



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

#### 1.1. Product identifier

*Identification of the product* Copper anode (particle size >1mm)  
*Registration No.:* 01-2119480154-42-0069

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

*Use of the substance:* Coating & Electroplating  
Please refer to the Guidance to Downstream Users in the Annex II of this e-MSDS.

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

IMC-MetalsAmerica, LLC  
135 Old Boiling Springs Road  
Shelby, North Carolina 28152  
USA  
Phone.: ++1(0) 704-482-8200  
Fax: ++1(0) 704-482-8038

*Responsible person:* Mr. Steve Ryan  
*e-mail (competent person):* ryan@imc-ma.com

### SECTION 2: Hazards identification

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

This substance is not classified as hazardous according to Regulation (EC) No. 1272/2008.

#### **Additional information:**

Not classified as hazardous according to OSHA Hazard Communication Standard, 29 CFR 1910.1200.

#### 2.2. Label elements

OSHA: Description of any hazards not otherwise classified: none.

#### 2.3. Other Hazards

The substance does not meet the criteria for a PBT or vPvB substance.  
Copper is not expected to contribute to ozone depletion, ozone formation, global warming or acidification.

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

*Name of Product:* Copper anode  
*IUPAC-Name:* Copper  
*CAS-No. :* 7440-50-8  
*EC-No.:* 231-159-6  
*INDEX-No.:* --  
*Purity:* > 99,95 %  
*Synonym(s):*  
*MW:* 63.546 [g/mol]  
*Formula:* Cu

### 3.2 Mixture

not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

Copper in anode form is not hazardous.

During production and some uses, the following hazardous derivatives may occur/be formed: respirable copper-bearing particles and soluble copper compounds. This section also considers potential hazards of copper-bearing materials and copper compounds (referred to as "copper"), relevant to the production and use of copper anode.

*General information:*

Get medical attention if any discomfort develops.

Show this safety data sheet to the doctor in attendance.

*In case of inhalation:*

In case of exposure to fumes, fine particulates, soluble copper compounds: move to fresh air, lay patient down, get medical attention if discomfort persists.

*In case of skin contact:*

Wash with soap and warm water.

*In case of eye contact:*

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. If irritation persists: Consult an Ophthalmologist.

*In case of ingestion:*

Do not induce vomiting. In case of significant oral intake (several mg Cu), rinse mouth and give 200-300 ml water to drink - never in case of unconsciousness. Get medical attention if any discomfort continues.

*Self-protection at first aid:*

Use general hygiene measures for contact with the material.

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

Gastro-intestinal symptoms are the first symptoms for high oral intakes of soluble copper compounds. Vomiting may occur. The most critical organ for delayed effects from "copper" excess is the liver.

Nose-lung irritation may be a symptom occurring after inhalation of copper containing fumes/dusts/ mists.

### 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:*

Copper anode itself is non-flammable. Use firefighting measures appropriate to surrounding materials. Extinguishing media which may be used where molten copper is present: sand, sodium chlorite.

*Unsuitable extinguishing media:*

Extinguishing media which must not be used where molten copper is present: water or halogenated extinguishing media.

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

No special hazards.

### 5.3. Advice for firefighters

**Protective equipment:**

General protection is needed: wear a self-contained breathing apparatus and a fully protective suit and gloves.

**Additional Information:**

Dispose of fire debris and contaminated firefighting media in accordance with official regulations.

## SECTION 6: Accidental release measures

Copper in anode form is not hazardous.

During production and some uses, hazardous “copper” may be formed and therefore accidental releases of respirable copper-bearing particles and soluble copper compounds are considered.

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

*For non-emergency responders:*

Avoid formation of dust. Ensure adequate ventilation. Avoid inhalation of dust and fumes.

*For emergency responders*

Keep unprotected persons away. Wear protective equipment acc. to the hazard assessment if required (refer to Section 8.)

### 6.2. Environmental precautions

Although the substance is not classified as dangerous to the environment the product should be prevented from release to the environment.

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

- Liquids containing copper/ copper compounds should be absorbed in vermiculite, dry sand, or earth.

