



# SAFETY DATA SHEET

DSP S.A.S.

Safety Data Sheet according to Reg. (EU) No 2015/830

**Product name:** MOLYKOTE<sup>®</sup> 1000 Paste

**Revision Date:** 08.06.2021

**Version:** 2.0

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DSP S.A.S. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

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### 1.1 Product identifier

**Product name:** MOLYKOTE<sup>®</sup> 1000 Paste

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

**Identified uses:** Lubricants and lubricant additives

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

#### COMPANY IDENTIFICATION

DSP S.A.S.  
22 RUE BRUNEL  
75017 PARIS  
FRANCE

**Customer Information Number:**

33(0)156604700  
SDSQuestion-EU@dupont.com

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** +(33)-975181407

**Local Emergency Contact:** +(33)-975181407

**ORFILA:** + 33 (0)1 45 42 59 59

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## SECTION 2: HAZARDS IDENTIFICATION

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### 2.1 Classification of the substance or mixture

#### Classification according to Regulation (EC) No 1272/2008:

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.

### 2.2 Label elements

**Labelling according to Regulation (EC) No 1272/2008:**

**Hazard pictograms**



**Signal word: WARNING**

**Hazard statements**

H410 Very toxic to aquatic life with long lasting effects.

**Precautionary statements**

P273 Avoid release to the environment.

P391 Collect spillage.

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

**2.3 Other hazards**

This product contains no substances assessed to be PBT or vPvB at levels of 0.1% or higher.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical nature:** Inorganic and organic compounds, in mineral oil

**3.2 Mixtures**

This product is a mixture.

| CASRN /<br>EC-No. /<br>Index-No.                                       | REACH<br>Registration<br>Number | Concentration     | Component                                       | Classification:<br>REGULATION (EC) No<br>1272/2008                                                                              |
|------------------------------------------------------------------------|---------------------------------|-------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| CASRN<br>7440-50-8<br>EC-No.<br>231-159-6<br>Index-No.<br>—            | —                               | >= 2,5 - < 10,0 % | Copper metal<br>powder                          | Aquatic Acute - 1 - H400<br>Aquatic Chronic - 1 - H410                                                                          |
| CASRN<br>7440-66-6<br>EC-No.<br>231-175-3<br>Index-No.<br>030-001-01-9 | —                               | >= 2,5 - < 10,0 % | zinc powder - zinc<br>dust (stabilized)         | Aquatic Acute - 1 - H400<br>Aquatic Chronic - 1 - H410                                                                          |
| CASRN<br>61791-53-5<br>EC-No.<br>263-186-4<br>Index-No.<br>—           | —                               | >= 0,25 - < 1,0 % | N-Tallow<br>Alkyltrimethylenedia<br>mine Oleate | Skin Irrit. - 2 - H315<br>Eye Irrit. - 2 - H319<br>STOT RE - 2 - H373<br>Aquatic Acute - 1 - H400<br>Aquatic Chronic - 2 - H411 |

Substances with a workplace exposure limit

|                                                                                  |                  |                    |                    |                |
|----------------------------------------------------------------------------------|------------------|--------------------|--------------------|----------------|
| <b>CASRN</b><br>7789-75-5<br><b>EC-No.</b><br>232-188-7<br><b>Index-No.</b><br>— | —                | >= 20,0 - < 30,0 % | Calcium difluoride | Not classified |
| <b>CASRN</b><br>7782-42-5<br><b>EC-No.</b><br>231-955-3<br><b>Index-No.</b><br>— | 01-2119486977-12 | >= 10,0 - < 20,0 % | Graphite           | Not classified |

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

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## SECTION 4: FIRST AID MEASURES

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### 4.1 Description of first aid measures

#### General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air; if effects occur, consult a physician.

**Skin contact:** Wash off with plenty of water.

**Eye contact:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

**Ingestion:** If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

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

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

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

**Notes to physician:** No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

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## SECTION 5: FIREFIGHTING MEASURES

