

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

#### 1.1. Product identifier

Product form	: Substance
Substance name	: Copper Citrate Hemitrihydrate
EC-No.	: 235-113-6
CAS-No.	: 866-82-0
Formula	: $\text{Cu}_2\text{C}_6\text{H}_4\text{O}_7 \cdot 1\frac{1}{2}\text{H}_2\text{O}$

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

##### 1.2.1. Relevant identified uses

Use of the substance/mixture : Nutrient; Dietary Supplement

##### 1.2.2. Uses advised against

No additional information available

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

##### Manufacturer

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

##### Distributor

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

#### 1.4. Emergency telephone number

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

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP] Mixtures/Substances: SDS EU 2015: According to Regulation (EU) 2015/830 (REACH Annex II)

Acute toxicity (oral), Category 4	H302
Hazardous to the aquatic environment — Acute Hazard, Category 1	H400
Hazardous to the aquatic environment — Chronic Hazard, Category 1	H410

Full text of H statements : see section 16

#### Adverse physicochemical, human health and environmental effects

No additional information available

#### 2.2. Label elements

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

Hazard pictograms (CLP)



GHS07

GHS09

Signal word (CLP)

: Warning

Hazard statements (CLP)

: H302 - Harmful if swallowed.  
H400 - Very toxic to aquatic life.  
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements (CLP)

: P264 - Wash hands, forearms and face thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product.  
P301+P312 - IF SWALLOWED: Call a doctor, a POISON CENTER if you feel unwell.

#### 2.3. Other hazards

Other hazards not contributing to the classification : None to our knowledge.

PBT: not yet assessed

vPvB: not yet assessed

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Substance type : Mono-constituent

# Copper Citrate Hemitrihydrate

## Safety Data Sheet

According to Regulation (EU) 2015/830 (REACH Annex II)

Name	Product identifier	%
Copper Citrate Hemitrihydrate	(CAS-No.) 866-82-0 (EC-No.) 235-113-6	100

Full text of H-statements: see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general	: Call a poison center or a doctor if you feel unwell.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	: Wash skin with plenty of water.
First-aid measures after eye contact	: Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Rinse mouth. Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects after inhalation	: Dry/sore throat. Irritation to the respiratory tract. Irritation of the nasal mucous membranes.
Symptoms/effects after skin contact	: No other effects known.
Symptoms/effects after eye contact	: Slight irritation.
Symptoms/effects after ingestion	: May cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
Chronic symptoms	: Skin rash/inflammation. Change in the haemogramme/blood composition. Enlargement/affection of the liver. Decreased renal function.

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

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

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

Fire hazard	: Non combustible.
Explosion hazard	: No data available.
Hazardous decomposition products in case of fire	: Copper oxides. Carbon oxides (CO, CO <sub>2</sub> ).

### 5.3. Advice for firefighters

Precautionary measures fire	: Exposure to fire/heat: keep upwind.
Firefighting instructions	: Use water moderately and if possible collect or contain it.
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

Protective equipment	: Gloves. protective clothing. Dust cloud production: compressed air/oxygen apparatus. See "Material-Handling" to select protective clothing.
Emergency procedures	: Ventilate spillage area.
Measures in case of dust release	: In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

#### 6.1.2. For emergency responders

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

Avoid release to the environment.

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

For containment	: Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray. Collect spillage.
Methods for cleaning up	: Mechanically recover the product.
Other information	: Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 13.

# Copper Citrate Hemitrihydrate

## Safety Data Sheet

According to Regulation (EU) 2015/830 (REACH Annex II)

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling	: Ensure good ventilation of the work station. Wear personal protective equipment.
Hygiene measures	: 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

Technical measures	: Use appropriate container to avoid environmental contamination.
Storage conditions	: Store in a clean, dry warehouse in the original unopened containers. Store in a well-ventilated place. Keep cool.
Incompatible materials	: Strong oxidizing agents.
Information on mixed storage	: Strong acids.
Storage area	: Store in a dry area. Store in a dark area. Provide for a tub to collect spills. Meet the legal requirements.

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

No additional information available

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

No additional information available

#### 8.2. Exposure controls

##### Appropriate engineering controls:

Ensure good ventilation of the work station.

##### Personal protective equipment:

Dust production: dust mask with filter type P2. Gloves. Safety glasses.

