Safety Data Sheet

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

1.1 Product identifier
Product Name • Tuf-Lon
Synonyms • Grease; Lubricant; Sealant

1.2 Relevant identified uses of the substance or mixture and uses advised against
Relevant identified use(s) • Lubricate and seal pipe threads

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 - Manufacturer
• 1-800-332-1414 - Poison & Drug Information Service (Alberta Health Services)

Section 2: Hazards Identification

EU/EEC

2.1 Classification of the substance or mixture
CLP • Carcinogenicity 2 - H351

2.2 Label Elements
CLP

WARNING

Hazard statements • H351 - Suspected of causing cancer.

Precautionary statements
Prevention • P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.

Response • P308+P313 - IF exposed or concerned: Get medical advice/attention.

Storage/Disposal • P405 - Store locked up.
P501 - Dispose of content and/or container in accordance with local, regional,
2.3 Other Hazards

CLP

- 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
- Carcinogenicity 2

2.2 Label elements
UN GHS

WARNING

Hazard statements • Suspected of causing cancer.

Precautionary statements

Prevention • Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.

Response • IF exposed or concerned: Get medical advice/attention.

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

2.3 Other hazards
UN GHS
- 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
- Carcinogenicity 2

2.2 Label elements
OSHA HCS 2012

WARNING

Hazard statements • Suspected of causing cancer.

Precautionary statements

Prevention • Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.

Response • IF exposed or concerned: Get medical advice/attention.
2.3 Other hazards

**OSHA HCS 2012**


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### 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>Crystalline silica</td>
<td>CAS:14808-60-7</td>
<td>60.1%</td>
<td>NDA</td>
<td>EU CLP: Carc. 1A, H350i; STOT RE 1, H372 (Lungs/Inhl)</td>
<td>NDA</td>
</tr>
<tr>
<td></td>
<td>EC Number:238-878-4</td>
<td>60.9%</td>
<td>NDA</td>
<td>UN GHS Revision 4: Carc. 1A; STOT RE 1 (Lungs/Inhl)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>OSHA HCS 2012: Carc. 1A; STOT RE 1 (Lungs/Inhl)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WHMIS 2015: Carc. 1A; STOT</td>
<td></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.

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**Ethene, homopolymer**
- **CAS:** 9002-88-4
- **15% TO 30% Ingestion/Oral-Rat:** LD50 • >8 g/kg
- **Inhalation-Rat LC50:** 75.5 g/m³ 30 Minute(s)
- **EU CLP:** Not Classified
- **UN GHS Revision 4:** Not Classified
- **OSHA HCS 2012:** Comb. Dust
- **WHMIS 2015:** Comb. Dust

**Graphite**
- **CAS:** 7782-42-5
- **EC Number:** 231-955-3
- **6% TO 19% Ingestion/Oral-Rat:** LD50 • >8 g/kg
- **Inhalation-Rat LC50:** 75.5 g/m³ 30 Minute(s)
- **EU CLP:** Not Classified
- **UN GHS Revision 4:** Not Classified
- **OSHA HCS 2012:** Comb. Dust
- **WHMIS 2015:** Comb. Dust

**Naturally occurring mineral (inert ash)**
- **CAS:** 999999-99-4
- **0.5% TO 8% Ingestion/Oral-Rat:** LD50 • >8 g/kg
- **EU CLP:** Not Classified
- **UN GHS Revision 4:** Not Classified
- **OSHA HCS 2012:** Not Classified
- **WHMIS 2015:** Not Classified

**Asphalt**
- **CAS:** 8052-42-4
- **EINECS:** 232-490-9
- **4.2% Ingestion/Oral-Rat:** LD50 • >5000 mg/kg
- **Skin-Rabbit LD50:** 2000 mg/kg
- **EU CLP:** Carc. 2 (Dermal), H351
- **UN GHS Revision 4:** Carc. 2 (Dermal)
- **OSHA HCS 2012:** Carc. 2 (Dermal)
- **WHMIS 2015:** Carc. 2 (Dermal)

**Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate**
- **CAS:** 68457-79-4
- **EINECS:** 270-608-0
- **1.071% Ingestion/Oral-Rat:** LD50 • >8 g/kg
- **EU CLP:** Not Classified
- **UN GHS Revision 4:** Acute Tox. 5 (Orl)
- **OSHA HCS 2012:** Not Classified
- **WHMIS 2015:** Not Classified

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See Section 16 for full text of H-statements.
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 · None

Hazardous Combustion Products · No data available

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>Exposure Limits/Guidelines</th>
<th>Result</th>
<th>ACGIH</th>
<th>Argentina</th>
<th>Australia</th>
<th>Canada Alberta</th>
<th>Canada British Columbia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asphalt (8052-42-4)</strong></td>
<td>TWAs</td>
<td>0.5 mg/m³ TWA (fume, inhalable particulate matter, as benzene-soluble aerosol)</td>
<td>0.5 mg/m³ TWA (CMP) (Bitumen, inhalable fraction, as soluble aerosol in benzene)</td>
<td>5 mg/m³ TWA (fume)</td>
<td>5 mg/m³ TWA (Petroleum; Bitumen, fume)</td>
<td>0.5 mg/m³ TWA (inhalable fume, as Benzene-soluble aerosol)</td>
</tr>
<tr>
<td><strong>Graphite</strong></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>3 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>
<tr>
<td><strong>Crystalline silica</strong></td>
<td>TWAs</td>
<td>0.025 mg/m³ TWA (respirable particulate matter)</td>
<td>0.05 mg/m³ TWA [CMP] (respirable fraction)</td>
<td>0.1 mg/m³ TWA (respirable dust)</td>
<td>0.025 mg/m³ TWA (respirable particulate)</td>
<td>0.025 mg/m³ TWA (respirable)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure Limits/Guidelines</th>
<th>Result</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><strong>Asphalt (8052-42-4)</strong></td>
<td>TWAs</td>
<td>0.5 mg/m³ TWA (fume, inhalable particulate matter, as Benzene soluble aerosol)</td>
<td>5 mg/m³ TWA (petroleum fumes)</td>
<td>0.5 mg/m³ TWA (Bitumen, fume, as Benzene soluble aerosol (inhalable fraction))</td>
<td>0.5 mg/m³ TWA (Bitumen, fume, as Benzene soluble aerosol (inhalable fraction))</td>
<td>0.5 mg/m³ TWA (Bitumen, fume, as Benzene soluble aerosol (inhalable fraction))</td>
</tr>
<tr>
<td><strong>Graphite</strong></td>
<td>STELs</td>
<td>Not established</td>
<td>Not established</td>
<td>1.5 mg/m³ STEL (Bitumen, fume, as Benzene soluble aerosol (inhalable fraction))</td>
<td>Not established</td>
<td>1.5 mg/m³ STEL (Bitumen, fume, as Benzene soluble aerosol (inhalable fraction))</td>
</tr>
<tr>
<td><strong>Crystalline silica</strong></td>
<td>TWAs</td>
<td>0.025 mg/m³ TWA (respirable particulate matter)</td>
<td>0.1 mg/m³ TWA (respirable fraction)</td>
<td>0.05 mg/m³ TWA (respirable fraction, listed under Silica - crystalline)</td>
<td>0.025 mg/m³ TWA (respirable particulate matter)</td>
<td>0.05 mg/m³ TWA (respirable fraction, listed under Silica - crystalline)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure Limits/Guidelines</th>
<th>Result</th>
<th>Canada Ontario</th>
<th>Canada Quebec</th>
<th>Canada Saskatchewan</th>
<th>Canada Yukon</th>
<th>China</th>
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<tbody>
<tr>
<td><strong>Asphalt</strong></td>
<td>STELs</td>
<td>Not established</td>
<td>Not established</td>
<td>1.5 mg/m³ STEL (fume and inhalable fraction, as Benzene soluble aerosol)</td>
<td>10 mg/m³ STEL (fume)</td>
<td>12.5 mg/m³ STEL (fume, as Benzene soluble matter)</td>
</tr>
<tr>
<td>Substance</td>
<td>TWAs</td>
<td>STELs</td>
<td>TWAEV</td>
<td>STELs</td>
<td>TWAs</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Graphite</strong></td>
<td><strong>TWAs</strong></td>
<td>STELs</td>
<td>TWA (fume, inhalable, as Benzene-soluble aerosol)</td>
<td>STELs</td>
<td>TWAs (except Graphite fibres, respirable)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>TWA (natural, except Graphite fibres, respirable fraction)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA (fume and inhalable fraction, as Benzene soluble aerosol)</td>
<td></td>
<td>TWA (natural, except Graphite fibres, respirable fraction)</td>
<td></td>
</tr>
<tr>
<td><strong>Ethene, homopolymer (9002-88-4)</strong></td>
<td>STELs Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>STEL (total dust)</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>4 mg/m3 STEL (total dust); 4 mg/m3 STEL (respirable dust)</td>
<td></td>
</tr>
<tr>
<td><strong>Crystalline silica (14808-60-7)</strong></td>
<td>STELs Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>STEL (total dust)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STEL (total dust)</td>
<td></td>
</tr>
<tr>
<td><strong>Ethene, homopolymer (9002-88-4)</strong></td>
<td>TWAs Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>STEL (total dust)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STEL (total dust)</td>
<td></td>
</tr>
</tbody>
</table>

