gas), H330 (ATE=100 ppmv/4h) Acute Tox. 2 (Inhalation:dust,mist), H330 (ATE=0.371 mg/l/4h) Eye Irrit. 2, H319 Skin Sens. 1, H317 STOT RE 1, H372  <u>Specific concentration limits:</u> ( 0.1 ≤C < 100) Skin Sens. 1, H317
morpholine	CAS-No.: 110-91-8 EC-No.: 203-815-1 EC Index-No.: 613-028-00-9	< 0.1	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation), H332 (ATE=1.5 mg/l/4h) Acute Tox. 4 (Dermal), H312 (ATE=1100 mg/kg bodyweight) Acute Tox. 4 (Oral), H302 (ATE=500 mg/kg bodyweight) Skin Corr. 1B, H314

<sup>[1]</sup>Tribasic copper sulphate 45.28% equivalent to copper metal 24%

Full text of H-statements: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

- First-aid measures after inhalation : Remove the injured person from the area of exposure and transfer to a well-ventilated area. Call a doctor.
- First-aid measures after skin contact : Remove contaminated clothing and wash with plenty of soap and water. Call a doctor.
- First-aid measures after eye contact : Wash off immediately with plenty of water and/or isotonic solution for at least 15 minutes. Call a doctor.
- First-aid measures after ingestion : Do not administer anything by mouth and do not induce vomiting if the injured person is unconscious. Call a doctor.

For people providing first aid: Use self-contained breathing equipment for airway protection, suitable clothing and gloves for skin protection.

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

- Symptoms/effects : METAL COPPER - Symptoms: denaturation of proteins with lesions in the mucous membranes, hepatic and renal damage and of the CNS, hemolysis. Vomiting with emission of green colored material, gastroesophageal burning, bloody diarrhea, abdominal colic, haemolytic jaundice, liver and kidney failure, convulsions, collapse. Metal inhalation fever. Skin and eye irritant.
- Symptoms/effects after skin contact : May cause an allergic skin reaction.
- Symptoms/effects after eye contact : Severe eye irritation.

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

Symptomatic treatment. Consult a poison center.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media : Use fractionated water, chemical powder, foam or carbon dioxide.

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

Hazardous decomposition products in case of fire : Thermal decomposition or combustion may cause the release of toxic and hazardous fumes containing CO<sub>x</sub>, NO<sub>x</sub>, Cu and other substances in the event of incomplete decomposition.

#### 5.3. Advice for firefighters

Precautionary measures fire : Cool the containers with jet water, even after the fire is extinguished. Remove the containers from the fire area if this can be done safely.

Protection during firefighting : 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

Emergency procedures : Ventilate spillage area. Avoid contact with eyes. Leave the area if you are not in possession of the protective equipment listed in Section 8. Alert the personnel responsible for handling such emergencies. Avoid contact with skin and eyes.

##### 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

Very toxic to aquatic life with long lasting effects. In case of accidental release or spillage, do not allow the mixture to reach drains and surface or ground water. If the product has escaped into a water course, into the drainage system, or has contaminated the ground or vegetation, notify the competent authorities.

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

For containment : Collect spillage. Stop leak without risks if possible.

Methods for cleaning up : Mechanically recover the product. Cover the contaminated area with absorbent material such as sand or sepiolite.

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

#### 6.4. Reference to other sections

For further information refer also to sections 8 and 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Handle in a well-ventilated space. Wear suitable Personal Protective Equipment (see section 8).

Use protective glasses during the mixing / loading phase of the product.

Hygiene measures : Remove contaminated clothing and personal protective equipments (PPE) before entering eating areas. 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 original containers, well-sealed and labelled with the product name, in a cool, dry place, away from sources of ignition. Avoid exposure to light and protect against moisture. Keep away from incompatible materials. Empty containers may also be hazardous due to product residues. Ventilation of the room/area: well-ventilated room. Keep away from food and drink.

### 7.3. Specific end use(s)

Consult the product label.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 8.1.1 National occupational exposure and biological limit values

Tribasic copper sulphate (12527-76-3)	
<b>USA - ACGIH - Occupational Exposure Limits</b>	
ACGIH OEL TWA	1 mg/m <sup>3</sup> Irritation, Gastrointestinal, metal fume fever
morpholine (110-91-8)	
<b>EU - Indicative Occupational Exposure Limit (IOEL)</b>	
Local name	Morpholine
IOEL TWA	36 mg/m <sup>3</sup>
IOEL TWA [ppm]	10 ppm
IOEL STEL	72 mg/m <sup>3</sup>
IOEL STEL [ppm]	20 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC
<b>Italy - Occupational Exposure Limits</b>	
Local name	Morfolina
OEL TWA	36 mg/m <sup>3</sup>
OEL TWA [ppm]	10 ppm
OEL STEL	72 mg/m <sup>3</sup>
OEL STEL [ppm]	20 ppm
Remark	Cute
Regulatory reference	Allegato XXXVIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i.

