Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier
Product Name
- TK II Modified®

Synonyms
- Anti-Seize; Lubricant; Sealant; Thread Compound

1.2 Relevant identified uses of the substance or mixture and uses advised against
Relevant identified use(s)
- Anti-Seize, Lubricant, Sealant, high temperature casing & tubing compound

1.3 Details of the supplier of the safety data sheet
Manufacturer
- Topco Oilsite Products Ltd.
  Bay 7, 3401 - 19th Street N.E.
  Calgary, Alberta T2E 6S8
  Canada
  www.topcooilsite.com
  msds@topcooilsite.com

Telephone (General) • 403-219-0255

1.4 Emergency telephone number
Manufacturer • 403-219-0255
Poison & Drug Information Service (Alberta Health Services) • 1-800-332-1414

Section 2: Hazards Identification

EU/EEC

2.1 Classification of the substance or mixture
CLP
- Hazardous to the aquatic environment Acute 1 - H400
  Hazardous to the aquatic environment Chronic 1 - H410

2.2 Label Elements
CLP

WARNING

Hazard statements • H400 - Very toxic to aquatic life
  H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements
  Prevention • P273 - Avoid release to the environment.
  Response • P391 - Collect spillage.
  Storage/Disposal • P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
2.3 Other Hazards
CLP
• Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

UN GHS Revision 4
According to: UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Fourth Revised Edition

2.1 Classification of the substance or mixture
UN GHS
• Acute Toxicity Oral 4
Skin Mild Irritation 3
Hazardous to the aquatic environment Acute 1
Hazardous to the aquatic environment Chronic 1

2.2 Label elements
UN GHS

WARNING

Hazard statements
• Harmful if swallowed
  Causes mild skin irritation
  Very toxic to aquatic life
  Very toxic to aquatic life with long lasting effects

Precautionary statements
  Prevention • Wash thoroughly after handling.
  Do not eat, drink or smoke when using this product.
  Avoid release to the environment.
  Response • If skin irritation occurs: Get medical advice/attention.
    IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
    Rinse mouth.
    Collect spillage.

Storage/Disposal • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Supplemental information • 60.7 - 66.9 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other hazards
UN GHS
• Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain
According to the Globally Harmonized System for Classification and Labeling (GHS) this product is considered hazardous

United States (US)
According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture
OSHA HCS 2012
• Acute Toxicity Oral 4
  Hazards Not Otherwise Classified - Health Hazards - Metal fume fever
2.2 Label elements

OSHA HCS 2012

WARNING

Hazard statements
• Harmful if swallowed

Precautionary statements
Prevention • Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Response • IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell.
Rinse mouth.

Storage/Disposal • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Supplemental information • 60.7 - 66.9 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other hazards

OSHA HCS 2012 • Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to: WHMIS 2015

2.1 Classification of the substance or mixture

WHMIS 2015 • Acute Toxicity Oral 4

Health Hazards Not Otherwise Classified 1

2.2 Label elements

WHMIS 2015

DANGER

Hazard statements • Harmful if swallowed

Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain

Precautionary statements
Prevention • Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Response • IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
Rinse mouth.

Storage/Disposal • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Supplemental information • 60.7 - 66.9 percent of this product consists of an ingredient of unknown toxicity.
### 2.3 Other hazards

**WHMIS 2015**

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

### Section 3 - Composition/Information on Ingredients

#### 3.1 Substances

- Material does not meet the criteria of a substance.