**TWAs**

- **Graphite**
  - 0.5 mg/m3 TWA (fume, as Benzene-soluble aerosol)
  - 5 mg/m3 TWAEV (fume)
  - 0.5 mg/m3 TWA (fume and inhalable fraction, as Benzene soluble aerosol)
  - 5 mg/m3 TWA (fume, as Benzene soluble matter)

- **Ethene, homopolymer (9002-88-4)**
  - 2 mg/m3 TWA (except Graphite fibres, respirable)
  - 2 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, except Graphite fibres, respirable dust)
  - 2 mg/m3 TWA (natural, except Graphite fibres, respirable fraction)
  - 20 mppcf TWA; 30 mppcf TWA (synthetic); 10 mg/m3 TWA (synthetic)
  - 4 mg/m3 TWA (total dust); 2 mg/m3 TWA (respirable dust)

- **Crystalline silica (14808-60-7)**
  - 0.10 mg/m3 TWA (designated substances regulation, respirable, listed under Silica, crystalline)
  - 0.1 mg/m3 TWAEV (respirable fraction, listed under Silica - crystalline (Trydimite removed))
  - 0.05 mg/m3 TWA (respirable fraction, listed under Silica - Quartz, crystalline)
  - 300 particle/mL TWA (listed under Silica - Quartz, crystalline)
  - 0.7 mg/m3 TWA (containing 50 - 80% free SiO2, total dust); 0.3 mg/m3 TWA (containing 50 - 80% free SiO2, respirable dust); 0.6 mg/m3 STEL (containing 10 - 50% free SiO2, respirable dust); 0.4 mg/m3 STEL (containing >80% free SiO2, respirable dust)
  - 0.7 mg/m3 TWA (containing >80% free SiO2, total dust); 0.2 mg/m3 TWA (containing >80% free SiO2, respirable dust)
## Exposure Limits/Guidelines (Con’t.)