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### 5.1 Extinguishing media

**Suitable extinguishing media:** Water spray Alcohol-resistant foam Carbon dioxide (CO<sub>2</sub>) Dry chemical

**Unsuitable extinguishing media:** None known.

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

**Hazardous combustion products:** Fluorine compounds Carbon oxides Metal oxides

**Unusual Fire and Explosion Hazards:** Exposure to combustion products may be a hazard to health.

### 5.3 Advice for firefighters

**Fire Fighting Procedures:** Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.

**Special protective equipment for firefighters:** In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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**6.1 Personal precautions, protective equipment and emergency procedures:** Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

**6.2 Environmental precautions:** Do not release the product to the aquatic environment above defined regulatory levels. Prevent further leakage or spillage if safe to do so. Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and materials for containment and cleaning up:** Wipe up or scrape up and contain for salvage or disposal. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

### 6.4 Reference to other sections:

See sections: 7, 8, 11, 12 and 13.

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## SECTION 7: HANDLING AND STORAGE

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**7.1 Precautions for safe handling:** Do not get on skin or clothing. Do not swallow. Avoid contact with eyes. Take care to prevent spills, waste and minimize release to the environment. Handle in accordance with good industrial hygiene and safety practice.

Use only with adequate ventilation. See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

**7.2 Conditions for safe storage, including any incompatibilities:** Keep in properly labelled containers. Store in accordance with the particular national regulations.

Do not store with the following product types: Strong oxidizing agents.  
Unsuitable materials for containers: None known.

**7.3 Specific end use(s):** See the technical data sheet on this product for further information.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

| Component           | Regulation                                                                                                                                                                                                                 | Type of listing                   | Value                            |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------|
| Copper metal powder | ACGIH                                                                                                                                                                                                                      | TWA Dust and mist                 | 1 mg/m <sup>3</sup> , Copper     |
|                     | Further information: irritation: Irritation; GI: Gastrointestinal; metal fume fever: metal fume fever                                                                                                                      |                                   |                                  |
|                     | ACGIH                                                                                                                                                                                                                      | TWA Fumes                         | 0,2 mg/m <sup>3</sup> , Copper   |
|                     | Further information: irritation: Irritation; GI: Gastrointestinal; metal fume fever: metal fume fever                                                                                                                      |                                   |                                  |
|                     | FR VLE                                                                                                                                                                                                                     | VME                               | 1 mg/m <sup>3</sup> , Copper     |
|                     | Further information: Indicative exposure limits: Indicative exposure limits                                                                                                                                                |                                   |                                  |
|                     | FR VLE                                                                                                                                                                                                                     | VLCT (VLE)                        | 2 mg/m <sup>3</sup> , Copper     |
|                     | Further information: Indicative exposure limits: Indicative exposure limits                                                                                                                                                |                                   |                                  |
|                     | FR VLE                                                                                                                                                                                                                     | VME                               | 0,2 mg/m <sup>3</sup>            |
|                     | Further information: Indicative exposure limits: Indicative exposure limits                                                                                                                                                |                                   |                                  |
|                     | FR VLE                                                                                                                                                                                                                     | VME Fumes                         | 0,2 mg/m <sup>3</sup> , Copper   |
|                     | Further information: Indicative exposure limits: Indicative exposure limits                                                                                                                                                |                                   |                                  |
|                     | FR VLE                                                                                                                                                                                                                     | VME Dust                          | 1 mg/m <sup>3</sup> , Copper     |
|                     | Further information: Indicative exposure limits: Indicative exposure limits                                                                                                                                                |                                   |                                  |
|                     | FR VLE                                                                                                                                                                                                                     | VLCT (VLE) Dust                   | 2 mg/m <sup>3</sup> , Copper     |
|                     | Further information: Indicative exposure limits: Indicative exposure limits                                                                                                                                                |                                   |                                  |
| Calcium difluoride  | ACGIH                                                                                                                                                                                                                      | TWA                               | 2,5 mg/m <sup>3</sup> , Fluorine |
|                     | Further information: bone dam: Bone damage; fluorosis: Fluorosis; BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section); A4: Not classifiable as a human carcinogen; varies: varies |                                   |                                  |
|                     | 2000/39/EC                                                                                                                                                                                                                 | TWA                               | 2,5 mg/m <sup>3</sup> , Fluorine |
|                     | Further information: Indicative                                                                                                                                                                                            |                                   |                                  |
|                     | FR VLE                                                                                                                                                                                                                     | VME                               | 2,5 mg/m <sup>3</sup> , Fluorine |
|                     | Further information: blue: Regulatory indicative exposure limits                                                                                                                                                           |                                   |                                  |
| Graphite            | ACGIH                                                                                                                                                                                                                      | TWA Respirable particulate matter | 2 mg/m <sup>3</sup>              |
|                     | Further information: pneumoconiosis: Pneumoconiosis                                                                                                                                                                        |                                   |                                  |
|                     | FR VLE                                                                                                                                                                                                                     | VME Alveolar fraction             | 2 mg/m <sup>3</sup>              |
|                     | Further information: Indicative exposure limits: Indicative exposure limits                                                                                                                                                |                                   |                                  |