#### 3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Identifiers</th>
<th>%</th>
<th>LD50/LC50</th>
<th>Classifications According to Regulation/Directive</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic</td>
<td>CAS:64741-88-4 EC Number:265-090-8 EU Index:649-454-00-7</td>
<td>21% TO 27%</td>
<td>Ingestion/Oral-Rat LD50 • &gt;5000 mg/kg Skin-Rabbit LD50 • &gt;2000 mg/kg</td>
<td>EU CLP: Annex VI, Table 3.1: Carc. 1B, H350 UN GHS Revision 4: Skin Irrit. 3; Asp. Tox. 2 OSHA HCS 2012: Not Classified WHMIS 2015: Not Classified</td>
<td>this ingredient contains &lt; 3% DMSO</td>
</tr>
<tr>
<td>Zinc powder, stabilized</td>
<td>CAS:7440-66-6 EC Number:231-175-3</td>
<td>&gt; 25%</td>
<td>NDA</td>
<td>EU CLP: STOT RE 1 (Lungs / Inhl), H372 UN GHS Revision 4: STOT RE 1 (Lungs / Inhl) OSHA HCS 2012: Comb. Dust; STOT RE 1 (Lungs / Inhl) WHMIS 2015: Comb. Dust; STOT RE 1 (Lungs / Inhl)</td>
<td>NDA</td>
</tr>
<tr>
<td>Graphite</td>
<td>CAS:7782-42-5 EC Number:231-955-3</td>
<td>&gt; 15%</td>
<td>NDA</td>
<td>EU CLP: Annex VI, Table 3.1: Aquatic Acute 1, H400; Aquatic Chronic 1, H410 UN GHS Revision 4: Skin Irrit. 3; Aquatic Acute 1; Aquatic Chronic 1 OSHA HCS 2012: Comb. Dust; Hazard Not Otherwise Classified - Health Hazard - Metal fume fever WHMIS 2015: Comb. Dust; Hazard Not Otherwise Classified - Health Hazard - Metal fume fever</td>
<td>NDA</td>
</tr>
<tr>
<td>Copper oxide</td>
<td>CAS:1317-38-0 EINECS:215-269-1</td>
<td>10% TO 15%</td>
<td>Ingestion/Oral-Rat LD50 • 470 mg/kg</td>
<td>EU CLP: Annex VI, Table 3.1: Aquatic Acute 1, H400; Aquatic Chronic 1, H410 UN GHS Revision 4: Acute Tox. 4 (Orl); Aquatic Acute 1; Aquatic Chronic 1 OSHA HCS 2012: Acute Tox. 4 (Orl) WHMIS 2015: Acute Tox. 4 (Orl)</td>
<td>NDA</td>
</tr>
<tr>
<td>Calcium moncarbonate</td>
<td>CAS:471-34-1 EC Number:207-439-9</td>
<td>1.5% TO 3%</td>
<td>Ingestion/Oral-Rat LD50 • 6450 mg/kg</td>
<td>EU CLP: Skin Irrit. 2, H315; Eye Irrit. 2, H319 UN GHS Revision 4: Skin Irrit. 2; Eye Irrit. 2 OSHA HCS 2012: Skin Irrit. 2; Eye Irrit. 2 WHMIS 2015: Skin Irrit. 2; Eye Irrit. 2</td>
<td>NDA</td>
</tr>
<tr>
<td>Sulfonic acid, petroleum, calcium salt</td>
<td>CAS:61789-86-4 EINECS:263-093-9</td>
<td>0.3% TO 1.5%</td>
<td>NDA</td>
<td>EU CLP: Not Classified UN GHS Revision 4: Not Classified OSHA HCS 2012: Not Classified WHMIS 2015: Not Classified</td>
<td>NDA</td>
</tr>
<tr>
<td>Benzenesulfonic acid, dodecyl-, calcium salt</td>
<td>CAS:26264-06-2</td>
<td>0.3% TO 1.5%</td>
<td>Ingestion/Oral-Rat LD50 • 1300 mg/kg</td>
<td>EU CLP: Acute Tox. 4, H302 UN GHS Revision 4: Acute Tox. 4 (Orl); Aquatic Acute 2</td>
<td>NDA</td>
</tr>
</tbody>
</table>
Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation
• Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing.

Skin
• In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Get medical attention if symptoms occur.

Eye
• In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. Get medical attention if symptoms occur.

Ingestion
• Obtain medical attention immediately if ingested.