#### 8.1.2. Recommended monitoring procedures

Monitoring methods	
Monitoring methods	The measurement of substances in the workplace must be carried out with standardized methods (e.g. UNI EN 689:2019: Workplace atmospheres - Guide for assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy; UNI EN 482:2015: Workplace exposure - General requirements for the performance of procedures for the measurement of chemical agents) or, failing that, with appropriate methods.

#### 8.1.3. Air contaminants formed

No additional information available

## 8.1.4. DNEL and PNEC

Tribasic copper sulphate (12527-76-3)	
<b>DNEL/DMEL (Workers)</b>	
Long-term - systemic effects, dermal	137 mg/kg bodyweight/day
<b>PNEC (Water)</b>	
PNEC aqua (freshwater)	7.8 µg/L of dissolved copper
PNEC aqua (marine water)	5.2 µg/L of dissolved copper
<b>PNEC (Sediment)</b>	
PNEC sediment (freshwater)	87 mg/kg dwt of copper
<b>PNEC (Soil)</b>	
PNEC soil	65.5 mg/kg dwt of copper
<b>PNEC (STP)</b>	
PNEC sewage treatment plant	0.23 mg/l of copper
2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol (4719-04-4)	
<b>DNEL/DMEL (Workers)</b>	
Long-term - local effects, inhalation	0.2 mg/m <sup>3</sup>
<b>PNEC (Water)</b>	
PNEC aqua (freshwater)	0.007 mg/l
PNEC aqua (marine water)	0.001 mg/l
<b>PNEC (Sediment)</b>	
PNEC sediment (freshwater)	0.03 mg/kg dwt
PNEC sediment (marine water)	0.003 mg/kg dwt
<b>PNEC (Soil)</b>	
PNEC soil	0.002 mg/kg dwt
<b>PNEC (STP)</b>	
PNEC sewage treatment plant	5.5 mg/l

## 8.1.5. Control banding

No additional information available

## 8.2. Exposure controls

## 8.2.1. Appropriate engineering controls

**Appropriate engineering controls:**

Ensure good ventilation of the work station.

## 8.2.2. Personal protection equipment

## 8.2.2.1. Eye and face protection

**Eye protection:**

Wear protective tightly fitting glasse or protective visor (EN 166).

## 8.2.2.2. Skin protection

**Skin and body protection:**

Wear category II professional long-sleeved overalls and safety footwear (EN 344). Wash with soap and water after removing protective clothing.

**Hand protection:**

Wear impervious gloves, resistant to chemical agents (eg rubber, neoprene, PVC), complying with EN 374 standard. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

**8.2.2.3. Respiratory protection****Respiratory protection:**

Use suitable respiratory protection systems, such as FFP2 class filters (EN 149).

**8.2.2.4. Thermal hazards**

No additional information available

**8.2.3. Environmental exposure controls****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	: Liquid
Colour	: Blue.
Appearance	: Viscous. Solution.
Odour	: Faint aromatic odour.
Odour threshold	: No data available, experimental evaluation not conducted
Melting point	: Not applicable
Freezing point	: No data available, experimental evaluation not conducted
Boiling point	: ≈ 100 °C (water)
Flammability	: Non-flammable [EEC method A.9]
Explosive properties	: Not explosive [EEC method A.14]
Oxidising properties	: Not oxidiser.
Explosive limits	: No data available, experimental evaluation not conducted
Lower explosion limit	: Non flammable
Upper explosion limit	: Non flammable
Flash point	: > 66 °C
Auto-ignition temperature	: > 600 °C
Decomposition temperature	: No data available, experimental evaluation not conducted
pH	: 6 – 8 (dilution 1%)
Viscosity, dynamic	: C4V12 >5000 cP C4V30 >2500 cP
Solubility	: Water: Miscible
Partition coefficient n-octanol/water (Log Kow)	: No data available, experimental evaluation not conducted
Vapour pressure	: No data available, experimental evaluation not conducted
Vapour pressure at 50°C	: No data available, experimental evaluation not conducted
Density	: 1500 ± 20 g/l
Relative density	: No data available, experimental evaluation not conducted
Relative vapour density at 20°C	: No data available, experimental evaluation not conducted
Particle characteristics	: Not applicable

**9.2. Other information****9.2.1. Information with regard to physical hazard classes**

No additional information available

**9.2.2. Other safety characteristics**

Surface tension : 58 mN/m at 25°C [EEC method A.5]

**SECTION 10: Stability and reactivity****10.1. Reactivity**

The product is non-reactive under normal conditions of use, storage and transport.

