ConnectingChemistry

BRENNTAG

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

COPPER SULPHATE PENTAHYDRATE

Version 7.0 Print Date 2019/01/24

Revision date / valid from 2019/01/24 **MSDS code: MYYY814**

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

1.1. Product identifier

Trade name	:	COPPER SULPHATE PENTAHYDRATE
Substance name	:	copper sulphate pentahydrate
Index-No.	:	029-004-00-0
CAS-No.	:	7758-99-8
EC-No.	:	231-847-6

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

Use of the Substance/Mixture	:	Identified use: See table in front of appendix for a complete overview of identified uses.
Uses advised against	:	At this moment we have not identified any uses advised against
Remarks	:	Before referring to any Exposure Scenario attached to this Safety Data Sheet please check the grade of the product: the Exposure Scenarios presented are not related to all product grade

1.3. Details of the supplier of the safety data sheet

Company	:	Brenntag UK Limited Alpha House, Lawnswood Business Park GB LS16 6QY Leeds
Telephone	:	+44 (0) 113 3879 200
Telefax	:	+44 (0) 113 3879 280
E-mail address	:	msds@brenntag.co.uk

1.4. Emergency telephone number

Emergency telephone number	:	Emergency only telephone number (open 24 hours): +44 (0) 1865 407333 (N.C.E.C. Culham)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008

Hazard class	Hazard category	Target Organs	Hazard statements
Acute toxicity (Oral)	Category 4	---	H302
Serious eye damage/eye irritation	Category 1	---	H318
Short-term (acute) aquatic hazard	Category 1	---	H400
Long-term (chronic) aquatic hazard	Category 1	---	H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

Most important adverse effects

Human Health	:	See section 11 for toxicological information.
Physical and chemical hazards	:	See section 9/10 for physicochemical information.
Potential environmental effects	:	See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols :



Signal word : Danger

Hazard statements :

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

Precautionary statements

Prevention :

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

Response :

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P301 + P312	IF SWALLOWED: Call a POISON

	CENTER/doctor if you feel unwell.
P302 + P352	IF ON SKIN: Wash with plenty of water.

Hazardous components which must be listed on the label:

- copper sulphate pentahydrate

2.3. Other hazards

For Results of PBT and vPvB assessment see section 12.5.

SECTION 3: Composition/information on ingredients

3.1. Substances

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)	
		Hazard class / Hazard category	Hazard statements
copper sulphate pentahydrate			
Index-No. : 029-023-00-4 CAS-No. : 7758-99-8 EC-No. : 231-847-6	<= 100	Acute Tox.4 Eye Dam.1 Aquatic Acute1 Aquatic Chronic1	H302 H318 H400 H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice	: Take off all contaminated clothing immediately. Wash contaminated clothing before re-use.
If inhaled	: Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. If symptoms call a physician.
In case of skin contact	: After contact with skin, wash immediately with plenty of water. If skin irritation persists, call a physician.
In case of eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.
If swallowed	: Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician immediately.
Protection of First Aid	: First Aid responders should pay attention to self-protection and

Responders	use the recommended protective clothing.

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

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

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

Treatment	: Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. The product itself does not burn.
Unsuitable extinguishing media	:	High volume water jet

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Hazardous decomposition products formed under fire conditions.
Hazardous combustion products	:	Sulphur oxides

5.3. Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.Wear appropriate body protection (full protective suit)
Further advice	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains.Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Provide adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes and clothing. Do not breathe dust.

6.2. Environmental precautions

Environmental	:	Do not flush into surface water or sanitary sewer system.

precautions	Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities. If material reaches soil inform authorities responsible for such cases.

6.3. Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up	:	Use mechanical handling equipment. Keep in suitable, closed containers for disposal.
Further information	:	Treat recovered material as described in the section "Disposal considerations".

6.4. Reference to other sections

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

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling	:	Keep container tightly closed. Provide for appropriate exhaust ventilation and dust collection at machinery. Avoid dust formation. Avoid contact with skin, eyes and clothing. Do not breathe dust. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.
Hygiene measures	:	Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately. Do not breathe dust.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Store in original container.
Advice on protection against fire and explosion	:	The product is not flammable. Normal measures for preventive fire protection.
Fire-fighting class	:	non-combustible
Further information on storage conditions	:	Keep container tightly closed. Keep in a dry place. Product is hygroscopic.
Advice on common storage	:	Keep away from food, drink and animal feedingstuffs. Incompatible with strong bases and oxidizing agents.