### Biological occupational exposure limits

| Components         | CAS-No.   | Control parameters  | Biological specimen | Sampling time                                   | Permissible concentration | Basis        |
|--------------------|-----------|---------------------|---------------------|-------------------------------------------------|---------------------------|--------------|
| Calcium difluoride | 7789-75-5 | Fluoride (Fluorine) | Urine               | Prior to shift (16 hours after exposure ceases) | 2 mg/l                    | ACGIH<br>BEI |

Fluoride  
(Fluorine)

Urine

End of  
shift (As  
soon as  
possible  
after  
exposure  
ceases)

3 mg/l

ACGIH  
BEI**Derived No Effect Level**

Copper metal powder

**Workers**

| <i>Acute systemic effects</i> |                      | <i>Acute local effects</i> |            | <i>Long-term systemic effects</i> |            | <i>Long-term local effects</i> |            |
|-------------------------------|----------------------|----------------------------|------------|-----------------------------------|------------|--------------------------------|------------|
| Dermal                        | Inhalation           | Dermal                     | Inhalation | Dermal                            | Inhalation | Dermal                         | Inhalation |
| 273 mg/kg bw/day              | 20 mg/m <sup>3</sup> | n.a.                       | n.a.       | 137 mg/kg bw/day                  | n.a.       | n.a.                           | n.a.       |

**Consumers**

| <i>Acute systemic effects</i> |                      |      | <i>Acute local effects</i> |            | <i>Long-term systemic effects</i> |            |                    | <i>Long-term local effects</i> |            |
|-------------------------------|----------------------|------|----------------------------|------------|-----------------------------------|------------|--------------------|--------------------------------|------------|
| Dermal                        | Inhalation           | Oral | Dermal                     | Inhalation | Dermal                            | Inhalation | Oral               | Dermal                         | Inhalation |
| 137 mg/kg bw/day              | 20 mg/m <sup>3</sup> | n.a. | n.a.                       | n.a.       | 137 mg/kg bw/day                  | n.a.       | 0,041 mg/kg bw/day | n.a.                           | n.a.       |

Calcium difluoride

**Workers**

| <i>Acute systemic effects</i> |            | <i>Acute local effects</i> |            | <i>Long-term systemic effects</i> |                     | <i>Long-term local effects</i> |            |
|-------------------------------|------------|----------------------------|------------|-----------------------------------|---------------------|--------------------------------|------------|
| Dermal                        | Inhalation | Dermal                     | Inhalation | Dermal                            | Inhalation          | Dermal                         | Inhalation |
| n.a.                          | n.a.       | n.a.                       | n.a.       | n.a.                              | 5 mg/m <sup>3</sup> | n.a.                           | n.a.       |