- Collect dust, particulates, powders, using an appropriate industrial vacuum cleaner.

Place in a suitable container for recycling or disposal as hazardous waste.

### 6.4. Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice: Do not eat, drink, and smoke. Wash hands before break and after work.

For Copper in anode forms no protective measures are needed for safe handling. Processing steps may generate fumes and dusts. Avoid generation of dust. Avoid inhalation of fumes, dust and small particles and contact with eyes. Provide adequate ventilation. Löschen: Observe good industrial hygiene practices.

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

**Requirements to be met by storerooms and containers: --**

**Information about storage in one common storage facility: -**

**Further information on storage conditions:-**

### 7.3. Specific end uses

refer to 1.2

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

The following current national occupational exposure limit values for copper and copper compounds apply:

Country	Occupational exposure limit	Maximum exposure time	Basis
US	0.2 mg Cu (fume)/m <sup>3</sup> 1 mg Cu (dust)/m <sup>3</sup>	8h TWA	Copper
UK	0.2 mg Cu (fume)/m <sup>3</sup> 1 mg Cu (dust and mist)/m <sup>3</sup>	8h TWA (dust and mist)/m <sup>3</sup>	Copper
Finland	0.1 mg Cu (alveolar)/m <sup>3</sup> 1 mg Cu (dust and mist)/m <sup>3</sup>	8h TWA	Copper
Belgium	0.2 mg Cu (fume)/m <sup>3</sup> 1 mg Cu (dust and mist)/m <sup>3</sup>	8h TWA	Copper
France	0.2 mg Cu (fume)/m <sup>3</sup> 1 mg Cu (dust)/m <sup>3</sup>	8h TWA	Copper

More information from Eurometaux OEL database

#### DNELs and PNECs:

Exposure pattern	Route	Descriptor	DNEL / PNEC
Human - Long-term systemic effects	Oral, dermal and inhalation	Internal dose DNEL (Derived No Effect Level) Using absorption factors of 25% for oral, 100% for inhalation (respirable) and 0.03% for dermal exposure routes	0.041mg Cu/kg B wt/d
Human - Short-term systemic effects	Oral, dermal and inhalation	Internal dose DNEL (Derived No Effect Level) Using absorption factors of 25% for oral, 100% for inhalation (respirable) and 0.03% for dermal exposure routes	0.082mg Cu/kg B wt/d
Human - Short-term effects - drinking water	Oral	A NOAEL for drinking water	4 mg/l
Environmental	Freshwater	PNEC (Predicted No Effect Concentration) Includes a default bio-availability correction	7.8 µg dissolved Cu/L <sup>(1)</sup>
Environmental	Marine water	PNEC (Predicted No Effect Concentration) Includes a default bio-availability correction	5.2 µg dissolved Cu/L <sup>(1)</sup>
Environmental	Sediment freshwater	PNEC (Predicted No Effect Concentration) Includes a default bio-availability correction	87 mg Cu/kg dry wt <sup>(1)</sup>
Environmental	Sediment estuarine	PNEC (Predicted No Effect Concentration)	288 mg Cu/kg dry wt <sup>(1)</sup>
Environmental	Sediment marine	PNEC (Predicted No Effect Concentration)	676 mg Cu/kg dry wt <sup>(1)</sup>
Environmental	Soil	PNEC (Predicted No Effect Concentration) Includes a default bio-availability correction	65.5 mg Cu/kg dry wt <sup>(1)</sup>
Environmental	STP	PNEC (Predicted No Effect Concentration)	230 g dissolved Cu/L

(1) Default PNEC values are given. These can be refined if information on local environment is available (see section 12.1)

## 8.2. Exposure controls

See section 2.1 of the individual exposure scenarios in Annex I for a detailed description of the required exposure control measures. Any control measures and associated efficiency values are based on actual measured data at the workplace or on the MEASE tool for occupational exposure assessment (<http://www.ebrc.de/ebrc/ebrc-mease.php>).

