Safety Data Sheet

according to 29 CFR 1910.1200(g)

UV-Plus Purifier

Revision date: 05.12.2016
Product code: 75160018, 75160211

1. Identification

Product identifier
UV-Plus Purifier

Recommended use of the chemical and restrictions on use

Use of the substance/mixture
professional use.
The UV Plus Purifier is a gas cleaning system for exclusive use in OES SPECTRO products.

Uses advised against
any non-intended use.

Details of the supplier of the safety data sheet

Company name: SPECTRO Analytical Instruments GmbH
Street: Boschstr. 10
Place: D-47533 Kleve
Responsible Department: info@tge-consult.de
Emergency phone number: International: +44 1865407333 Spectro 29003-NEC
North America: 011441865407333

Further Information
The product is classified as a device. Providing the Safety Data Sheet takes place on a voluntary basis for information purposes.

2. Hazard(s) identification

Classification of the chemical

29 CFR Part 1910.1200
Hazard categories:
Self-heating chemicals: Self-heat. 1
Hazard Statements:
Self-heating; may catch fire
UN GHS Classification (voluntary):
Hazardous to the aquatic environment: Aquatic Acute 1
Hazardous to the aquatic environment: Aquatic Chronic 1

Label elements

29 CFR Part 1910.1200
Precautionary statements
Avoid release to the environment.

Additional advice on labelling
Not required because hazardous substances are incorporated in the material/article and there is no risk in case of skin contact, inhalation or ingestion as long as the material is properly handled and stored. (1910.1200(b)(6)(v))

Hazards not otherwise classified
This article doesn't contain dangerous substances or preparations intended to be released under normal or reasonably foreseeable conditions of use. Under normal conditions, the product is hermetically sealed.

3. Composition/information on ingredients

Mixtures

Chemical characterization
Catalyst.
The UV Plus Purifier is a gas cleaning system for exclusive use in OES SPECTRO products. Dispose of only deactivated catalyst residues.
4. First-aid measures

Description of first aid measures

General information
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

After inhalation
In case of accident by inhalation: remove casualty to fresh air and keep at rest. In all cases of doubt, or when symptoms persist, seek medical advice.

After contact with skin
In the event of a damaged container. If material escapes:
After contact with skin, wash immediately with: Water. In all cases of doubt, or when symptoms persist, seek medical advice.

After contact with eyes
In the event of a damaged container. If material escapes:
Rinse immediately carefully and thoroughly with eye-bath or water. In case of troubles or persistent symptoms, consult an ophthalmologist.

After ingestion
In the event of a damaged container. If material escapes:
Rinse mouth thoroughly with water. Let water be drunken in little sips (dilution effect). In all cases of doubt, or when symptoms persist, seek medical advice.

Most important symptoms and effects, both acute and delayed
No information available.

Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

5. Fire-fighting measures

Extinguishing media
Suitable extinguishing media
The product itself does not burn.
In the event of a damaged container. If material escapes:
D powder. Dry sand.

Unsuitable extinguishing media
Water.

Specific hazards arising from the chemical
Can be released in case of fire: Gas/vapours, harmful.

Special protective equipment and precautions for fire-fighters
Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.
Co-ordinate fire-fighting measures to the fire surroundings.
Use water spray jet to protect personnel and to cool endangered containers.
6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

Wear personal protection equipment.  
Warning: May cause fire.  
In case of fire, use fire extinguisher class D.

**Environmental precautions**

Do not allow to enter into surface water or drains. In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

**Methods and material for containment and cleaning up**

Dispose of only deactivated catalyst residues.  
Take up carefully when dry. Avoid contact with water.  
Treat the recovered material as prescribed in the section on waste disposal.  
Clean contaminated articles and floor according to the environmental legislation.

**Reference to other sections**

See protective measures under point 7 and 8.

7. Handling and storage

**Precautions for safe handling**

Advice on safe handling

Protect containers against damage.  
Under normal conditions, the product is hermetically sealed.

Advice on protection against fire and explosion

Protect containers against damage.  
Under normal conditions, the product is hermetically sealed.  
Usual measures for fire prevention.

