

SPECTRUM GLAZES EU SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

SPECTRUM brushing glaze

Product Code 18xx

Revision date: 15.08.2016

Version: 1

Date of print: 15.08.2016

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

1.1 Product identifier

SPECTRUM Oxide Pen

This safety data sheet pertains to the following products:

1853 & 1854

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

Glaze coating of ceramic products.

1.3 Details of the supplier of the safety data sheet

Spectrum Glazes Inc.

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Canada

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1.4 Emergency telephone number

Telephone: +1 (905) 695-9355

Only available during office hours.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to EC regulation 1272/2008 (CLP)

Acute toxicity, Oral (Category 4) H302

Acute aquatic toxicity (Category 1) H400

Chronic aquatic toxicity (Category 1) H410

2.2 Label elements

Labelling according to EC regulation 1272/2008 (CLP)

This product is classified and labelled according to the CLP regulation.

Hazard Pictogram



GHS09

Signal Word: Warning

Hazard Statements

H400 Very toxic to aquatic life (Aquatic Acute 1).

H412 Harmful to aquatic life with long lasting effects (Aquatic Chronic 3).

Precautionary Statements

P273 Avoid release to the environment.

P391 Collect spillage.

P501 Dispose of contents/container to an approved waste disposal site.

SECTION 3: Composition / information on ingredients

3.1 Substances

EcNo.	Chemical Name	CAS No.	Index No.	Percentage Composition
215-269-1	Copper Oxide Aquatic Acute 1: H400 Aquatic Chronic 3: H412	1317-38-0		<4%

3.2 Mixtures

Chemical characterization: Water based mixture of frits (silicate glasses), minerals, metal oxides, clays and suspenders.

SECTION 4: First aid measures

4.1 Description of first aid measures

After inhalation: Move affected person to fresh air. Symptoms of toxicity may occur after several hours, and as such, medical observation of breathing may be necessary.

After skin contact: Wash off immediately with plenty of soap and water.

After eye contact: Wash out eyes immediately for several minutes with plenty of clean water.

After ingestion: Rinse mouth with water. If you feel unwell seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed

Gastro-intestinal symptoms are the first symptoms following high oral intake of copper compounds.

Vomiting may occur. The most critical organ for delayed effects of "Copper" excess is the liver.

Nose/lung irritation may occur after inhalation of dusts.

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: Product is non-combustible. Extinguishing materials should therefore be selected according to the surrounding fire.

5.2 Special hazards arising from the substance or mixture

In the case of strong heating, such as fire, carbon monoxide and carbon dioxide may be released.

5.3 Advice for firefighters

Special protective equipment for firefighters: Wear a self-contained breathing apparatus.

Additional information: Hazchem-Code: Do not allow extinguishing media to penetrate into surface or ground water.

SPECTRUM GLAZES EU SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear suitable personal protective equipment. Avoid contact with skin and eyes. Avoid dust formation.

6.2 Environmental precautions

Do not allow material to penetrate into soil, water bodies or drainage systems.

6.3 Methods and material for containment and cleaning up

Clean/scoop up spills immediately, and then place in appropriate containers for disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advices on safe handling:

While using this product do not eat, drink or smoke. Wash hands before breaks and immediately after using the product. Avoid contact with skin and eyes. Avoid the formation of dust in the atmosphere. Do not breathe dust. Ensure good ventilation of the work area. Do not leave children unattended while using the product. Ensure that kiln gases emitted during firing are vented directly to the outside, if possible.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers: Keep container tightly closed. Store out of the reach of children. Store at room temperature and not in direct sunlight. Protect from freezing. Product is a non-combustible liquid.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

The following current national occupational exposure limit values for Copper and Copper compounds apply.

Area	Long term exposure limit (8h TWA)	Short term exposure limit (15m TWA)	Notes	Source
Australia	1 mg/m ³	-	Copper, dusts, and mists (as Cu).	NOHSC: 1003*
UK	1 mg/m ³	2 mg/m ³	Copper, dusts, and mists (as Cu).	OSHA website**
Germany	0.1 mg/m ³	0.2 mg/m ³	Copper and its inorganic compounds, inhalable aerosol.	OSHA website**
France	1 mg/m ³	2 mg/m ³	Copper, dusts, and mists (as Cu).	OSHA website**
Spain	1 mg/m ³	-	Copper, dusts, and mists (as Cu).	OSHA website**
Netherlands	0.1 mg/m ³	0.2 mg/m ³	Inhalable aerosol.	OSHA website**

8.2 Exposure controls

Occupational exposure controls

When using this product, a well-functioning exhaust ventilation of the furnace gases and ample ventilation of the workrooms are recommended.

Protective and hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Do not eat, drink or smoke when using this product.

Respiratory protection

Where sufficient ventilation is not available, avoid breathing dust by wearing a P1 or P2 particulate filter respirator. Final choice of appropriate breathing protection is dependent upon actual airborne concentrations

Protection of hands

As a precautionary measure, it is advisable to wear gloves made of an impervious material such as PVC.