7.3. Specific end use(s)

Specific use(s)	:	No information available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Other Occupational Exposure Limit Values		
(Additional) Information	:	Contains no substances with occupational exposure limit values. Contains no substances with occupational exposure limit values.

Component:	copper sulphate pentahydrate	CAS-No. 7758-99-8

Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)

Workers, Long-term - systemic effects, Inhalation Copper	:	1 mg/m3
Workers, Long-term - systemic effects, Skin contact	:	13.7 mg/kg bw/day
Workers, Acute - local effects, Skin contact	:	1 mg/kg bw/day
Workers, Long-term - systemic effects, Ingestion	:	0.04 mg/kg bw/day

Predicted No Effect Concentration (PNEC)

Fresh water copper sulphate	:	7.8 µg/l
Marine water copper sulphate	:	5.2 µg/l
Sewage treatment plant (STP) copper sulphate	:	230 µg/l
Fresh water sediment copper sulphate	:	87 mg/kg d.w.
Marine sediment copper sulphate	:	676 mg/kg d.w.
Soil copper sulphate	:	65 mg/kg d.w.

8.2. Exposure controls

Personal protective equipment

Respiratory protection

Advice	:	Required if dust is released Recommended Filter type:

Particle filter:P2
Particle filter:P3
If ventilation is insufficient, suitable respiratory protection must be provided

Hand protection

Advice	:	Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation. 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). Protective gloves should be replaced at first signs of wear. The following information applies to aqueous, saturated solutions.
Material	:	Natural Rubber
Break through time	:	>= 8 min
Glove thickness	:	0.5 mm
Material	:	Nitrile rubber
Break through time	:	>= 8 min
Glove thickness	:	0.35 mm
Material	:	polychloroprene
Break through time	:	>= 8 min
Glove thickness	:	0.5 mm
Material	:	Fluorinated rubber
Break through time	:	>= 8 min
Glove thickness	:	0.4 mm
Material	:	butyl-rubber
Break through time	:	>= 8 min
Glove thickness	:	0.5 mm
Material	:	Polyvinylchloride
Break through time	:	>= 8 min
Glove thickness	:	0.5 mm

Eye protection

Advice	:	Safety goggles Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection

Advice	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-

place.
Wear appropriate chemical resistant clothing and boots.
Dust impervious protective suit

Environmental exposure controls

General advice : Do not flush into surface water or sanitary sewer system.
Avoid subsoil penetration.
If the product contaminates rivers and lakes or drains inform respective authorities.
If material reaches soil inform authorities responsible for such cases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	:	solid
Colour	:	blue
Odour	:	odourless
Odour Threshold	:	no data available
pH	:	3.5 - 4.5 (50 g/l ; 20 °C)
Melting point/range	:	Not applicableThermal decomposition
Boiling point/boiling range	:	no data available
Flash point	:	Not applicable
Evaporation rate	:	no data available
Flammability (solid, gas)	:	The product is not flammable.
Upper explosion limit	:	Not applicable
Lower explosion limit	:	Not applicable
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Density	:	2.29 g/cm3 (20 °C)
Water solubility	:	317 g/l (20 °C)
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	Not applicable
Thermal decomposition	:	> 560 °C

Viscosity, dynamic	:	Not applicable
Explosive properties	:	EU legislation: Not explosive
Explosivity	:	Product is not explosive.
Oxidizing properties	:	not oxidising

9.2. Other information

Molecular weight	:	249.69 g/mol
Bulk density	:	ca. 900 - 1200 kg/m3

SECTION 10: Stability and reactivity

10.1. Reactivity

Advice : No decomposition if used as directed.