**Further information on handling**

Advises on general occupational hygiene: refer to chapter 8

**Conditions for safe storage, including any incompatibilities**

Requirements for storage rooms and vessels

not relevant

Advice on storage compatibility

not relevant

**Further information on storage conditions**

not relevant

8. Exposure controls/personal protection

**Control parameters**
Exposure limits

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Substance</th>
<th>ppm</th>
<th>mg/m³</th>
<th>f/cc</th>
<th>Category</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-50-8</td>
<td>Copper (dusts and mists, as Cu)</td>
<td>-</td>
<td>1</td>
<td></td>
<td>TWA (8 h)</td>
<td>REL</td>
</tr>
<tr>
<td>7440-50-8</td>
<td>Copper Dusts and mists (as Cu)</td>
<td>-</td>
<td>1</td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>1317-38-0</td>
<td>Copper fume: copper(II) oxide, as Cu</td>
<td>-</td>
<td>0.2</td>
<td></td>
<td>TWA (8 h)</td>
<td>ACGIH-2016</td>
</tr>
<tr>
<td>14808-60-7</td>
<td>Silica, crystalline (as respirable dust)</td>
<td>-</td>
<td>0.05</td>
<td></td>
<td>TWA (8 h)</td>
<td>REL</td>
</tr>
<tr>
<td>14808-60-7</td>
<td>Silica, crystalline - alpha-quartz (respirable fraction)</td>
<td>-</td>
<td>0.025</td>
<td></td>
<td>TWA (8 h)</td>
<td>ACGIH-2016</td>
</tr>
<tr>
<td>14808-60-7</td>
<td>Silica, crystalline quartz, total dust</td>
<td>-</td>
<td>(Z-3)</td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>1314-13-2</td>
<td>Zinc oxide (Dust)</td>
<td>-</td>
<td>5</td>
<td></td>
<td>TWA (8 h)</td>
<td>REL</td>
</tr>
<tr>
<td>1314-13-2</td>
<td>Zinc oxide (respirable fraction)</td>
<td>-</td>
<td>5</td>
<td></td>
<td>STEL (15 min)</td>
<td>ACGIH-2016</td>
</tr>
</tbody>
</table>

**Additional advice on limit values**
Under normal conditions, the product is hermetically sealed.

**Exposure controls**

**Appropriate engineering controls**
No special measures are necessary.

**Protective and hygiene measures**
No special measures are necessary.

**Eye/face protection**
Eye protection: not required.
Under normal conditions, the product is hermetically sealed.

**Hand protection**
Hand protection: not required.
Under normal conditions, the product is hermetically sealed.

**Respiratory protection**
With correct and proper use, and under normal conditions, breathing protection is not required.
Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

**Environmental exposure controls**
No special precautionary measures are necessary.

**9. Physical and chemical properties**

**Information on basic physical and chemical properties**

| Physical state: | solid |
| Color:          | not applicable |
| Odor:           | not applicable |

Test method

pH-Value: not applicable

**Changes in the physical state**

Initial boiling point and boiling range: not applicable not applicable

Flash point: not applicable
UV-Plus Purifier

Explosive properties
not applicable

Lower explosion limits: not applicable
Upper explosion limits: not applicable
Ignition temperature: not applicable

Oxidizing properties
In the event of a damaged container. If material escapes: Self-heating substances and mixtures May cause fire.

Vapor pressure: not applicable
Water solubility: not applicable
Viscosity / dynamic: not applicable
Solvent content: 0%

Other information
Solid content: not applicable

10. Stability and reactivity

Reactivity
No information available.

Chemical stability
Stability: Stable
The product is stable under storage at normal ambient temperatures.

Possibility of hazardous reactions
Hazardous reactions: May occur
No information available.

Conditions to avoid
Protect against: UV-radiation/sunlight. heat.

Incompatible materials

Hazardous decomposition products
Can be released in case of fire: Gas/vapours, harmful.

11. Toxicological information

Information on toxicological effects

Route(s) of Entry
Under normal conditions, the product is hermetically sealed.
In the event of a damaged container. If material escapes: Ingestion: May be harmful. Inhalation: May be harmful. Skin contact: May cause mild irritation. Eye contact: May cause irritation. May cause fire.

Toxicocinetics, metabolism and distribution
No data available.

Acute toxicity
Based on available data, the classification criteria are not met.
Components

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Components</th>
<th>Exposure route</th>
<th>Dose</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1317-38-0</td>
<td>Copper oxide</td>
<td>oral</td>
<td>LD50</td>
<td>&gt;2500 mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermal</td>
<td>LD50</td>
<td>&gt;2000 mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td>1314-13-2</td>
<td>zinc oxide</td>
<td>oral</td>
<td>LD50</td>
<td>&gt;5000 mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermal</td>
<td>LD50</td>
<td>&gt;2000 mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalative (4 h) aerosol</td>
<td>LC50</td>
<td>&gt;5,7 mg/l</td>
<td>Rat</td>
</tr>
</tbody>
</table>

Irritation and corrosivity
Based on available data, the classification criteria are not met.

Sensitizing effects
Based on available data, the classification criteria are not met.
Copper oxide: no danger of sensitization. Literature information: ECHA Dossier

Carcinogenic/mutagenic/toxic effects for reproduction
Based on available data, the classification criteria are not met.
Copper oxide: Ames test negative. Literature information: ECHA Dossier

Specific target organ toxicity (STOT) - single exposure
Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) - repeated exposure
Based on available data, the classification criteria are not met.