4.2 Most important symptoms and effects, both acute and delayed
• Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed
Notes to Physician
• All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media
• In case of fire use media as appropriate for surrounding fire.

Unsuitable Extinguishing Media
• No data available

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
• The product itself does not burn.

Hazardous Combustion Products
• Hazardous decomposition products formed under fire conditions: Carbon oxides.

5.3 Advice for firefighters
• Structural firefighters' protective clothing will only provide limited protection. Wear positive pressure self-contained breathing apparatus (SCBA).

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions
• Ventilate the area. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact.

Emergency Procedures
• Keep unauthorized personnel away. Stay upwind.

6.2 Environmental precautions
• Avoid run off to waterways and sewers.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures
• Carefully shovel or sweep up spilled material and place in suitable container.
6.4 Reference to other sections
• Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling
Handling • Use only with adequate ventilation. Use good safety and industrial hygiene practices. Wear appropriate personal protective equipment, avoid direct contact. Avoid contact with skin, eyes, and clothing. Do not eat, drink or smoke when using this product. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities
Storage • Keep container tightly closed. Store in a cool, dry, well-ventilated place.

7.3 Specific end use(s)
• Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>Exposure Limits/Guidelines</th>
<th>Canada Manitoba</th>
<th>Canada New Brunswick</th>
<th>Canada Northwest Territories</th>
<th>Canada Nova Scotia</th>
<th>Canada Nunavut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium monocarbonate (471-34-1)</td>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>10 mg/m3 TWA (containing no asbestos and &lt;1% crystalline silica, inhalable dust)</td>
<td>10 mg/m3 TWA</td>
<td>Not established</td>
</tr>
<tr>
<td>Copper oxide</td>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Graphite</td>
<td>TWAs</td>
<td>2 mg/m3 TWA (all forms except graphite fibers, respirable particulate matter)</td>
<td>2 mg/m3 TWA [CMP] (all forms except fibers, respirable fraction)</td>
<td>2 mg/m3 TWA (containing no asbestos and &lt;1% crystalline silica; all forms except fibers, natural and synthetic, respirable dust)</td>
<td>2 mg/m3 TWA (all forms except Graphite fibres, respirable)</td>
<td>2 mg/m3 TWA (all forms except Graphite fibres, respirable)</td>
</tr>
</tbody>
</table>

Exposure Limits/Guidelines (Con’t.)

<table>
<thead>
<tr>
<th>Component</th>
<th>STELs</th>
<th>Canada Manitoba</th>
<th>Canada New Brunswick</th>
<th>Canada Northwest Territories</th>
<th>Canada Nova Scotia</th>
<th>Canada Nunavut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium monocarbonate (471-34-1)</td>
<td>STELS</td>
<td>Not established</td>
<td>Not established</td>
<td>20 mg/m3 STEL (listed under Limestone)</td>
<td>Not established</td>
<td>20 mg/m3 STEL (listed under Limestone)</td>
</tr>
<tr>
<td>Copper oxide</td>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>10 mg/m3 TWA (listed under Limestone)</td>
<td>Not established</td>
<td>10 mg/m3 TWA (listed under Limestone)</td>
</tr>
<tr>
<td>Graphite</td>
<td>TWAs</td>
<td>2 mg/m3 TWA (all forms except Graphite fibers, respirable particulate matter)</td>
<td>2 mg/m3 TWA (all forms except Graphite fibres, respirable fraction)</td>
<td>2 mg/m3 TWA (all forms except Graphite fibers, respirable particulate matter)</td>
<td>2 mg/m3 TWA (all forms except Graphite fibres, respirable fraction)</td>
<td>2 mg/m3 TWA (all forms except Graphite fibres, respirable fraction)</td>
</tr>
<tr>
<td>STELs</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>4 mg/m3 STEL (natural, all forms,)</td>
<td>Not established</td>
<td>4 mg/m3 STEL (natural, all forms,)</td>
</tr>
</tbody>
</table>
### Exposure Limits/Guidelines (Con’t.)