10.2. Chemical stability

Advice : Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid

Conditions to avoid : humid air and waterProduct is hygroscopic.
Thermal decomposition : > 560 °C

10.5. Incompatible materials

Materials to avoid : Hydroxylamine, Strong oxidizing agents, Magnesium powder, Hydrazine, Bases

10.6. Hazardous decomposition products

Hazardous decomposition products : Sulphur oxides, toxic metal oxide fume

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Component:	copper sulphate pentahydrate	CAS-No. 7758-99-8
	Acute toxicity	
	Oral	

LD50	:	482 mg/kg (Rat, male and female) (OECD Test Guideline 401)

Inhalation

no data available

Dermal

LD50	:	> 2000 mg/kg (Rat, male and female) (OECD Test Guideline 402)

Irritation

Skin

Result	:	No skin irritation (Rabbit) (OECD Test Guideline 404)

Eyes

Result	:	Irreversible damage. (Rabbit; Causes serious eye damage.) (OECD - Guideline 405)

Sensitisation

Result	:	not sensitizing (Dermal; Guinea pig) (OECD Test Guideline 406)

CMR effects

CMR Properties

Carcinogenicity	:	It is not considered carcinogenic.
Mutagenicity	:	In vitro tests did not show mutagenic effects In vivo tests showed mutagenic effects
Teratogenicity	:	Animal testing did not show any effects on foetal development.
Reproductive toxicity	:	Animal testing did not show any effects on fertility.

Genotoxicity in vitro

Result	:	negative (Ames test; Salmonella typhimurium) (OECD Test Guideline 471)

Genotoxicity in vivo

Result	:	negative (In vivo micronucleus test; Mouse, CD1, male and female) (Directive 67/548/EEC, Annex V, B.12.) negative (Unscheduled DNA Synthesis (UDS); Rat, male) (OECD Test Guideline 486)

Specific Target Organ Toxicity		
Single exposure		
Remarks	:	The substance or mixture is not classified as specific target organ toxicant, single exposure.
Repeated exposure		
Remarks	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Other toxic properties		
Repeated dose toxicity		
NOAEL	:	16.7 mg/kg (Rat; Test substance: Copper)(90-day) (Regulation (EC) No. 440/2008, Annex, B.29)
NOAEL	:	97 mg/kg (Mouse, male; Test substance: Copper)(90-day) (Regulation (EC) No. 440/2008, Annex, B.29)
NOAEL	:	126 mg/kg (Mouse, female; Test substance: Copper)(90-day) (Regulation (EC) No. 440/2008, Annex, B.29)
Aspiration hazard		
		Not applicable,

SECTION 12: Ecological information

12.1. Toxicity

Component:	copper sulphate pentahydrate	CAS-No. 7758-99-8
Acute toxicity		
Fish		
LC50	:	0.75 - 0.84 mg/l (Oncorhynchus mykiss; 96 h; Test substance: copper sulphate)
Toxicity to daphnia and other aquatic invertebrates		
EC50	:	0.024 mg/l (Daphnia magna (Water flea); 48 h; Test substance: copper sulphate)

algae		
EC50	:	0.1 mg/l (scenedesmus quadricauda; 4 h; Test substance: copper sulphate)

Bacteria		
LC50	:	0.08 mg/l (Escherichia coli)

M-Factor		
M-Factor (Acute Aquat. Tox.)	:	10

12.2. Persistence and degradability

Component:	copper sulphate pentahydrate	CAS-No. 7758-99-8
Persistence and degradability		
Persistence		
Result	:	(Related to: Water) study scientifically unjustified
Biodegradability		
Result	:	The methods for determining the biological degradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Component:	copper sulphate pentahydrate	CAS-No. 7758-99-8
Bioaccumulation		
Result	:	Bioaccumulation is potentially possible.

12.4. Mobility in soil

Component:	copper sulphate pentahydrate	CAS-No. 7758-99-8
Mobility		
Water	:	The product is water soluble.

Soil : Has low mobility.

12.5. Results of PBT and vPvB assessment

Component:	copper sulphate pentahydrate	CAS-No. 7758-99-8
	Results of PBT and vPvB assessment	

Result : The PBT or vPvB criteria of Annex XIII to the REACH Regulation does not apply to inorganic substances.

12.6. Other adverse effects

Component:	copper sulphate pentahydrate	CAS-No. 7758-99-8
	Additional ecological information	

Result : Do not flush into surface water or sanitary sewer system.
Avoid subsoil penetration.
Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product : Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.