Protection of eyes

As a precautionary measure, it is advisable to wear suitable safety glasses with side-shields, goggles, or a full-face shield.

Environmental exposure controls

Avoid release to the environment. Clean/scoop up spills immediately and place in a suitable container for disposal.

SPECTRUM GLAZES EU SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state: Liquid

Colour: Various colours

Odour: Almost odourless

Odour threshold: no data available

pH value: 8-10

Melting point/melting range: no data available

Boiling temperature/boiling range: no data available

Flash point/flash point range: no data available

Vapourisation rate: no data available

Flammability: no data available

Explosive properties: no data available

Explosion limits: no data available

Vapour pressure: no data available

Vapour density: no data available

Density: no data available

Water solubility: dispersible

Partition coefficient n-octanol/water: no data available

Autoflammability: no data available

Thermal decomposition: no data available

Viscosity, dynamic: no data available

Explosive properties: no data available

Oxidizing characteristics: no data available

9.2 Other information

Additional information: no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reactions are known.

10.2 Chemical stability

Product is stable under normal storage conditions.

10.3 Possibility of hazardous reactions

No dangerous reactions are known.

10.4 Conditions to avoid

Avoid extremes of temperature and dusty conditions.

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

In the case of strong heating, such as fire, carbon monoxide and carbon dioxide may be released.

Thermal decomposition: No data available

SPECTRUM GLAZES EU SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Absorption

Oral:

An oral absorption of 25% has been adopted, based on studies in the rat.

Inhalation:

The "respirable" and "inhalable" fraction is assumed by default to be 100%. If necessary, however, the Multiple Path Model of Particle Deposition (MPPD)¹ can be used to quantify particle size dependent absorption of the "inhalable" fraction.

Dermal:

A dermal absorption of 0.3% has been adopted for soluble and insoluble copper substances in solution or suspension, based on in-vitro percutaneous tests with human skin. For dry exposure, a dermal absorption value of 0.03% applies.

Acute toxicity

Oral:

LD₅₀ > 2500 mg/kg bw (male rats). Test guideline OECD 423 [Sanders, 2002]. Cupric Oxide does not meet the criteria for classification.

Inhalation:

Copper oxide showed little/no toxicity when administered to test animals by other routes. Furthermore, information on the particle size distribution and low water solubility of copper oxide indicate a low potential for inhalation exposure. Cupric Oxide does not meet the criteria for classification.

Dermal:

LD₅₀ > 2000 mg/kg (male and female rats). Test guideline OECD 402 [Sanders, 2002]. Cupric Oxide does not meet the criteria for classification.

STOT single exposure

Cupric oxide is not classified on the basis of acute oral, inhalation or dermal toxicity. Cupric oxide does not meet the criteria for classification as STOT for a single exposure.

Skin irritation/corrosion

No skin irritation was seen in test animals (rabbits). Test guideline OECD 404 [Sanders, 2002]. Cupric oxide does not meet the criteria for classification.

Eye irritation/corrosion

A test carried out in 3 male rabbits resulted in scattered or diffuse corneal opacity in one treated eye up to 72 hours and iridial inflammation up to 48 hours. Test guideline 405 [Sanders, 2002]. Cupric Oxide does not meet the criteria for classification.

Skin sensitisation

Not classified (Inconclusive data)

Genotoxicity

No further relevant information available.

Carcinogenicity

Based on a weight of evidence approach, it was concluded that copper compounds do not have carcinogenic potential. Cupric Oxide does not meet the criteria for classification.

Toxicity to reproduction

NOAEL for toxicity to reproduction of Copper Sulphate Pentahydrate in rats is > 1500 ppm in food. Test guideline OECD 416 [Mylchreest, 2005]. The NOAEL for maternal toxicity and developmental effects in rabbits in a study according to OECD 414 was 6 mg Cu/kg/bw/day [Munley, 2003]. Cupric Oxide does not meet the criteria for classification.

Repeated dose toxicity and STOTRE

A 90-day oral repeat dose study (Hébert, 1993) conducted with copper sulphate pentahydrate in rats and mice in accordance with a 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:

The NOAEL rat study was used to calculate an oral and systemic DNEL of 0.041 mg Cu/kg bw/day (including a Safety factor of 100 and an oral absorption of 25%). Cupric oxide does not meet the criteria for classification.

SPECTRUM GLAZES EU SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

SECTION 12: Ecological information

12.1 Acute aquatic toxicity test results and environmental classification

Acute toxicity of Copper ions was assessed using 451 L(E)C50 values from studies on soluble copper compounds. The lowest species-specific geometric mean reference value of 25.0 μ g Cu/L was an L(E)C50 obtained for *Daphnia magna* at pH 5.5 - 6.5 [Van Sprang et al., 2010]. Copper is an essential nutrient regulated by homeostatic mechanisms and does not bio-accumulate. Bio-available Copper ions are rapidly removed from the water column [Rader, 2010].