<table>
<thead>
<tr>
<th>Result</th>
<th>Canada Ontario</th>
<th>Canada Quebec</th>
<th>Canada Saskatchewan</th>
<th>Canada Yukon</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium monocarbonate (471-34-1)</td>
<td>TWAs</td>
<td>Not established</td>
<td>10 mg/m³ TWA EV (total dust)</td>
<td>10 mg/m³ TWA (listed under Limestone)</td>
<td>30 mppcf TWA; 10 mg/m³ TWA</td>
</tr>
<tr>
<td>STELs</td>
<td>Not established</td>
<td>Not established</td>
<td>20 mg/m³ STEL (listed under Limestone)</td>
<td>20 mg/m³ STEL</td>
<td>Not established</td>
</tr>
<tr>
<td>Graphite</td>
<td>STELs</td>
<td>Not established</td>
<td>Not established</td>
<td>4 mg/m³ STEL (natural, except Graphite fibres, respirable fraction)</td>
<td>Not established</td>
</tr>
<tr>
<td>TWAs</td>
<td>2 mg/m³ TWA (except Graphite fibres, respirable)</td>
<td>2 mg/m³ TWA EV (containing no Asbestos and &lt;1% Crystalline silica, except Graphite fibres, respirable dust)</td>
<td>2 mg/m³ TWA (natural, except Graphite fibres, respirable fraction)</td>
<td>20 mppcf TWA; 30 mppcf TWA (synthetic); 10 mg/m³ TWA (synthetic)</td>
<td>4 mg/m³ TWA (total dust); 2 mg/m³ TWA (respirable dust)</td>
</tr>
</tbody>
</table>

### Exposure Limits/Guidelines (Con’t.)

<table>
<thead>
<tr>
<th>Result</th>
<th>France</th>
<th>Germany DFG</th>
<th>Germany TRGS</th>
<th>Indonesia</th>
<th>Israel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfonic acid, petroleum, calcium salt (61789-86-4)</td>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>5 mg/m³ TWA AGW (respirable fraction, exposure factor 4)</td>
<td>Not established</td>
</tr>
<tr>
<td>Ceilings</td>
<td>Not established</td>
<td>20 mg/m³ Peak (respirable fraction)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>MAKs</td>
<td>Not established</td>
<td>5 mg/m³ TWA MAK (respirable fraction)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Calcium monocarbonate (471-34-1)</td>
<td>TWAs</td>
<td>10 mg/m³ TWA [VME]</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Copper oxide</td>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Graphite (7782-42-5)</td>
<td>TWAs</td>
<td>2 mg/m³ TWA [VME] (alveolar fraction)</td>
<td>Not established</td>
<td>Not established</td>
<td>2 mg/m³ TWA</td>
</tr>
<tr>
<td>MAKs</td>
<td>Not established</td>
<td>1.5 mg/m³ TWA MAK (respirable fraction); 4 mg/m³ TWA MAK (inhaled fraction)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Ceilings</td>
<td>Not established</td>
<td>0.4 mg/m³ Peak (respirable fraction); 4 mg/m³ Peak (inhaled fraction)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>MAKs</td>
<td>Not established</td>
<td>0.1 mg/m³ TWA MAK (respirable fraction); 2 mg/m³ TWA MAK (inhaled fraction)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
</tbody>
</table>

### Exposure Limits/Guidelines (Con’t.)

<table>
<thead>
<tr>
<th>Result</th>
<th>Japan</th>
<th>Malaysia</th>
<th>Mexico</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium monocarbonate (471-34-1)</td>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable dust)</td>
<td>Not established</td>
</tr>
<tr>
<td>Copper oxide</td>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>0.1 mg/m³ TWA (fume, as Cu)</td>
<td>Not established</td>
</tr>
</tbody>
</table>
### Graphite