For appropriate air monitoring, "total" and "respirable" copper levels should be assessed. An Excel sheet that allows the systemic internal human health exposure levels to be calculated is available from: <http://www.eurocopper.org/copper/reach.html>

The environmental assessment uses the Metal EUSES calculator for Downstream Uses which can be freely downloaded from <http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool>. For environmental monitoring, the physico-chemical characteristics of the local receiving environment should preferably be monitored (see section 12).

### *Appropriate engineering controls*

Ensure appropriate ventilation/exhaustion at machinery and places where dust or fumes can be generated.

Any deposit of dust which cannot be avoided should be regularly removed preferably using appropriate industrial vacuum cleaners or central vacuum systems.

Waste air should be released into the atmosphere only after it has passed through suitable dust separators.

Waste water generated during the production process or cleaning operations should be collected and should preferably be treated in an on-site waste water treatment plant which ensures efficient removal of copper.

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

Choose Suitable personal protection equipment dependant on substance concentration and amount specific for workplace. Resistance against chemicals should be clarified with the supplier.

#### **E y e / f a c e   p r o t e c t i o n**

As a precautionary measure, the wearing of suitable safety glasses is advised.

#### **S k i n   p r o t e c t i o n**

Copper is not classified as hazardous to skin (see section 11 for more details).

#### **R e s p i r a t o r y   p r o t e c t i o n**

When dusts are generated a suitable particle filter mask is recommended (see annex 1).

### *Environmental exposure controls*

Prevent release to the environment.

## SECTION 9: Physical and chemical properties

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

Appearance::	solid, copper color
Odor:	Odorless
pH	Not applicable to an inorganic solid.
Melting point/freezing point;	1059-1069°C
Initial boiling point and boiling range;;	Not applicable to a solid that melts >300°C
Flash point;	Not applicable to an inorganic solid
Evaporation rate;	Not applicable to an inorganic solid.
Flammability (solid, gas);	Non-flammable.
Upper/lower flammability or explosive limits;	Not applicable
Vapour pressure;	Not applicable to a solid that melts at >300°C
Vapour density;	Not applicable to an inorganic solid.
Relative density;	8.78g/cm <sup>3</sup> at 20°C
Solubility(ies); Water	Insoluble – copper needs to be transformed into a copper compound to become soluble.
Partition coefficient: n-octanol/water;	Not applicable to inorganic substances.
Auto-ignition temperature;	No auto-ignition
Decomposition temperature;	Decomposition and/or melting starts at 1059°C
Viscosity	Not applicable to an inorganic solid
Explosive properties;	Non-explosive. The substance does not contain chemical groups associated with explosive properties
Oxidising properties.	Non-oxidising substance.

### 9.2. Other information

not available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Not applicable. See section 9.

### 10.2. Chemical stability

Under normal conditions of use and storage, the product is stable.

### 10.3. Possibility of hazardous reactions

Reaction with H- equivalents releases soluble copper compounds.

### 10.4. Conditions to avoid

Avoid contact with acids.

### 10.5. Incompatible materials

Acids

### 10.6. Hazardous decomposition products

see section 10.3.

## 11. SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

For the hazard profile of copper in massive forms, information on solubility, bioaccessibility and bioavailability is combined with the hazard profile of soluble copper compounds in a read-across approach to assess its potential hazards.

#### *(a) acute toxicity;*

**ORAL:** At high levels, solubilised copper-ions may induce gastro-Intestinal effects. Comparison of the toxicity profiles demonstrates the importance of solubility/bio-accessibility for read-across of toxicity data among copper-bearing substances. The available animal data combined with in-vitro bio-accessibility data permitted the assessment of the acute toxicity of copper in powder and massive form.

The assessment concluded that, according to the Regulations (EC) No 1272/2008 and 67/548/EEC, copper sulphate and coated copper flakes meet the criteria as acute harmful by oral intake (LD50 rats > 300 mg/kg body weight).

Copper (massive and powder forms) and CuO do not meet the criteria for classification after oral intake (LD50 > 2000 mg/kg body weight).