**Consumers**

| <i>Acute systemic effects</i> |            |      | <i>Acute local effects</i> |            | <i>Long-term systemic effects</i> |                       |                   | <i>Long-term local effects</i> |            |
|-------------------------------|------------|------|----------------------------|------------|-----------------------------------|-----------------------|-------------------|--------------------------------|------------|
| Dermal                        | Inhalation | Oral | Dermal                     | Inhalation | Dermal                            | Inhalation            | Oral              | Dermal                         | Inhalation |
| n.a.                          | n.a.       | n.a. | n.a.                       | n.a.       | n.a.                              | 0,5 mg/m <sup>3</sup> | 0,02 mg/kg bw/day | n.a.                           | n.a.       |

Graphite

**Workers**

| <i>Acute systemic effects</i> |            | <i>Acute local effects</i> |            | <i>Long-term systemic effects</i> |            | <i>Long-term local effects</i> |                       |
|-------------------------------|------------|----------------------------|------------|-----------------------------------|------------|--------------------------------|-----------------------|
| Dermal                        | Inhalation | Dermal                     | Inhalation | Dermal                            | Inhalation | Dermal                         | Inhalation            |
| n.a.                          | n.a.       | n.a.                       | n.a.       | n.a.                              | n.a.       | n.a.                           | 1,2 mg/m <sup>3</sup> |

**Consumers**

| <i>Acute systemic effects</i> |            |      | <i>Acute local effects</i> |            | <i>Long-term systemic effects</i> |            |      | <i>Long-term local effects</i> |            |
|-------------------------------|------------|------|----------------------------|------------|-----------------------------------|------------|------|--------------------------------|------------|
| Dermal                        | Inhalation | Oral | Dermal                     | Inhalation | Dermal                            | Inhalation | Oral | Dermal                         | Inhalation |

|      |      |      |      |      |      |      |                        |      |              |
|------|------|------|------|------|------|------|------------------------|------|--------------|
| n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 813<br>mg/kg<br>bw/day | n.a. | 0,3<br>mg/m3 |
|------|------|------|------|------|------|------|------------------------|------|--------------|

**Predicted No Effect Concentration**

Copper metal powder

| Compartment            | PNEC      |
|------------------------|-----------|
| Fresh water            | 7,8 µg/l  |
| Marine water           | 5,2 µg/l  |
| Sewage treatment plant | 230 µg/l  |
| Fresh water sediment   | 87 mg/kg  |
| Marine sediment        | 676 mg/kg |
| Soil                   | 65 mg/kg  |

Calcium difluoride

| Compartment            | PNEC     |
|------------------------|----------|
| Fresh water            | 0,9 mg/l |
| Sewage treatment plant | 51 mg/l  |
| Soil                   | 11 mg/kg |

**8.2 Exposure controls**

**Engineering controls:** Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

**Individual protection measures**

**Eye/face protection:** Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent.

**Skin protection**

**Hand protection:** Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process.

**Environmental exposure controls**

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

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**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

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**9.1 Information on basic physical and chemical properties****Appearance**

|                                        |                                         |
|----------------------------------------|-----------------------------------------|
| Physical state                         | paste                                   |
| Color                                  | brown                                   |
| Odor                                   | slight                                  |
| Odor Threshold                         | No data available                       |
| pH                                     | Not applicable                          |
| Melting point/range                    | No data available                       |
| Freezing point                         | No data available                       |
| Boiling point (760 mmHg)               | Not applicable                          |
| Flash point                            | Not applicable                          |
| Evaporation Rate (Butyl Acetate = 1)   | Not applicable                          |
| Flammability (solid, gas)              | Not classified as a flammability hazard |
| Lower explosion limit                  | No data available                       |
| Upper explosion limit                  | No data available                       |
| Vapor Pressure                         | Not applicable                          |
| Relative Vapor Density (air = 1)       | No data available                       |
| Relative Density (water = 1)           | 1,26                                    |
| Water solubility                       | No data available                       |
| Partition coefficient: n-octanol/water | No data available                       |
| Auto-ignition temperature              | No data available                       |
| Decomposition temperature              | No data available                       |
| Dynamic Viscosity                      | Not applicable                          |
| Kinematic Viscosity                    | Not applicable                          |
| Explosive properties                   | Not explosive                           |

**Oxidizing properties** The substance or mixture is not classified as oxidizing.

**9.2 Other information**

|                  |                   |
|------------------|-------------------|
| Molecular weight | No data available |
| Particle size    | No data available |

NOTE: The physical data presented above are typical values and should not be construed as a specification.