<table>
<thead>
<tr>
<th>TWAs</th>
<th>Exposure Limits/Guidelines</th>
<th>STELs</th>
<th>Expos. Control Notations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 mg/m³ OEL (Class 1 Dust, total dust); 0.5 mg/m³ OEL (Class 1 Dust, respirable dust)</td>
<td>2 mg/m³ TWA (all forms except Graphite fibres, respirable fraction)</td>
<td>2 mg/m³ TWA VLE-PPT (synthetic and natural)</td>
<td>2.5 mg/m³ TWA (natural, respirable dust)</td>
</tr>
</tbody>
</table>

#### Exposure Control Notations

**Japan**
- Copper oxide as Copper compounds: **Sensitizers:** (Group 2 skin sensitizer (Evaluation does not necessarily apply to all individuals within the group))
- Graphite (7782-42-5): **Nuisance Dusts:** (10 mg/m³ TWA (synthetic, containing <1% Quartz, total dust); 30 mppcf TWA (synthetic, containing <1% Quartz, total dust))

**Egypt**
- Graphite (7782-42-5): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (respirable fraction; inhalable fraction))
- Zinc powder, stabilized (7440-66-6): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (respirable fraction; inhalable fraction))

**Germany DFG**
- Graphite (7782-42-5): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (respirable fraction; inhalable fraction))
- Sulfonic acid, petroleum, calcium salt (61789-86-4): **Pregnancy:** (classification not yet possible (respirable fraction))

**Exposure Limits Supplemental**

**Thailand**
- Graphite (7782-42-5): **Mineral Dusts:** (15 mppcf TWA)
- Graphite as Particulates not otherwise classified (PNOC): **Mineral Dusts:** (15 mppcf TWA (respirable dust); 50 mppcf TWA (total dust); 5 mg/m³ TWA (respirable dust))

**OSHA**
- Graphite (7782-42-5): **Mineral Dusts:** (15 mppcf TWA (natural))
- Graphite as Particulates not otherwise classified (PNOC): **Mineral Dusts:** (15 mppcf TWA (respirable fraction); 5 mg/m³ TWA (respirable fraction); 50 mppcf TWA (total dust); 15 mg/m³ TWA (total dust))

**ACGIH**
- Graphite (7782-42-5): **TLV Basis - Critical Effects:** (pneumoconiosis (all forms except graphite fibers))
- Copper oxide as Copper compounds: **TLV Basis - Critical Effects:** (gastrointestinal (dust and mist); irritation (dust and mist))

### 8.2 Exposure controls

#### Engineering Measures/Controls
- **Good general ventilation should be used. Ventilation rates should be matched to conditions.**
- **If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.** If exposure limits have not been established, maintain airborne levels to an acceptable level.
Personal Protective Equipment

Respiratory • In case of insufficient ventilation, wear suitable respiratory equipment.

Eye/Face • Wear protective eyewear (goggles, face shield, or safety glasses).

Skin/Body • Natural Rubber, latex gloves. Break through time: 4-8 Hours. Wear long sleeves and/or protective coveralls.

Environmental Exposure Controls • Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

Key to abbreviations
ACGIH = American Conference of Governmental Industrial Hygiene
MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Level determined by the Occupational Safety and Health Administration (OSHA)

STEL = Short Term Exposure Limits are based on 15-minute exposures
TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures
TWA EV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Physical Form</th>
<th>Appearance/Description</th>
<th>Brown/copper semi-solid paste with mild petroleum odor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Brown/copper</td>
<td>Odor</td>
<td>Mild, petroleum.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Data lacking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

General Properties

<table>
<thead>
<tr>
<th>Boiling Point</th>
<th>Data lacking</th>
<th>Melting Point/Freezing Point</th>
<th>Data lacking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decomposition Temperature</td>
<td>Data lacking</td>
<td>pH</td>
<td>Data lacking</td>
</tr>
<tr>
<td>Specific Gravity/Relative Density</td>
<td>Data lacking</td>
<td>Water Solubility</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Data lacking</td>
<td>Explosive Properties</td>
<td>Data lacking</td>
</tr>
<tr>
<td>Oxidizing Properties:</td>
<td>Data lacking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vapor Pressure