##### Materials for protective clothing:

Wear suitable protective clothing, gloves and eye/face protection

##### Hand protection:

Impermeable protective gloves

##### Eye protection:

Safety glasses

##### Skin and body protection:

Protective clothing. In case of dust production: dustproof clothing

##### Respiratory protection:

Dust production: dust mask with filter type P2

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



##### Environmental exposure controls:

Avoid release to the environment.

### SECTION 9: Physical and chemical properties

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

Physical state	: Solid
Appearance	: Bluish-green powder or fine granular.
Molecular mass	: 342.18 g/mol
Colour	: Blue.
Odour	: Odorless.
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: 76.8 °C
Freezing point	: Not applicable

# Copper Citrate Hemitrihydrate

## Safety Data Sheet

According to Regulation (EU) 2015/830 (REACH Annex II)

Boiling point	: Not applicable.
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: Not applicable
Solubility	: Insoluble in water. Substance sinks in water. Water: (20 °C) 0.00016-0.00047
Log Pow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: Not applicable

### 9.2. Other information

VOC content : >= Not applicable (inorganic substance)

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Upon combustion CO and CO<sub>2</sub> are formed and: formation of metallic fumes.

### 10.2. Chemical stability

No data available.

### 10.3. Possibility of hazardous reactions

None under normal conditions.

### 10.4. Conditions to avoid

None, to our knowledge.

### 10.5. Incompatible materials

Strong oxidizing agents.

### 10.6. Hazardous decomposition products

On thermal decomposition (pyrolysis), releases : Carbon oxides (CO, CO<sub>2</sub>), Copper oxides.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

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

### Copper Citrate Hemitrihydrate (866-82-0)

LD50 oral rat	1385 mg/kg (Rat; OECD 401: Acute Oral Toxicity; Experimental value)
LD50 dermal rat	> 2000 mg/kg bodyweight (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)

Causes serious eye damage.	: Not classified (Based on available data, the classification criteria are not met)
Serious eye damage/irritation	: Not classified (Based on available data, the classification criteria are not met)
Respiratory or skin sensitisation	: Not classified (Lack of data)
Germ cell mutagenicity	: Not classified (Lack of data)
Carcinogenicity	: Not classified (Lack of data)
Reproductive toxicity	: Not classified (Conclusive but not sufficient for classification)
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified (Lack of data)
Aspiration hazard	: Not classified (Not applicable)

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general	: Dangerous for the environment. Very toxic to aquatic life with long lasting effects.
Ecology - air	: Not dangerous for the ozone layer.
Ecology - water	: Highly toxic to fishes. Toxic to invertebrates (Daphnia).
Dangerous for the environment	: Very toxic to aquatic life.
Chronic aquatic toxicity	: Very toxic to aquatic life with long lasting effects.

# Copper Citrate Hemitrihydrate

## Safety Data Sheet

According to Regulation (EU) 2015/830 (REACH Annex II)

Copper Citrate Hemitrihydrate (866-82-0)	
LC50 fish 1	810 µg/l (LC50; Other; 96 h; Cyprinus carpio; Fresh water)
EC50 Daphnia 1	33.8 - 792 µg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna; Static system; Fresh water; Experimental value)
EC50 other aquatic organisms 1	0.55 mg/l / 12 hours / Shell (Copper compounds) (Published data)
Threshold limit algae 1	5.7 µg/l (NOEC; ISO 10253; 72 h; Phaeodactylum; Static system; Salt water; Experimental value)
Threshold limit algae 2	30 µg/l (NOEC; Other; 7 days; Lemna minor; Static system; Fresh water; Experimental value)

### 12.2. Persistence and degradability

Copper Citrate Hemitrihydrate (866-82-0)	
Persistence and degradability	Not applicable. Adsorbs into the soil.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

### 12.3. Bioaccumulative potential

Copper Citrate Hemitrihydrate (866-82-0)	
Bioaccumulative potential	bioaccumulative.

### 12.4. Mobility in soil

No additional information available

### 12.5. Results of PBT and vPvB assessment

Copper Citrate Hemitrihydrate (866-82-0)	
PBT: not yet assessed	
vPvB: not yet assessed	

### 12.6. Other adverse effects

No additional information available


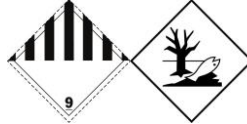
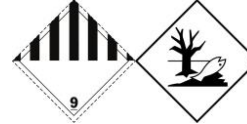
## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: To be disposed of as hazardous waste. Avoid release to the environment.
Additional information	: LWCA (the Netherlands): KGA category 05. Hazardous waste according to Directive 2008/98/EC.