**10.2. Chemical stability**

The mixture is stable under normal temperature and pressure conditions and if stored in closed containers in a cool and well-ventilated place.

**10.3. Possibility of hazardous reactions**

No dangerous reactions known under normal conditions of use.

**10.4. Conditions to avoid**

Do not expose to direct sunlight, heat sources and high temperatures.

**10.5. Incompatible materials**

Avoid contact with oxidizing agents.

**10.6. Hazardous decomposition products**

Thermal decomposition or combustion may cause the release of toxic and hazardous fumes containing CO<sub>x</sub>, NO<sub>x</sub>, Cu and other substances in the event of incomplete decomposition.

**SECTION 11: Toxicological information****11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

Acute toxicity (oral)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation)	: Not classified (Based on available data, the classification criteria are not met)

**KING**

LD50 oral rat	> 2000 mg/kg bodyweight
LD50 dermal rat	> 2000 mg/kg bodyweight

**Tribasic copper sulphate (12527-76-3)**

LD50 oral rat	300 – 500 mg/kg based on OECD 423
LD50 dermal rabbit	> 2000 mg/kg based on OECD 402
LC50 Inhalation - Rat	The substance is prepared in the form of a filter cake and it is never normally dried in the industrial process: it is stored and used as the aqueous paste. The active substance, the copper ion, is not volatile. The technical material as manufactured does not present an inhalation hazard.

**2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol (4719-04-4)**

LD50 oral rat	1000 mg/kg
LD50 dermal rat	> 4000 mg/kg
LC50 Inhalation - Rat (Dust/Mist)	0.371 mg/l/4h

**morpholine (110-91-8)**

LD50 oral rat	1450 mg/kg
ATE CLP (dust,mist)	1.5 mg/l/4h

Skin corrosion/irritation	: Not classified (The product was non-irritating to the skin in a rabbit study) pH: 6 – 8 (dilution 1%)
Additional information	: <i>2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol</i> : Under the test conditions, according to OECD 404, the substance did not give indications of an irritant property to the skin. <i>Morpholine</i> causes burns to the skin and mucous membranes
Serious eye damage/irritation	: The product was irritating to the eyes in a rabbit study pH: 6 – 8 (dilution 1%)



## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

Additional information	: 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol: due to the score for irritation and recovery times registered in a test according to OECD 405, the substance was classified as an eye irritant. <i>Morpholine</i> causes irreversible damage to the eyes
Respiratory or skin sensitisation	: The product was sensitized to the skin in the LLNA (Local Lymph Node Assay) test.
Additional information	: <i>Tribasic copper sulphate</i> : The substance caused blue staining on the skin of the guinea pigs. No case of sensitisation were found in the challenge tests at 10 and 25% concentration. 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol: the substance induced skin sensitisation in a challenge non-LLNA in vivo test on guinea pigs.
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: <i>Copper sulphate</i> : Negative results were obtained for copper sulphate in vitro in a bacterial cell reverse mutation assay (OECD 471). An In vivo unscheduled DNA synthesis test (equivalent to OECD 486) and a mouse micronucleus test (EC method B.12) performed on copper sulphate also gave negative results. 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol: the substance did not induce mutagenic effects in in vitro tests, except for a chromosomal aberration assay. The negative results were however confirmed by two in vivo tests. <i>Morpholine</i> : in vitro and in vitro mutagenicity studies were negative.
Carcinogenicity	: Not classified (Based on available data, the classification criteria are not met)