<table>
<thead>
<tr>
<th>Vapor Pressure</th>
<th>Data lacking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaporation Rate</td>
<td>Data lacking</td>
</tr>
</tbody>
</table>

Flammability

<table>
<thead>
<tr>
<th>Flash Point</th>
<th>Data lacking 385 °C(&gt; 725 °F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEL</td>
<td>Data lacking Autoignition</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Data lacking</td>
</tr>
</tbody>
</table>

Environmental

| Octanol/Water Partition coefficient | Data lacking |

9.2 Other Information

• No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

• No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

• Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

• Hazardous polymerization will not occur.
10.4 Conditions to avoid
• Keep away from heat, sparks and flame.

10.5 Incompatible materials
• None in particular.

10.6 Hazardous decomposition products
• Hazardous decomposition products formed under fire conditions: Carbon oxides.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

<table>
<thead>
<tr>
<th>Components</th>
<th>Acute Toxicity</th>
<th>Skin corrosion/Irritation</th>
<th>Serious eye damage/Irritation</th>
<th>Skin sensitization</th>
<th>Respiratory sensitization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc powder, stabilized (&gt;25%)</td>
<td>7440-66-6</td>
<td>Irritation: Skin-Human • 300 µg 3 Day(s)-Intermittent • Mild irritation; Tumorigen / Carcinogen: Ingestion/Oral-Mouse TDLo • 12.6 mg/kg 46 Week(s)-Continuous; Tumorigenic:Carcinogenic by RTECS criteria; Gastrointestinal:Tumors; Tumorigenic:Facilitates action of known carcinogen</td>
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<tr>
<td>Copper oxide (10% TO 15%)</td>
<td>1317-38-0</td>
<td>Acute Toxicity: Ingestion/Oral-Rat LD50 • 470 mg/kg; Multi-dose Toxicity: Ingestion/Oral-Woman TDLo • 0.7 mg/kg 7 Day(s)-Continuous; Gastrointestinal:Hypermotility, diarrhea; Gastrointestinal:Nausea or vomiting; Gastrointestinal:Other changes</td>
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<tr>
<td>Calcium moncarbonate (1.5% TO 3%)</td>
<td>471-34-1</td>
<td>Acute Toxicity: Ingestion/Oral-Rat LD50 • 6450 mg/kg; Irritation: Eye-Rabbit • 750 µg 24 Hour(s) • Severe irritation; Skin-Rabbit • 500 mg 24 Hour(s) • Moderate irritation; Multi-dose Toxicity: Ingestion/Oral-Woman TDLo • 4.08 g/kg 30 Day(s)-Intermittent; Vascular:BP elevation not characterized in autonomic section; Gastrointestinal:Changes in structure or function of endocrine pancreas; Biochemical:Metabolism (intermediary):Effect on inflammation or mediation of inflammation</td>
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<tr>
<td>Benzenesulfonic acid, dodecyl-, calcium salt (0.3% TO 1.5%)</td>
<td>26264-06-2</td>
<td>Acute Toxicity: Ingestion/Oral-Rat LD50 • 1300 mg/kg</td>
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<tr>
<td>Sulfonic acid, petroleum, calcium salt (0.3% TO 1.5%)</td>
<td>61789-86-4</td>
<td>Acute Toxicity: Ingestion/Oral-Rat LD50 • &gt;5 g/kg; Gastrointestinal:Hypermotility, diarrhea; Skin-Rabbit LD50 • &gt;5 g/kg</td>
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GHS Properties