Carcinogenicity (NTP): not listed
Carcinogenicity (IARC): Silica dust, crystalline, in the form of quartz or cristobalite (CAS 14808-60-7) is listed in group 1.
Carcinogenicity (OSHA): not listed

Aspiration hazard
Based on available data, the classification criteria are not met.

Specific effects in experiment on an animal
No data available.

12. Ecological information

Ecotoxicity
No data available.

Persistence and degradability
The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential
No indication of bioaccumulation potential.

Mobility in soil
No data available.

Other adverse effects
No data available.

Further information
Do not allow to enter into surface water or drains.

13. Disposal considerations
**Waste treatment methods**

**Advice on disposal**
- Must not be disposed with household waste.
- Refer to manufacturer/supplier for information on recovery/recycling.

**Contaminated packaging**
- not relevant

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### 14. Transport information

**US DOT 49 CFR 172.101**

- **UN/ID number:** UN 3190
- **Proper shipping name:** SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated copper oxide)
- **Transport hazard class(es):** 4.2
- **Packing group:** II
- **Hazard label:** 4.2

**Marine transport (IMDG)**

- **UN number:** UN 3190
- **UN proper shipping name:** SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated copper oxide)
- **Transport hazard class(es):** 4.2
- **Packing group:** II
- **Hazard label:** 4.2
- **Marine pollutant:** No
- **Limited quantity:** 0
- **Excepted quantity:** E2
- **EmS:** F-A, S-J

**Air transport (ICAO-TI/IATA-DGR)**

- **UN number:** UN 3190
- **UN proper shipping name:** SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated copper oxide)
- **Transport hazard class(es):** 4.2
- **Packing group:** II
- **Hazard label:** 4.2
- **Limited quantity Passenger:** Forbidden
- **Passenger LQ:** Forbidden
- **Excepted quantity:** E2
- **IATA-packing instructions - Passenger:** 467
- **IATA-max. quantity - Passenger:** 15 kg
- **IATA-packing instructions - Cargo:** 470
- **IATA-max. quantity - Cargo:** 50 kg

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**Environmental hazards**

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ENVIRONMENTALLY HAZARDOUS: yes

Danger releasing substance: Copper oxide

Special precautions for user
refer to chapter 6-8

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
not relevant

15. Regulatory information

U.S. Regulations

National Inventory TSCA
All ingredients used to manufacture this product are listed in the TSCA Inventory and not listed under TSCA 12(b)

National regulatory information
SARA Section 304 CERCLA:
Zinc compounds (-): Reportable quantity = &
SARA Section 313 Toxic release inventory:
Zinc compounds (-): De minimis limit = 1.0 %, Reportable threshold = Standard

State Regulations
Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, State of California)
This product contains no chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

16. Other information

Hazardous Materials Information Label (HMIS)
Health: 0
Flammability: 2
Physical Hazard: 2

NFPA Hazard Ratings
Health: 0
Flammability: 2
Reactivity: 2
Unique Hazard: 2

Changes
Revision date: 05.12.2016
Revision No: 1,1
Rev. 1,0 Initial release 23.04.2014
Rev. 1,1 Changes in chapter: 2, 7, 9, 10, 14, 15,16

Abbreviations and acronyms
ADR: Accord européen sur le transport des marchandises dangereuses par Route
CAS Chemical Abstracts Service
DNEL: Derived No Effect Level
IARC: INTERNATIONAL AGENCY FOR RESEARCH ON CANCER
International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
Safety Data Sheet

according to 29 CFR 1910.1200(g)

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Revision date: 05.12.2016
Product code: 75160018, 75160211

ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
GefStoffV: Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)
LOAEL: Lowest observed adverse effect level
LOAEC: Lowest observed adverse effect concentration
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
NOAEL: No observed adverse effect level
NOAEC: No observed adverse effect level
NTP: National Toxicology Program
N/A: not applicable
OSHA: Concerning the International Transport of Dangerous Goods by Rail
PNEC: predicted no effect concentration
PBT: Persistent bioaccumulative toxic
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
SARA: Superfund Amendments and Reauthorization Act
SVHC: substance of very high concern
TRGS: Technische Regeln für Gefahrstoffe
TSCA: Toxic Substances Control Act
VOC: Volatile Organic Compounds
VwVwS: Verwaltungsvorschrift wassergefährdender Stoffe
WGK: Wassergefährdungsklasse

Other data
Classification according to regulation 29 CFR Part 1910.1200 (GHS): - Classification procedure:
Health hazards: Calculation method.
Environmental hazards: Calculation method.
Physical hazards: On basis of test data. and / or calculated. and / or estimated.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)