Copper (anode and powder forms) and CuO do not meet the criteria for classification after oral intake (LD50 > 2000 mg/kg body weight).

**INHALATION:** Available acute inhalation toxicity data on coated copper flakes (Wesson, 2001) and copper oxychloride (Wesson, 2003) demonstrate that these soluble materials need to be classified as "harmful by inhalation" (LD50 rats 1-5 g/m<sup>3</sup> air). The inhalation toxicity was characterized by local damage at the site of predominant deposition of particles (effect on respiratory tract and in lungs).

Copper anode has a particle size > 10 µm and down-stream uses do not lead to particles with d<sub>50</sub> < 10 µm. Therefore, according to Regulations (EC) No 1272 and 67/548/EEC, these do not meet the criteria for classification as harmful by inhalation.

**DERMAL:** EU classification criteria, according to Regulations (EC) No 1272/2008 and 67/548/EEC, leads to the conclusion that neither copper nor any of the tested copper compounds are classified as toxic after dermal exposure.

#### **Summary:**

The classification criteria, for very fine and soluble "copper" bearing substances, according to the regulations (EC) No 1272/2008 and 67/548/EEC on acute toxicity, lead to a classification as "harmful if swallowed and if inhaled".

The classification criteria, for copper in massive form and copper powder, according to Regulations (EC) No 1272/2008 and 67/548/EEC on acute toxicity, are not met.

#### *b) skin corrosion/irritation;*

Animal data (coated copper flakes (Sanders, 2001c) and CuO (Sanders, 2002c)) have demonstrated that, according to Regulations (EC) No 1272 and 67/548/EEC, "copper" is not a skin irritant.

**(c) serious eye damage/irritation;**

Animal studies with coated copper flakes (Sanders 2001d) and CuO (Sanders, 2002d) induced slight reversible eye irritation effects. Following the criteria, according to the Regulations (EC) No 1272 and 67/548/EEC, the coated copper flakes and CuO are not considered as an eye irritant.

**(d) respiratory or skin sensitisation;**

Animal data (coated copper flakes (Sanders 2001e) and CuO (Sanders 2002e)) have demonstrated that, according to Regulations (EC) No 1272/2008 and 67/548/EEC, "copper" is not a skin sensitizer.

**(e) germ cell mutagenicity;**

Public domain data indicate that copper sulphate is negative *in vitro* in bacterial cell reverse mutation assays, and in several other bacterial cell assays up to and including cytotoxic doses (1000-~3000 µg/plate). Similar negative findings have also been reported for copper chloride. Results from *in vitro* mammalian cell tests show that copper sulphate is genotoxic only at high, cytotoxic concentrations (up to 250 mg/l).

Two *in vivo* genotoxicity studies performed on a soluble copper compound (copper sulphate), in accordance to respectively OECD 486 and EU B.12 were negative (Ward, 1994 and Riley, 1994).

**(f) carcinogenicity;**

All available studies on the carcinogenicity of copper are public domain studies but study qualities are limited due to shorter exposure periods (<2 years) and small group sizes (Carlton et al., 1973; Burki and Okita, 196 and Harrison et al., 1954). However, using these studies in a weight of evidence approach, it was concluded that copper compounds do not raise concerns with respect to carcinogenic activity.

**(g) reproductive toxicity;**

A high quality study (Mylchreest, 2005) indicates that the no-observed-adverse-effect level (NOAEL) for reproductive toxicity of a soluble copper compound (copper sulphate pent hydrate) in rats is > 1500 mg/kg food or >24 mg Cu/kg bw/d, the highest dose tested. At the highest dose, slight non-reproductive toxicity effects (transient effect on spleen weight) were observed.

**(h) STOT-single exposure;**

The classification criteria, for copper in massive form and copper powder, according to Regulations (EC) No 1272/2008 and 67/548/EEC on STOT-SE are not met.