<b>morpholine (110-91-8)</b>	
IARC group	3 - Not classifiable
<b>Tribasic copper sulphate (12527-76-3)</b>	
Additional information	Based on a weight of evidence approach, it was concluded that copper compounds do not have carcinogenic potential.
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
<b>Tribasic copper sulphate (12527-76-3)</b>	
Additional information	Based on a weight of evidence approach, it was concluded that copper compounds do not have carcinogenic potential.
<b>2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol (4719-04-4)</b>	
Additional information	In a teratogenicity study in rabbits, the NOAEL for maternal toxicity was set at 60 mg/kg bw/d. The NOAEL for developmental toxicity was established at 60 mg/kg bw/d. There were no treatment-related effects on the pregnancy parameters, and embryos showed no developmental effects even at maternally toxic doses.
STOT-single exposure	: Not classified (Based on available data, the classification criteria are not met)
STOT-repeated exposure	: Not classified (Based on available data, the classification criteria are not met)
<b>Tribasic copper sulphate (12527-76-3)</b>	
Additional information	A 90-day oral repeated dose study conducted with copper sulphate pentahydrate in rats and mice (test method equivalent to EU B.26) gave the following results: Forestomach lesions: NOAEL in the rat: 16.7 mg Cu/kg bw/day NOAEL in male mice 97 mg Cu/kg bw/day NOAEL in female mice: 126 mg Cu/kg bw/day Liver and kidney damage: NOAEL in the rat: 16.7 mg Cu/kg bw/day
<b>2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol (4719-04-4)</b>	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
<b>morpholine (110-91-8)</b>	
Morpholine	several studies have been carried out (oral, dermal and inhalation route); the substance is not classified for repeated dose toxicity.
Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met)
<b>Tribasic copper sulphate (12527-76-3)</b>	
Viscosity, kinematic	Not applicable

## 11.2. Information on other hazards

### 11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

### 11.2.2. Other information

Potential adverse human health effects and symptoms : Causes serious eye irritation,  
May cause an allergic skin reaction.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Very toxic to aquatic life with long lasting effects.  
Hazardous to the aquatic environment, short-term (acute) : Very toxic to aquatic life.  
Hazardous to the aquatic environment, long-term (chronic) : Very toxic to aquatic life with long lasting effects.

#### Tribasic copper sulphate (12527-76-3)

EC50 - Crustacea [1]	25 µg/l was the lowest data obtained, on Daphnia Magna at pH between 5.5 and 6.5
NOEC (chronic)	0.23 mg/l of dissolved Cu, measured on bacteria and protozoa from STP.

#### 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol (4719-04-4)

LC50 - Fish [1]	16.07 mg/l on Danio Rerio
EC50 - Crustacea [1]	11.9 mg/l
EC50 72h - Algae [1]	6.66 mg/l on Desmodesmus subspicatus
NOEC chronic algae	3.4 mg/l on Desmodesmus subspicatus

#### morpholine (110-91-8)

LC50 - Fish [1]	> 1000 mg/l Brachydanio rerio (zebra-fish)
LC50 - Fish [2]	380 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	45 mg/l Daphnia magna (Water flea)
EC50 72h - Algae [1]	64.6 mg/l Pseudokirchneriella subcapitata
NOEC chronic crustacea	> 1 mg/l Daphnia magna (Water flea)

## 12.2. Persistence and degradability

#### Tribasic copper sulphate (12527-76-3)

Persistence and degradability	Copper ions derived from tribasic copper sulphate cannot be degraded. The fate of copper ions in the water column was modelled using the Ticket Unit World Model. Removal was also assessed using data from one mesocosm and three field studies. "Rapid" removal was demonstrated, defined as 70% removal within 28 days. Literature data confirm the strong binding of copper ions to sediment, with the formation of stable Cu-S complexes. Re-mobilisation of copper ions to the water column is therefore not expected. Copper does not meet the criteria as "persistent".
-------------------------------	---

#### 2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol (4719-04-4)

Persistence and degradability	2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol: The substance is readily biodegradable according to OECD criteria. Regarding the m-octanol/water partition coefficient (-2,0 at pH = 7), accumulation in organisms is not to be expected.
-------------------------------	--

# KING

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

### morpholine (110-91-8)

Persistence and degradability	readily biodegradable.
-------------------------------	------------------------

### 12.3. Bioaccumulative potential

#### morpholine (110-91-8)

Bioaccumulative potential	Based on log Kow <=3, the substance has a low potential for bioaccumulation.
---------------------------	--

### 12.4. Mobility in soil

#### Tribasic copper sulphate (12527-76-3)

Mobility in soil	Copper-ions bind strongly to soil. The median water-soil partitioning coefficient (Kp) is 2120 L/kg.
------------------	--

### 12.5. Results of PBT and vPvB assessment

#### KING

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

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

### 12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

### 12.7. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste treatment methods : If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services. Dispose of contents/container in accordance with licensed collector's sorting instructions.