Contaminated packaging : Dispose of contaminated packaging in the same way as the product. In accordance with local and national regulations.

European Waste Catalogue Number : No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

SECTION 14: Transport information

14.1. UN number

3077

14.2. UN proper shipping name

ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper sulfate pentahydrate)

RID : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper sulfate pentahydrate)

IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper sulfate pentahydrate)

14.3. Transport hazard class(es)

ADR-Class	:	9
(Labels; Classification Code; Hazard identification No; Tunnel restriction code)		9; M7; 90; (-)
RID-Class	:	9
(Labels; Classification Code; Hazard identification No)		9; M7; 90
IMDG-Class	:	9
(Labels; EmS)		9; F-A, S-F

14.4. Packaging group

ADR	:	III
RID	:	III
IMDG	:	III

14.5. Environmental hazards

Environmentally hazardous according to ADR	:	yes
Environmentally hazardous according to RID	:	yes
Marine Pollutant according to IMDG-Code	:	yes

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

IMDG : Not applicable.

SECTION 15: Regulatory information

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

Component:	copper sulphate pentahydrate	CAS-No. 7758-99-8

EU. Regulation EU No. 649/2012 concerning the export and import of dangerous chemicals	:	; The substance/mixture does not fall under this legislation.
EU. REACH, Annex XVII, Marketing and Use Restrictions (Regulation 1907/2006/EC)	:	Point Nos.: , 3; Listed

EU. Regulation No 1451/2007 [Biocides], Annex I, OJ (L 325)	:	EC Number: , 231-847-6; Listed
EU. Directive 2012/18/EU (SEVESO III) Annex I	:	Lower-tier requirements: 100 tonnes; Part 1: Categories of dangerous substances; E1: Hazardous to the Aquatic Environment in Category Acute 1 or Chronic 1 Upper-tier requirements: 200 tonnes; Part 1: Categories of dangerous substances; E1: Hazardous to the Aquatic Environment in Category Acute 1 or Chronic 1
UK. Releases to air and water (UK ISR)	:	Annual reporting level threshold: 10 kg
UK. Releases to air and water (UK ISR)	:	Annual reporting level threshold: 20.0 kg
UK. Releases to air and water (UK ISR)	:	Annual reporting level threshold: 20.0 kg
WGK (DE)	:	WGK 3: highly hazardous to water: 141

Notification status
copper sulphate pentahydrate:

Regulatory List	Notification	Notification number
AICS	YES	
INV (CN)	YES	
ENCS (JP)	YES	(1)-300
ISHL (JP)	YES	(1)-300
IECSC	YES	

15.2. Chemical safety assessment

no data available

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

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.

Abbreviations and Acronyms

BCF	bioconcentration factor
BOD	biochemical oxygen demand
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging
CMR	carcinogenic, mutagenic or toxic to reproduction
COD	chemical oxygen demand
DNEL	derived no-effect level
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
LC50	median lethal concentration
LOAEC	lowest observed adverse effect concentration
LOAEL	lowest observed adverse effect level
LOEL	lowest observed effect level
NLP	no-longer polymer
NOAEC	no observed adverse effect concentration
NOAEL	no observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
OECD	Organisation for Economic Cooperation and Development
OEL	occupational exposure limit
PBT	persistent, bioaccumulative and toxic
REACH Auth. No.:	REACH Authorisation Number
REACH AuthAppC. No.	REACH Authorisation Application Consultation Number
PNEC	predicted no-effect concentration
STOT	specific target organ toxicity
SVHC	substance of very high concern
UVCB	substance of unknown or variable composition, complex reaction products or biological materials
vPvB	very persistent and very bioaccumulative

Further information

Key literature references and sources for data	:	Supplier information and data from the "Database of registered substances" of the European Chemicals Agency (ECHA) were used to create this safety data sheet.
Methods used for product classification	:	The classification for human health, physical and chemical hazards and environmental hazards were derived from a

combination of calculation methods and if available test data.

Hints for trainings	:	The workers have to be trained regularly on the safe handling of the products based on the information provided in the Safety Data Sheet and the local conditions of the workplace. National regulations for the training of workers in the handling of hazardous materials must be adhered to.
Other information	:	The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship. The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

|| Indicates updated section.