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## SECTION 10: STABILITY AND REACTIVITY

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**10.1 Reactivity:** Not classified as a reactivity hazard.

**10.2 Chemical stability:** Stable under normal conditions.

**10.3 Possibility of hazardous reactions:** Can react with strong oxidizing agents.

**10.4 Conditions to avoid:** None known.

**10.5 Incompatible materials:** Oxidizing agents

**10.6 Hazardous decomposition products:** 1-Butene. Sodium.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data is available.*

### 11.1 Information on toxicological effects

#### Acute toxicity

##### Acute oral toxicity

Product test data not available. Refer to component data.

##### Acute dermal toxicity

Product test data not available. Refer to component data.

##### Acute inhalation toxicity

Product test data not available. Refer to component data.

#### Skin corrosion/irritation

Product test data not available. Refer to component data.

#### Serious eye damage/eye irritation

Product test data not available. Refer to component data.

#### Sensitization

Product test data not available. Refer to component data.

#### Specific Target Organ Systemic Toxicity (Single Exposure)

Product test data not available. Refer to component data.

#### Specific Target Organ Systemic Toxicity (Repeated Exposure)

Product test data not available. Refer to component data.

#### Carcinogenicity

Product test data not available. Refer to component data.

#### Teratogenicity

Product test data not available. Refer to component data.

**Reproductive toxicity**

Product test data not available. Refer to component data.

**Mutagenicity**

Product test data not available. Refer to component data.

**Aspiration Hazard**

Product test data not available. Refer to component data.

**COMPONENTS INFLUENCING TOXICOLOGY:**

**Copper metal powder**

**Acute oral toxicity**

LD50, Rat, > 2 500 mg/kg OECD Test Guideline 423 No deaths occurred at this concentration.

**Acute dermal toxicity**

LD50, Rat, > 2 000 mg/kg OECD Test Guideline 402 No deaths occurred at this concentration.

**Acute inhalation toxicity**

LC50, Rat, 4 Hour, dust/mist, > 5,11 mg/l OECD Test Guideline 436 No deaths occurred at this concentration.

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause slight eye irritation.  
May cause slight corneal injury.

**Sensitization**

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:  
No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**Carcinogenicity**

No relevant data found.

**Teratogenicity**

Did not cause birth defects or any other fetal effects in laboratory animals.

**Reproductive toxicity**

In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

**Mutagenicity**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**zinc powder - zinc dust (stabilized)**

**Acute oral toxicity**

LD50, Rat, male and female, > 2 000 mg/kg OECD 401 or equivalent No deaths occurred at this concentration.

**Acute dermal toxicity**

The dermal LD50 has not been determined.

**Acute inhalation toxicity**

LC50, Rat, male and female, 4 Hour, dust/mist, > 5,41 mg/l OECD Test Guideline 403 No deaths occurred at this concentration.

**Skin corrosion/irritation**

Essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause slight eye irritation.

**Sensitization**

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

The substance or mixture is not classified as specific target organ toxicant, single exposure.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Information given is based on data obtained from similar substances.

**Carcinogenicity**

No relevant data found.

**Teratogenicity**

For similar material(s): Did not cause birth defects or any other fetal effects in laboratory animals.

**Reproductive toxicity**

For similar material(s): In animal studies, did not interfere with reproduction.

**Mutagenicity**

For similar material(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases.