According to Directive 67/548/EEC:

Dangerous for the environment (N)

R50: Very toxic to aquatic organisms.

According to CLP/GHS:

Aquatic Acute 1 H400: Very toxic to aquatic life, M-factor 1.

Aquatic Chronic 2 H412: Harmful to aquatic life with long lasting effects.

12.2 Chronic Freshwater toxicity test results and PNEC derivation

Chronic toxicity of copper ions from soluble copper compounds was assessed using 139 NOEC/EC10 values from 27 species representing different trophic levels (fish, invertebrates and algae). Species-specific NOECs were normalised using Biotic Ligand Models and used to derive Species Sensitivity Distributions (SSD) and a lowest HC5 (the median fifth percentile of the SSD) of 7.8 μ g dissolved Cu/L.

This value is considered to be protective of 90% of EU surface waters and represents a reasonable worst case.

Applying an assessment factor of 1, a default chronic freshwater PNEC of 7.8 μ g dissolved Cu/L is assigned to assess local risks.

12.3 Chronic marine waters toxicity test results and PNEC derivation

Chronic toxicity of copper ions from soluble copper compounds was assessed using 51 NOEC/EC10 values from 24 species representing different trophic levels (fish, invertebrates and algae). Species-specific NOECs were calculated after normalizing to dissolved organic carbon (DOC) and were used to derive SSDs and HC5 values.

Normalization at a typical DOC for coastal waters of 2 mg/l resulted in

an HC5 of 5.2 μ g dissolved Cu/L. Applying an assessment factor of 1, a default chronic marine PNEC of 5.2 μ g dissolved Cu/L is assigned to assess local risks.

12.4 Chronic freshwater sediment toxicity test results and PNEC derivation

Toxicity of Copper ions from soluble Copper compounds was assessed using 62 NOEC values from 6 benthic species. The NOECs were related to DOC and Acid Volatile Sulphide (AVS) and were used to derive SSDs and HC5 values. An HC5 of 1741 mg Cu/kg OC, corresponding to 87 mg Cu/kg dry weight, was calculated for a low AVS sediment with a default OC of 5%. Applying an assessment factor of

1, a default chronic freshwater sediment PNEC of 87 mg Cu/kg dry weight is assigned to assess local risks.

12.5 Chronic terrestrial toxicity test results and PNEC derivation

Toxicity of Copper ions from soluble Copper compounds was assessed using 252 NOEC/EC10 values from 28 different species representing different trophic levels (decomposers, primary producers, primary consumers). NOEC values were adjusted to account for differences between lab-spiked soils and field-contaminated soils by the addition of a leaching ageing factor of 2. The adjusted values were then normalized to a range of EU soils using regression bio-availability models and used to derive SSDs and a lowest HC5 value of 65.5 mg Cu/kg dry weight [Oorts et al., 2010]. Applying an assessment factor of 1, a default chronic soil PNEC of 65.5 mg Cu/kg dry weight is assigned.

12.6 Toxicity to Sewage Treatment Plant (STP) microorganisms

The toxicity of Copper ions from soluble Copper compounds was assessed using NOEC and EC50 values from high quality studies with STP bacteria and protozoa. The NOEC was 0.23 mg Cu/L in the STP [Cha et al., 2004].

Applying an assessment factor of 1, a PNEC of 0.23 mg Cu/L is assigned for Sewage Treatment Plant.

12.7 Persistence and degradability

Copper ions derived from Copper Oxide cannot be degraded. The fate of Copper ions in the water column was modelled using the Ticket Unit World Model [Rader, 2010]. 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-mobilization of Copper ions to the water column is therefore not expected. Copper Oxide does not meet the criteria as "persistent".

12.8 Bio-accumulative potential

The "bio-accumulative" criteria are not applicable to essential metals.

12.9 Mobility in soil

12.10 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. Copper (as Copper Oxide) is not PBT or vPvB.

12.11 Other adverse effects

Cupric Oxide does not contribute to ozone depletion, ozone formation, global warming or acidification. For more information on how the environmental classification was derived and how to assess bio-availability, contact your supplier

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recommendation

Discharging into rivers and drains is forbidden. Dispose of in accordance with relevant local regulations. Destroy at an authorised site.

Contaminated Packaging

Dispose of as unused product.

SECTION 14: Transport information

14.6 Special precautions for user

Not a hazardous material with respect to transport regulations.

SECTION 15: Regulatory information

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

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Hazard Pictograms



GHS09

Signal Word

Warning

Hazard Statements

H400 Very toxic to aquatic life (Aquatic Acute 1).

H412 Harmful to aquatic life with long-lasting effects (Aquatic Chronic 3).

Precautionary Statements

P273 Avoid release to the environment.

P391 Collect spillage.

P501 Dispose of contents/container to an approved waste disposal site.

SECTION 16: Other information

Further information

The information in this data sheet has been established to our best knowledge and was up-to-date at time of issuance. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific materials designated and may not be valid for such materials used in combination with any other materials or in any process, unless specified in the text.