## SECTION 14: Transport information

In accordance with ADR / IMDG / IATA

ADR	IMDG	IATA
<b>14.1. UN number</b>		
3077	3077	3077
<b>14.2. UN proper shipping name</b>		
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.	Environmentally hazardous substance, solid, n.o.s.
<b>Transport document description</b>		
UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper Citrate Hemitrihydrate), 9, III, (E)	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper Citrate Hemitrihydrate), 9, III, MARINE POLLUTANT	UN 3077 Environmentally hazardous substance, solid, n.o.s. (Copper Citrate Hemitrihydrate), 9, III
<b>14.3. Transport hazard class(es)</b>		
9	9	9
		

# Copper Citrate Hemitrihydrate

## Safety Data Sheet

According to Regulation (EU) 2015/830 (REACH Annex II)

### 14.4. Packing group

III

III

III

### 14.5. Environmental hazards

Dangerous for the environment : Yes

Dangerous for the environment : Yes  
Marine pollutant : Yes

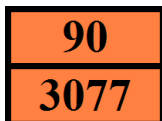
Dangerous for the environment : Yes

Dangerous for the environment

### 14.6. Special precautions for user

#### Overland transport

Classification code (ADR) : M7  
Special provisions (ADR) : 274, 335, 601, 375  
Limited quantities (ADR) : 5kg  
Excepted quantities (ADR) : E1  
Packing instructions (ADR) : P002, IBC08, LP02, R001  
Mixed packing provisions (ADR) : MP10  
Portable tank and bulk container instructions (ADR) : T1, BK1, BK2  
Portable tank and bulk container special provisions (ADR) : TP33  
Tank code (ADR) : SGAV, LGBV  
Vehicle for tank carriage : AT  
Transport category (ADR) : 3  
Special provisions for carriage - Packages (ADR) : V13  
Special provisions for carriage - Bulk (ADR) : VC1, VC2  
Special provisions for carriage - Loading, unloading and handling (ADR) : CV13  
Hazard identification number (Kemler No.) : 90  
Orange plates :



Tunnel restriction code (ADR) : E

#### Transport by sea

Transport regulations (IMDG) : Subject  
Special provisions (IMDG) : 274, 335, 966, 967, 969  
Limited quantities (IMDG) : 5 kg  
Excepted quantities (IMDG) : E1  
Packing instructions (IMDG) : P002, LP02  
Special packing provisions (IMDG) : PP12  
IBC packing instructions (IMDG) : IBC08  
IBC special provisions (IMDG) : B3  
Tank instructions (IMDG) : T1, BK1, BK2, BK3  
Tank special provisions (IMDG) : TP33  
EmS-No. (Fire) : F-A  
EmS-No. (Spillage) : S-F  
Stowage category (IMDG) : A  
Stowage and handling (IMDG) : SW23  
MFAG-No : 171

#### Air transport

Transport regulations (IATA) : Subject to the provisions  
PCA Excepted quantities (IATA) : E1  
PCA Limited quantities (IATA) : Y956  
PCA limited quantity max net quantity (IATA) : 30kgG  
PCA packing instructions (IATA) : 956  
PCA max net quantity (IATA) : 400kg  
CAO packing instructions (IATA) : 956  
CAO max net quantity (IATA) : 400kg  
Special provisions (IATA) : A97, A158, A179, A197

# Copper Citrate Hemitrihydrate

## Safety Data Sheet

According to Regulation (EU) 2015/830 (REACH Annex II)

ERG code (IATA) : 9L

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

## SECTION 15: Regulatory information

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

#### 15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Copper Citrate Hemitrihydrate is not on the REACH Candidate List

Copper Citrate Hemitrihydrate is not on the REACH Annex XIV List

VOC content : >= Not applicable (inorganic substance)

Directive 2012/18/EU (SEVESO III)

#### 15.1.2. National regulations

The anhydrous form of this material is listed on the United States TSCA (Toxic Substance Control Act) inventory

### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out

## SECTION 16: Other information

### Indication of changes:

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

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

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
H302	Harmful if swallowed.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product*