## SECTION 14: Transport information




In accordance with ADR / IMDG / IATA

ADR	IMDG	IATA
<b>14.1. UN number or ID number</b>		
UN 3082	UN 3082	UN 3082

# KING

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

ADR	IMDG	IATA
<b>14.2. UN proper shipping name</b>		
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Tribasic copper sulphate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Tribasic copper sulphate)	Environmentally hazardous substance, liquid, n.o.s. (Tribasic copper sulphate)
<b>Transport document description</b>		
UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Tribasic copper sulphate), 9, III, (-)	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Tribasic copper sulphate), 9, III, MARINE POLLUTANT	UN 3082 Environmentally hazardous substance, liquid, n.o.s. (Tribasic copper sulphate), 9, III
<b>14.3. Transport hazard class(es)</b>		
9	9	9
		
<b>14.4. Packing group</b>		
III	III	III
<b>14.5. Environmental hazards</b>		
Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes	Dangerous for the environment: Yes
No supplementary information available		

### 14.6. Special precautions for user

#### Overland transport

Classification code (ADR)	: M6
Limited quantities (ADR)	: 5I
Special provisions (ADR)	: 274, 335, 375, 601
Excepted quantities (ADR)	: E1
Transport category (ADR)	: 3
Hazard identification number (Kemler No.)	: 90

#### Transport by sea

Limited quantities (IMDG)	: 5 L
Excepted quantities (IMDG)	: E1

#### Air transport

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y964
PCA limited quantity max net quantity (IATA)	: 30kgG
PCA packing instructions (IATA)	: 964
PCA max net quantity (IATA)	: 450L
CAO packing instructions (IATA)	: 964
CAO max net quantity (IATA)	: 450L
Special provisions (IATA)	: A97, A158, A197, A215
ERG code (IATA)	: 9L

### 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****15.1.1. EU-Regulations**

Other information, restriction and prohibition regulations : Regulation RECh (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals.

**Regulation (EC) no. 1107/2009 of the European Parliament and of the Council, of 21 October 2009, concerning the placing on the market of plant protection products**

Ministry of Health registration number: 10029 of 05/24/1999

**REACH Annex XVII (Restriction List)**

Contains no substance(s) listed on REACH Annex XVII (Restriction Conditions)

**REACH Annex XIV (Authorisation List)**

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

**REACH Candidate List (SVHC)**

Contains no substance(s) listed on the REACH Candidate List

**Seveso Directive (Disaster Risk Reduction)**

Seveso Additional information : Seveso III: Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, transposed in Italy with D. Lgs. 105/2015. Section: E Category: E1

**15.2. Chemical safety assessment**

No chemical safety assessment has been carried out

**SECTION 16: Other information****Indication of changes:**

Edition 4 Revision 0 dated 30 september 2022.

<b>Abbreviations and acronyms:</b>	
ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
BCF	Bioconcentration factor
CAS	Chemical Abstract Service (division of the American Chemical Society)
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

Abbreviations and acronyms:	
NOEC	No-Observed Effect Concentration
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
SDS	Safety Data Sheet
STP	Sewage treatment plant
TLV/TWA	Threshold Limit Value/Threshold Weighted Average
vPvB	Very Persistent and Very Bioaccumulative
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ATE	Acute Toxicity Estimate
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
EC-No.	European Community number
EN	European Standard
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
ED	Endocrine disrupting properties

Data sources : ECHA Database. GESTIS International Limit Values, available on [http://limitvalue.ifa.dguv.de/WebForm\\_ueliste.aspx](http://limitvalue.ifa.dguv.de/WebForm_ueliste.aspx). ChemIDPlus database. IARC. PubChem Database. Internal data.

Training advice : Training instructions: Comply with the provisions of Directive 98/24/EC and subsequent amendments and national implementations.

Full text of H-statements:	
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

### Full text of H-statements:

H372	Causes damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

### Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Eye Irrit. 2	H319	On basis of test data
Skin Sens. 1	H317	On basis of test data
Aquatic Acute 1	H400	Calculation method
Aquatic Chronic 1	H410	Calculation method

Safety Data Sheet (SDS), EU

The document aims to provide guidance for appropriate handling and precaution of this product by qualified personnel or operating under the supervision of personnel trained in handling chemicals. The product should not be used for purposes other than those mentioned in section 1, unless they are given adequate written information received on how to handle the material.

The provider of this document cannot provide any warnings related to the dangers of using, interaction with other materials or chemicals or user's safe use of the product, the suitability of the product for which is applied or its proper disposal. The information above should not be considered a declaration or guarantee, either expressed or implied, of merchantability, fitness for a particular purpose, quality, or any other.