<table>
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<tr>
<th>Acute toxicity</th>
<th>Classification</th>
<th>Skin corrosion/Irritation</th>
<th>Classification</th>
<th>Serious eye damage/Irritation</th>
<th>Classification</th>
<th>Skin sensitization</th>
<th>Classification</th>
<th>Respiratory sensitization</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU/CLP • Data lacking</td>
<td>UN GHS 4 • Acute Toxicity - Oral 4 - ATEmix (oral) = 1188 mg/kg</td>
<td>UN GHS 4 • Skin Mild Irritation 3</td>
<td>OSHA HCS 2012 • Data lacking</td>
<td>OSHA HCS 2012 • Data lacking</td>
<td>WHMIS 2015 • Data lacking</td>
<td>EU/CLP • Data lacking</td>
<td>UN GHS 4 • Data lacking</td>
<td>OSHA HCS 2012 • Data lacking</td>
<td>WHMIS 2015 • Data lacking</td>
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</table>
Potential Health Effects

Inhalation

Acute (Immediate) • Under normal conditions of use, no health effects are expected.
Chronic (Delayed) • No data available

Skin

Acute (Immediate) • Causes mild skin irritation.
Chronic (Delayed) • No data available

Eye

Acute (Immediate) • Under normal conditions of use, no health effects are expected.
Chronic (Delayed) • No data available

Ingestion

Acute (Immediate) • Harmful if swallowed.
Chronic (Delayed) • No data available

11.2 Other information

• Heating above the melting point releases metallic oxides which may cause metal fume fever which is an influenza like illness. Symptoms include headache, metallic taste in the mouth, cough, thirst, throat irritation, shortness of breath, fever, sweating and pain in the limbs. This illness is not permanent and recovery usually occurs within 24-48 hours after onset.

Key to abbreviations
LD = Lethal Dose
TD = Toxic Dose

Section 12 - Ecological Information

12.1 Toxicity

Components
Zinc powder, stabilized (> 25%) 7440-66-6

Aquatic Toxicity - Fish: 96 Hour(s) LC50 *Pimephales promelas* (Fathead Minnow) 0.238 mg/L Comments: Trace Metals Toxicity and Bioaccumulation in Mudskipper *Periophthalmus waltoni* Koumans 1941 (Gobiidae: Perciformes)

28 Day(s) NOEC *Cyprinus carpio* (Common Carp) 0.0026 mg/L Comments: Bioaccumulation of Micropollutants and Biomarker Responses in Caged Carp (*Cyprinus carpio*)

Aquatic Toxicity - Crustacea: 21 Day(s) NOEC Water Flea 0.062 mg/L Comments: Bioavailability Models for Predicting Acute and Chronic Toxicity of Zinc to Algae, Daphnids, and Fish in Natural Surface Waters

48 Hour(s) EC50 *Ceriodaphnia dubia* 0.07 mg/L Comments: Influence of Water Chemistry on the Acute Toxicity of Copper and Zinc to the Cladoceran *Ceriodaphnia cf. dubia*

Aquatic Toxicity - Algae and Other Aquatic Plant(s): 72 Hour(s) EC50 *Pseudokirchneriella subcapitata* (Green Algae) 0.106 mg/L Comments: Bioavailability Models for Predicting Acute and Chronic Toxicity of Zinc to Algae, Daphnids, and Fish in Natural Surface Waters

14 Day(s) NOEC *Euglena gracilis* (Flagellate Euglenoid) 0.0075 mg/L Comments: Water Quality Bioassay Using Selected Protozoa, II. The Effects of Zinc on Population Growth of *Euglena gracilis*

Copper oxide (10% TO 15%) 1317-38-0

Aquatic Toxicity - Fish: 4 Day(s) LC50 *Western Mosquitofish* >56000 mg/L

20 Day(s) NOEC *Common carp* 0.0128 mg/L

Aquatic Toxicity - Crustacea: 2 Day(s) EC50 *Water flea* 92.7 mg/L

• Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

• Material data lacking.

12.3 Bioaccumulative potential

• Material data lacking.

12.4 Mobility in Soil

• Material data lacking.

12.5 Results of PBT and vPvB assessment

• No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

• No studies have been found.

### Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

### Section 14 - Transport Information

<table>
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<tr>
<th>14.1 UN number</th>
<th>14.2 UN proper shipping name</th>
<th>14.3 Transport hazard class(es)</th>
<th>14.4 Packing group</th>
<th>14.5 Environmental hazards</th>
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14.6 Special precautions for user

• None specified.
Section 15 - Regulatory Information

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

SARA Hazard Classifications

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<td>Copper oxide</td>
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<td>Graphite</td>
<td>7782-42-5</td>
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<td>Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic</td>
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Inventory

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Inventory (Con’t.)

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<th>EU EINECS</th>
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</tbody>
</table>
### United States - California

#### Environment

**U.S. - California - Proposition 65 - Carcinogens List**
- **Sulfonic acid, petroleum, calcium salt**
- **Copper oxide**
- **Zinc powder, stabilized**
- **Calcium monocarbonate**
- **Graphite**
- **Benzenesulfonic acid, C10-16-alkyl derivs., calcium salts**
- **Benzenesulfonic acid, dodecyl-, calcium salt**
- **Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic**

**U.S. - California - Proposition 65 - Developmental Toxicity**
- **Sulfonic acid, petroleum, calcium salt**
- **Copper oxide**
- **Zinc powder, stabilized**
- **Calcium monocarbonate**
- **Graphite**
- **Benzenesulfonic acid, C10-16-alkyl derivs., calcium salts**
- **Benzenesulfonic acid, dodecyl-, calcium salt**
- **Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic**

**U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)**
- **Sulfonic acid, petroleum, calcium salt**
- **Copper oxide**
- **Zinc powder, stabilized**
- **Calcium monocarbonate**
- **Graphite**
- **Benzenesulfonic acid, C10-16-alkyl derivs., calcium salts**
- **Benzenesulfonic acid, dodecyl-, calcium salt**
- **Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic**

**U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)**
- **Sulfonic acid, petroleum, calcium salt**
- **Copper oxide**
- **Zinc powder, stabilized**
- **Calcium monocarbonate**
- **Graphite**
- **Benzenesulfonic acid, C10-16-alkyl derivs., calcium salts**
- **Benzenesulfonic acid, dodecyl-, calcium salt**
- **Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic**

**U.S. - California - Proposition 65 - Reproductive Toxicity - Female**
- **Sulfonic acid, petroleum, calcium salt**
- **Copper oxide**
- **Zinc powder, stabilized**
- **Calcium monocarbonate**
- **Graphite**
- **Benzenesulfonic acid, C10-16-alkyl derivs., calcium salts**
- **Benzenesulfonic acid, dodecyl-, calcium salt**
- **Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic**

**U.S. - California - Proposition 65 - Reproductive Toxicity - Male**
- **Sulfonic acid, petroleum, calcium salt**
- **Copper oxide**
- **Zinc powder, stabilized**
- **Calcium monocarbonate**

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<td>Copper oxide</td>
<td>1317-38-0</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>No</td>
<td>No</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic</td>
<td>64741-88-4</td>
<td>No</td>
<td>No</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Sulfonic acid, petroleum, calcium salt</td>
<td>61789-86-4</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Zinc powder, stabilized</td>
<td>7440-66-6</td>
<td>No</td>
<td>No</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
• Graphite 7782-42-5 Not Listed
• Benzenesulfonic acid, C10-16-alkyl derivs., calcium salts 68584-23-6 Not Listed
• Benzenesulfonic acid, dodecyl-, calcium salt 26264-06-2 Not Listed
• Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic 64741-88-4 Not Listed

15.2 Chemical Safety Assessment
• No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)
• H302 - Harmful if swallowed
  H315 - Causes skin irritation
  H319 - Causes serious eye irritation
  H350 - May cause cancer.
  H372 - Causes damage to organs through prolonged or repeated exposure.

Revision Date • 26/May/2017
Last Revision Date • 26/May/2017
Preparation Date • 26/May/2017

Disclaimer/Statement of Liability
• The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. 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 a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key to abbreviations
NDA = No Data Available