<table>
<thead>
<tr>
<th>Result</th>
<th>France</th>
<th>Germany DFG</th>
<th>India</th>
<th>Indonesia</th>
<th>Israel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt (8052-42-4)</td>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>0.5 mg/m³ TWA (soluble aerosol, fume)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.5 mg/m³ TWA (fume, inhalable fraction, as benzene soluble aerosol)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></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 (respirable fraction, all forms except graphite fibers)</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crystalline silica (14808-60-7)</td>
<td>TWAs</td>
<td>0.1 mg/m³ TWA [VME] (restrictive limit, alveolar fraction)</td>
<td>Not established</td>
<td>(10600)/(%Quartz + 10) mppcm TWA, dust count; (10)/(%Quartz + 2) mg/m³ TWA, respirable dust; (30)/(%Quartz + 3) mg/m³ TWA, total dust</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>0.1 mg/m³ TWA (respirable particulate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.025 mg/m³ TWA (respirable fraction)</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>Netherlands</th>
<th>NIOSH</th>
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</thead>
<tbody>
<tr>
<td>Asphalt (8052-42-4)</td>
<td>STELs</td>
<td>Not established</td>
<td>Not established</td>
<td>10 mg/m³ STEL [PPT-CT]</td>
<td>Not established</td>
</tr>
<tr>
<td></td>
<td>TWAs</td>
<td>Not established</td>
<td>5 mg/m³ TWA (fume)</td>
<td>5 mg/m³ TWA VLE-PPT</td>
<td>Not established</td>
</tr>
<tr>
<td></td>
<td>Ceilings</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>5 mg/m³ Ceiling (fume, 15 min)</td>
</tr>
<tr>
<td>Graphite (7782-42-5)</td>
<td>TWAs</td>
<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>Not established</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.5 mg/m³ TWA (natural, respirable dust)</td>
</tr>
<tr>
<td>Crystalline silica (14808-60-7)</td>
<td>TWAs</td>
<td>0.03 mg/m³ OEL (respirable dust) as Silica, crystalline (general form)</td>
<td>0.1 mg/m³ TWA (respirable fraction)</td>
<td>0.1 mg/m³ TWA VLE-PPT (respirable fraction)</td>
<td>0.075 mg/m³ TWA (respirable dust, listed under Silicium dioxide)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.05 mg/m³ TWA (respirable dust)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Result</th>
<th>OSHA</th>
<th>OSHA Vacated</th>
<th>Portugal</th>
<th>Russia</th>
<th>Singapore</th>
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<tbody>
<tr>
<td>Asphalt (8052-42-4)</td>
<td>TWAs</td>
<td>Not established</td>
<td>Not established</td>
<td>0.5 mg/m³ TWA [VLE-MP] (fumes, inhalable fraction, as Benzene soluble aerosol)</td>
<td>Not established</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>5 mg/m³ PEL (fume)</td>
</tr>
<tr>
<td>Graphite</td>
<td>TWAs</td>
<td>15 mg/m³ TWA (synthetic, total dust); 5 mg/m³ TWA (synthetic, respirable fraction)</td>
<td>2.5 mg/m³ TWA (natural, respirable dust); 10 mg/m³ TWA (synthetic, total dust); 5 mg/m³ TWA (synthetic, respirable fraction)</td>
<td>2 mg/m³ TWA [VLE-MP] (all forms except Graphite fibers, respirable fraction)</td>
<td>Not established</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 mg/m³ PEL (respirable dust)</td>
</tr>
<tr>
<td>Crystalline silica</td>
<td>TWAs</td>
<td>STELs</td>
<td>TWAs</td>
<td>STELs</td>
<td></td>
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<tr>
<td></td>
<td>50 µg/m³ TWA (listed under Respirable crystalline silica)</td>
<td>Not established</td>
<td>0.1 mg/m³ TWA (respirable dust)</td>
<td>Not established</td>
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<tr>
<td></td>
<td>0.025 mg/m³ TWA [VLE-MP] (respirable fraction)</td>
<td>Not established</td>
<td>0.1 mg/m³ PEL (respirable dust)</td>
<td>Not established</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure Limits/Guidelines (Con’t.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Result</strong></td>
</tr>
<tr>
<td>Asphalt (8052-42-4)</td>
</tr>
<tr>
<td>TWAs</td>
</tr>
<tr>
<td>STELs</td>
</tr>
<tr>
<td>Graphite (7782-42-5)</td>
</tr>
<tr>
<td>TWAs</td>
</tr>
<tr>
<td>STELs</td>
</tr>
<tr>
<td>Crystalline silica</td>
</tr>
<tr>
<td>TWAs</td>
</tr>
<tr>
<td>as Silica, crystalline (general form)</td>
</tr>
</tbody>
</table>

**Exposure Control Notations**

**Japan**
- Crystalline silica as Silica, crystalline (general form): **Carcinogens:** (Group 1 - Carcinogenic to Humans)
  
  **Mexico**
  - Asphalt (8052-42-4): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)

  **Egypt**
  - 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); 3 mg/m³ TWA (synthetic, containing <1% Quartz, total dust))

  **Portugal**
  - Crystalline silica (14808-60-7): **Carcinogens:** (A2 - Suspected Human Carcinogen)
  - Asphalt (8052-42-4): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen (fumes))