**(i) STOT- repeated exposure;**

NOAEL<sub>oral rat</sub> = 16 mg Cu /kg body weight/day (Hebert C.D., 1993). Following repeated administration of CuSO<sub>4</sub> in the feed for 13 weeks produced effects in the forestomach, liver and kidney. Inflammation of the liver occurred in male and female animals at 260 mg CuSO<sub>4</sub>/kgBW/day and above. The incidence and severity of the effects were dose-dependent. This study was used in the subsequent calculation of an oral and systemic DNEL (including a Safety factor of 100 and an oral absorption of 25%) of 0.041 mg Cu/kg body weight/day.

**(j) aspiration hazard.**

no information available - not classified

## 11.2 Further information

Further hazardous properties cannot be excluded.

## SECTION 12: Ecological information

Most of the available hazard data are related to exposure of soluble copper compounds (e.g. copper sulphate). For the hazard profile of copper massive forms (assessed from a sphere of 1mm diameter), information on solubility and bioavailability are combined with the hazard profile of soluble copper compounds in a read-across approach to assess its potential hazards.

## 12.1. Toxicity

### **Acute aquatic toxicity test results and environmental classification:**

The acute toxicity of soluble copper ions was assessed from studies on soluble copper compounds. From a literature search 451 high quality L(E)C50 values were retained. For the algae 66 individual data points were selected for 3 standard species (*Pseudokirchnerella subcapitata*, *Chlamydomonas reinhardtii* and *Chlorella vulgaris*). For the invertebrates 123 individual data points were selected for 2 standard species (*Ceriodaphnia dubia* and *Daphnia magna*) and for the fish 262 individual data points were selected for 5 standard species (*Oncorhynchus mykiss*, *Pimephales promelas*, *Lepomis macrochirus*, *Brachydanio rerio* and *Cyprinus carpio*). The data were treated and summarized in accordance with the CLP guidance (2009) to derive the pH dependent acute reference value. The lowest species-specific geometric mean L(E) C50 reference was obtained for an invertebrate (*Ceriodaphnia dubia*) at pH 5.5-6.5 with an acute L(E)C50 of 25.0 µg Cu/L (Van Sprang et al., 2010).

To assess the environmental classification of copper in massive form, the copper release from the 7 days transformation/dissolution data of copper in massive forms (6.7 µg Cu/L at 100mg/L, pH6) was combined with the acute reference value for the copper ions (25 µg Cu/L) (Van Sprang et al., 2010).

**The assessment demonstrates that, according to Regulations (EC) No 1272/2008 and 67/548/EEC, copper massive forms do not need to be classified for acute environmental hazards.**

### **Chronic Toxicity:**

In accordance with the EU CLP guidelines (2009), chronic classification applies if the substance is persistent or bio-accumulative. For “copper” it has been demonstrated that the bio-available copper-ions are rapidly removed from the water column (Rader, 2010) – see also section 12.2. Copper is an essential nutrient, copper concentrations are very strongly regulated and copper is not bio-magnified across the food-web – see also section 12.3. The “bio-accumulation” criteria therefore do not apply the “copper”.

**Based on the assessment (see section 12.2 and 12.3), according to Regulations (EC) No 1272/2008 and 67/548/EEC, Copper massive does not meet the classification for chronic aquatic toxicity.**

### **Chronic freshwater toxicity**

A value of 7.8 µg dissolved Cu/L is the default chronic freshwater PNEC, to be used to assess local risks. The assessment can be refined if information on local water chemistry (dissolved organic carbon, pH, calcium, magnesium, sodium and alkalinity) is available.

### **Chronic marine waters toxicity:**

A value of 5.2 µg dissolved Cu/L is the default chronic marine water PNEC, to be used to assess local risks. The assessment can be refined if the dissolved organic carbon concentration of the local environment is available.

### **Chronic freshwater sediment toxicity**

A value of 87 mg Cu/kg dry weight is the default chronic freshwater sediment PNEC, to be used to assess local risks. The assessment can be refined if the organic carbon concentration and the Acid Volatile Sulphide concentrations of the local sediment is available.

### **Chronic terrestrial toxicity**

A value of 65.5 mg Cu/kg dry weight is the default chronic soil PNEC, to be used to assess local risks. The assessment can be refined if the pH and Cation Exchange Capacity of the local soil is available.