For similar material(s): Animal genetic toxicity studies were negative.

**Aspiration Hazard**

No aspiration toxicity classification

**N-Tallow Alkyltrimethylenediamine Oleate**

**Acute oral toxicity**

LD50, Rat, > 5 000 mg/kg

**Acute dermal toxicity**

Based on data from similar materials LD50, Rat, > 2 000 mg/kg OECD Test Guideline 402

**Skin corrosion/irritation**

Based on data from similar materials

**Serious eye damage/eye irritation**

Based on data from similar materials

**Sensitization**

Based on data from similar materials

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

Based on data from similar materials

**Calcium difluoride**

**Acute oral toxicity**

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

LD50, Rat, female, > 2 000 mg/kg No deaths occurred at this concentration.

**Acute dermal toxicity**

The dermal LD50 has not been determined.

**Acute inhalation toxicity**

LC50, Rat, male and female, 4 Hour, dust/mist, > 5,07 mg/l OECD Test Guideline 403 No deaths occurred at this concentration.

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

Corneal injury is unlikely.

**Sensitization**

Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:

No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

Observations in animals include:

May cause fluorosis of teeth and bones.

**Carcinogenicity**

Available data are inadequate to evaluate carcinogenicity.

**Teratogenicity**

Fluorides may cause mottling of teeth in children of mothers exposed excessively before or during pregnancy or during lactation.

**Reproductive toxicity**

For similar material(s): In animal studies, did not interfere with fertility.

**Mutagenicity**

For similar material(s): In vitro genetic toxicity studies were negative.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**Graphite**

**Acute oral toxicity**

LD50, Rat, > 2 000 mg/kg OECD Test Guideline 401 No deaths occurred at this concentration.

**Acute dermal toxicity**

The dermal LD50 has not been determined.

**Acute inhalation toxicity**

LC50, Rat, 4 Hour, dust/mist, > 2 mg/l OECD Test Guideline 403 No deaths occurred at this concentration.

**Skin corrosion/irritation**

Essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

May cause slight temporary corneal injury.

**Sensitization**

Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:

No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs.

**Carcinogenicity**

No relevant data found.

**Teratogenicity**

Did not cause birth defects or any other fetal effects in laboratory animals.

**Reproductive toxicity**

In animal studies, did not interfere with reproduction.

**Mutagenicity**

In vitro genetic toxicity studies were negative.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

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**SECTION 12: ECOLOGICAL INFORMATION**

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*Ecotoxicological information appears in this section when such data is available.*

**12.1 Toxicity****Copper metal powder****Acute toxicity to fish**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

LC50, 96 Hour, 8,1 µg/l

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 48 Hour, 0,792 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, Chlorella vulgaris (Fresh water algae), 72 Hour, 0,333 mg/l, OECD Test Guideline 201

**Chronic toxicity to fish**

NOEC, Oncorhynchus mykiss (rainbow trout), 1 µg/l

**zinc powder - zinc dust (stabilized)****Acute toxicity to fish**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 0,169 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, Ceriodaphnia dubia (water flea), 48 Hour, 0,413 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, Scenedesmus capricornutum (fresh water algae), 96 Hour, 0,136 mg/l

NOEC, Pseudokirchneriella subcapitata (green algae), 96 Hour, 0,019 mg/l

**Chronic toxicity to fish**

NOEC, Oncorhynchus mykiss (rainbow trout), 25 d, 0,025 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), 21 d, 0,037 - 0,4 mg/l

**N-Tallow Alkyltrimethylenediamine Oleate**

**Acute toxicity to fish**

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

**Acute toxicity to aquatic invertebrates**

Based on data from similar materials

EC50, Daphnia magna (Water flea), 48 Hour, > 0,1 - 1 mg/l

**Acute toxicity to algae/aquatic plants**

Based on data from similar materials

EC50, 72 Hour, > 0,01 - 0,1 mg/l, OECD Test Guideline 201

Based on data from similar materials

NOEC, 72 Hour, > 0,01 - 0,1 mg/l, OECD Test Guideline 201

**Chronic toxicity to aquatic invertebrates**

Based on data from similar materials

EC10, Daphnia (water flea), > 1 mg/l

**Calcium difluoride**

**Acute toxicity to fish**

Not expected to be acutely toxic to aquatic organisms.