  **Canada**
  - Crystalline silica as Silica, crystalline (general form): **Designated Substances:** (Designated substance - requires code of practice (respirable))
  - **Designated Substances:** (ACGIH Category A2 - Suspected Human Carcinogen; IARC Category 1 - Human Carcinogen) | **Designated Substances:** (IAARC Category 2A - Probable Human Carcinogen; fume; occupational exposure to oxidized Bitumens and their emissions during road paving); IARC Category 2B - Possible Human Carcinogen (fume; occupational exposure to straight-run Bitumens and their emissions during road paving)) | **Designated Substances:** (IAARC Category 2A - Possible Human Carcinogen (fume; occupational exposure to oxidized Bitumens and their emissions during road paving))

  **Canada Alberta**
  - Crystalline silica (14808-60-7): **Carcinogens:** (A2 Suspected Human Carcinogen)
  - Asphalt (8052-42-4): **Carcinogens:** (A4 Not Classifiable as a Human Carcinogen (fume, Coal tar-free))

  **Canada New Brunswick**
  - Asphalt (8052-42-4): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen (fumes))

  **Canada Nova Scotia**
  - Crystalline silica (14808-60-7): **Carcinogens:** (A2 - Suspected Human Carcinogen)
  - Asphalt (8052-42-4): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen (fume, Coal tar-free))

  **Canada Ontario**
  - Crystalline silica (14808-60-7): **Designated Substances:** (0.10 mg/m³ TWA (respirable fraction, listed under Silica, crystalline))

  **Canada Quebec**
  - Crystalline silica (14808-60-7): **Carcinogens:** (C2 carcinogen - effect suspected in humans)

  **Canada Saskatchewan**
  - Crystalline silica as Silica, crystalline (general form): **Designated Substances:** (Present (respirable size))

  **Venezuela**
  - Crystalline silica (14808-60-7): **Ceilings:** (Present)
  - Asphalt (8052-42-4): **Ceilings:** (Present)

  **ACGIH**
  - Crystalline silica (14808-60-7): **Carcinogens:** (A2 - Suspected Human Carcinogen)
  - Asphalt (8052-42-4): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen (fume, coal tar-free))

  **Germany DFG**
  - Graphite (7782-42-5): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (inhalable fraction; respirable fraction))
  - Crystalline silica (14808-60-7): **Carcinogens:** (Category 1 (causes cancer in man; alveola fraction))
  - Asphalt (8052-42-4): **Carcinogens:** (Category 2 (considered to be carcinogenic for man; aerosol and vapor)) | **Skin:** (skin notation (aerosol and vapour))

**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); 15 mg/m³ TWA (total dust); 50 mppcf TWA (total dust); 15 mg/m³ TWA (respirable dust))
  - Crystalline silica (14808-60-7): **Mineral Dusts:** (TWA (15 mppcf TWA (respirable dust)); TWA (15000 mg/m³ TWA (total dust)); TWA (15 mg/m³ TWA (respirable dust)); TWA (15 mg/m³ TWA (total dust)))

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**Preparation Date:** 18/September/2018
**Revision Date:** 18/September/2018

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**EU CLP, UN GHS Revision 4, OSHA HCS 2012, WHMIS 2015**
Israel

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))
• Crystalline silica (14808-60-7): Mineral Dusts: ((250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m3 TWA, respirable fraction)

ACGIH
• Graphite (7782-42-5): TLV Basis - Critical Effects: (pneumoconiosis (all forms except graphite fibers))
• Crystalline silica (14808-60-7): TLV Basis - Critical Effects: (lung cancer; pulmonary fibrosis)
• Asphalt (8052-42-4): BEIs: (Medium: urine Time: end of shift at end of workweek Parameter: 1-Hydroxypyrene with hydrolysis (nonquantitative))

TLV Basis - Critical Effects: (eye and upper respiratory tract irritation (fume))

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
• Rubber or cloth. 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

OSHA = Occupational Safety and Health Administration

BEI = Biological Exposure Indices

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

PPE = 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

TWAEV = Time-Weighted Average Exposure Value

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>Black semi-solid paste with mild petroleum odor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form</td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Black</td>
<td>Odor</td>
<td>Mild, petroleum.</td>
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<tr>
<td>Odor Threshold</td>
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General Properties

<table>
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<tr>
<th>Property</th>
<th>Value</th>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
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<td>Melting Point/Freezing Point</td>
<td>Data lacking</td>
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<td>Decomposition Temperature</td>
<td>Data lacking</td>
<td>pH</td>
<td>Data lacking</td>
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<td>Specific Gravity/Relative Density</td>
<td>Data lacking</td>
<td>Water Solubility</td>
<td>Data lacking</td>
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<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>
Volatility
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

- Strong oxidising agents.