## 12.2. Persistency and degradability

“Copper” cannot be degraded, but may be transformed between different phases, chemical species, and oxidation states.

In accordance to the EU 2009 CLP guidance, the fate of the copper ion under “environmentally relevant” conditions was modelled, using the Ticket Unit World Model. Rapid removal from the water column was also assessed using data from one mesocosm and three field studies (Rader et al., 2010). The assessment demonstrated the rapid removal of copper-ions, delivered as soluble copper compounds, from the water column under “normal environmental conditions”. Rapid removal of a substance from the water column is defined as 70% removal within 28 days. Literature data demonstrates the strong binding of copper-ions to sediment materials and especially the anaerobic CuS complexes are very stable (Simpson et al., 1998; Sundelin and Erickson, 2001). The remobilisation of Cu-ions to the water column is therefore not expected. The assessment therefore demonstrates that “copper” does not meet the criterion as “persistent”.



### 12.3. Bioaccumulative potential

The Guidance states the following on Bioaccumulation: *“Metals that are essential nutrients are actively regulated: removal and sequestration processes that minimise toxicity are complemented by an ability to up-regulate concentrations for essentiality. As a result, the “bioaccumulative” criterion is not applicable to these metals.”*

### 12.4. Mobility in soil

Copper-ions bind strongly to the soil matrix. The binding depends on the soil properties. A median water-soil partitioning coefficient (Kp) of 2120 L/kg has been derived for soils.

### 12.5. Results of PBT and vPvB assessment

The PBT and vPvB criteria of Annex XIII to the Regulation do not apply to inorganic substances, such as copper and its inorganic compounds.

### 12.6. Other adverse effects

Copper is not expected to contribute to ozone depletion, ozone formation, global warming or acidification.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Consult your local or regional authorities.

Do not contaminate ground or surface waters via drainage, by cleaning of equipment or disposal of wastes.

## SECTION 14: Transport information

### 14.1. UN number

ADR/RID, IMDG, IATA/ICAO	not classified as dangerous good
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### 14.2. UN proper shipping name

ADR	n/a
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IMDG, IATA/ICAO	n/a
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### 14.3. Transport hazard class:

ADR/RID Class: Label:	n/a
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IMDG, IATA, IATA/ICAO Class: Label:	n/a
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### 14.4. Packing group

ADR; IMDG, IATA/ICAO	n/a
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### 14.5. Environmental hazards

ADR, IATA/ICAO	n/a
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IMDG,	n/a
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#### 14.6. Special precautions for user

no information available

UN "Model Regulation": n/a

#### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 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 regulations:*

no special regulations for this substance known

#### 15.2. Chemical safety assessment

A chemical safety assessment has been carried out for the substance.

### SECTION 16: Other information

Changes: formal revision

##### *Abbreviations:*

TCNES: EC Technical Committee for New and Existing Substances (TCNES)

SCHER: EC Scientific Committee on Health and Environmental Risks

REACH: EC Regulation on Registration, Evaluation and Authorisation of Chemicals (Regulation (EC) No 1907/2006 as amended)

LD50: Lethal dose to 50% of the test organisms

LC50: Lethal concentration to 50% of the test organisms

LC10: Lethal concentration to 10% of the test organisms

EC10: Effective concentration to 10% of the test organisms

NOEC: No Observed Effect Concentration = highest concentration tested without effects

DNEL: Derived No-Effect Level

SSD: Species Sensitivity Distribution= distribution of the species-specific NOEC or (L(E)C10 values for all species tested.

HC-5: The concentration without effect for 95% of the species = statistically derived environmental threshold value.

PNEC: Predicted No-effects Concentration

DOC: Dissolved Organic Carbon

OC: Organic Carbon

CEC: Cationic Exchange Capacity

AVS = Acid Volatile Sulphide.

##### *Relevant*

*R-Phrases* none

*Hazard statements:* none

##### *Further information:*

##### *MSDS issued by:*

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These data are based on the data prepared by the ECI and our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.