No toxicity at the limit of solubility

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 105 - 698 mg/l

**Acute toxicity to aquatic invertebrates**

For similar material(s):

No toxicity at the limit of solubility

EC50, Daphnia magna (Water flea), 48 Hour, 53,4 - 98,5 mg/l

**Acute toxicity to algae/aquatic plants**

For similar material(s):

No toxicity at the limit of solubility

EC50, Scenedesmus capricornutum (fresh water algae), 96 Hour, 88,3 - 250 mg/l

For similar material(s):

No toxicity at the limit of solubility

NOEC, Scenedesmus capricornutum (fresh water algae), 96 Hour, 103 - 510 mg/l

For similar material(s):

No toxicity at the limit of solubility

EC50, Skeletonema costatum (marine diatom), 96 Hour, 166 mg/l

**Graphite**

**Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, Danio rerio (zebra fish), 96 Hour, > 100 mg/l, OECD Test Guideline 203

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 48 Hour, > 100 mg/l, OECD Test Guideline 202

**Acute toxicity to algae/aquatic plants**

EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, > 100 mg/l, OECD Test Guideline 201

**Toxicity to bacteria**

EC50, 3 Hour, > 1 012,5 mg/l, OECD Test Guideline 209

**12.2 Persistence and degradability**

**Copper metal powder**

**Biodegradability:** Biodegradability is not applicable to inorganic substances.

**zinc powder - zinc dust (stabilized)**

**Biodegradability:** Biodegradation is not applicable.

**N-Tallow Alkyltrimethylenediamine Oleate**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Based on data from similar materials 10-day Window: Pass

**Biodegradation:** 65 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301D

**Calcium difluoride**

**Biodegradability:** Biodegradability is not applicable to inorganic substances.

**Graphite**

**Biodegradability:** Biodegradation is not applicable.

**12.3 Bioaccumulative potential**

**Copper metal powder**

**Bioaccumulation:** No relevant data found.

**zinc powder - zinc dust (stabilized)**

**Bioaccumulation:** No relevant data found.

**Bioconcentration factor (BCF):** 177 Fish

**N-Tallow Alkyltrimethylenediamine Oleate**

**Bioaccumulation:** No relevant data found.

**Calcium difluoride**

**Bioaccumulation:** Partitioning from water to n-octanol is not applicable.

**Graphite**

**Bioaccumulation:** No relevant data found.

#### 12.4 Mobility in soil

**Copper metal powder**

No relevant data found.

**zinc powder - zinc dust (stabilized)**

No relevant data found.

**N-Tallow Alkyltrimethylenediamine Oleate**

No relevant data found.

**Calcium difluoride**

No relevant data found.

**Graphite**

No relevant data found.

#### 12.5 Results of PBT and vPvB assessment

**Copper metal powder**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**zinc powder - zinc dust (stabilized)**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**N-Tallow Alkyltrimethylenediamine Oleate**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Calcium difluoride**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Graphite**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

#### 12.6 Other adverse effects

**Copper metal powder**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**zinc powder - zinc dust (stabilized)**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**N-Tallow Alkyltrimethylenediamine Oleate**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Calcium difluoride**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Graphite**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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## SECTION 13: DISPOSAL CONSIDERATIONS

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### 13.1 Waste treatment methods

Do not dump into any sewers, on the ground, or into any body of water. This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

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## SECTION 14: TRANSPORT INFORMATION

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### Classification for ROAD and Rail transport (ADR/RID):

|      |                              |                                                                               |
|------|------------------------------|-------------------------------------------------------------------------------|
| 14.1 | UN number                    | UN 3077                                                                       |
| 14.2 | UN proper shipping name      | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Copper metal powder, Zinc) |
| 14.3 | Transport hazard class(es)   | 9                                                                             |
| 14.4 | Packing group                | III                                                                           |
| 14.5 | Environmental hazards        | Copper metal powder, Zinc                                                     |
| 14.6 | Special precautions for user | Hazard Identification Number: 90                                              |

### Classification for SEA transport (IMO-IMDG):

|      |                                                                                      |                                                                               |
|------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 14.1 | UN number                                                                            | UN 3077                                                                       |
| 14.2 | UN proper shipping name                                                              | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Copper metal powder, Zinc) |
| 14.3 | Transport hazard class(es)                                                           | 9                                                                             |
| 14.4 | Packing group                                                                        | III                                                                           |
| 14.5 | Environmental hazards                                                                | Copper metal powder, Zinc                                                     |
| 14.6 | Special precautions for user                                                         | EmS: F-A, S-F                                                                 |
| 14.7 | Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code | Consult IMO regulations before transporting ocean bulk                        |

### Classification for AIR transport (IATA/ICAO):

|      |                         |                                                                               |
|------|-------------------------|-------------------------------------------------------------------------------|
| 14.1 | UN number               | UN 3077                                                                       |
| 14.2 | UN proper shipping name | Environmentally hazardous substance, solid, n.o.s.(Copper metal powder, Zinc) |

- 14.3 Transport hazard class(es) 9  
14.4 Packing group III  
14.5 Environmental hazards Not applicable  
14.6 Special precautions for user No data available.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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## SECTION 15: REGULATORY INFORMATION

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

#### REACH Regulation (EC) No 1907/2006

This product contains only components that have been either registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct. Polymers are exempted from registration under REACH. All relevant starting materials and additives have been either registered, or are exempt from registration according to Regulation (EC) No. 1907/2006 (REACH).

#### Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

Listed in Regulation: ENVIRONMENTAL HAZARDS

Number in Regulation: E1

100 t

200 t

#### Installations classified for the protection of the environment (Environment Code R511-9)

4510: Hazardous to the aquatic environment category acute 1 or chronic 1

Occupational Illnesses (R-461-3, France):

(Not applicable)

### 15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture.

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**SECTION 16: OTHER INFORMATION**

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

|      |                                                                    |
|------|--------------------------------------------------------------------|
| H315 | Causes skin irritation.                                            |
| H319 | Causes serious eye irritation.                                     |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H400 | Very toxic to aquatic life.                                        |
| H410 | Very toxic to aquatic life with long lasting effects.              |
| H411 | Toxic to aquatic life with long lasting effects.                   |

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008**

Aquatic Acute - 1 - H400 - Calculation method

Aquatic Chronic - 1 - H410 - Calculation method

**Revision**

Identification Number: 1444425 / A674 / Issue Date: 08.06.2021 / Version: 2.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

|                 |                                                                                                                    |
|-----------------|--------------------------------------------------------------------------------------------------------------------|
| 2000/39/EC      | Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values |
| ACGIH           | USA. ACGIH Threshold Limit Values (TLV)                                                                            |
| ACGIH BEI       | ACGIH - Biological Exposure Indices (BEI)                                                                          |
| FR VLE          | France. Occupational Exposure Limits (INRS)                                                                        |
| TWA             | Limit Value - eight hours                                                                                          |
| VLCT (VLE)      | Short Term Exposure Limit                                                                                          |
| VME             | Time Weighted Average                                                                                              |
| Aquatic Acute   | Short-term (acute) aquatic hazard                                                                                  |
| Aquatic Chronic | Long-term (chronic) aquatic hazard                                                                                 |
| Eye Irrit.      | Eye irritation                                                                                                     |
| Skin Irrit.     | Skin irritation                                                                                                    |
| STOT RE         | Specific target organ toxicity - repeated exposure                                                                 |

**Full text of other abbreviations**

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO -

International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

**Information Source and References**

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DSP S.A.S. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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