#### 10.6 Hazardous decomposition products

- Carbon Monoxide, Carbon Dioxide.

### Section 11 - Toxicological Information

#### 11.1 Information on toxicological effects

<p>| Components | Crystalline silica (60.1% TO 60.9%) 14808-60-7 | Acute Toxicity: Inhalation-Human TCLo • 16 mppcf 8 Hour(s) 17.9 Year(s)-Intermittent; Lungs, Thorax, or Respiration: Fibrosis, focal (pneumoconiosis); Lungs, Thorax, or Respiration: Cough; Lungs, Thorax, or Respiration: Dyspnea; Inhalation-Rat TCLo • 200 mg/kg; Lungs, Thorax, or Respiration: Fibrosis, focal (pneumoconiosis); Lungs, Thorax, or Respiration: Other changes; Nutritional and Gross Metabolic: Changes in Chemistry or Temperature: Fe; Multi-dose Toxicity: Inhalation-Rat TCLo • 80 mg/m² 26 Week(s)-Intermittent; Lungs, Thorax, or Respiration: Fibrosis, focal (pneumoconiosis); Blood: Changes in spleen; Immunological Including Allergic: Decrease in cellular immune response; Inhalation-Rat TCLo • 6.2 mg/m³ 6 Hour(s) 6 Week(s)-Intermittent; Lungs, Thorax, or Respiration: Other changes; Blood: Changes in spleen; Immunological Including Allergic: Increase in cellular immune response; Mutagen: Micronucleus test • Unreported Route-Hamster • Lung (Somatic cell) • 160 µg/cm²; DNA damage • Unreported Route-Human • Other Cell Type • 120 mg/L 24 Hour(s); Micronucleus test • Unreported Route-Human • Lung (Somatic cell) • 40 µg/cm²; Tumorigen / Carcinogen: Inhalation-Rat TCLo • 50 mg/m³ 6 Hour(s) 71 Week(s)-Intermittent; Tumorigenic: Carcinogenic by RTECS criteria; Liver: Tumors | Acute Toxicity: Ingestion/Oral-Rat LD50 • &gt;8 g/kg; Ingestion/Oral-Mouse TDLo • 2500 mg/kg; Kidney, Ureter, and Bladder: Changes in tubules (including acute renal failure, acute tubular necrosis); Blood: Changes in spleen; Biochemical: Metabolism (intermediary): Other proteins; Inhalation-Rat LC50 • |</p>
<table>
<thead>
<tr>
<th>Material</th>
<th>CAS Number</th>
<th>Acute Toxicity:</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethene, homopolymer (15% TO 30%)</td>
<td>9002-88-4</td>
<td>75.5 g/m³ 30 Minute(s); Tumorigen / Carcinogen: Implant-Rat • 2120 mg/kg; Tumorigenic: Equivocal tumorigenic agent by RTECS criteria; Blood: Lymphoma, including Hodgkin's disease; Tumorigenic: Tumors at site of application; Implant-Rat • 1000 mg/kg; Tumorigenic: Equivocal tumorigenic agent by RTECS criteria; Tumorigenic: Tumors at site of application; Implant-Rat TDL0 • 33 mg/kg; Tumorigenic: Equivocal tumorigenic agent by RTECS criteria; Tumorigenic: Tumors at site of application</td>
<td>EU/CLP - Data lacking</td>
</tr>
<tr>
<td>Asphalt (4.2%)</td>
<td>8052-42-4</td>
<td>Acute Toxicity: Ingestion/Oral-Rat LD50 • &gt;5000 mg/kg; Gastrointestinal: Hypermotility, diarrhea; Multi-dose Toxicity: Inhalation-Rat TCL0 • 100 mg/m³ 6 Hour(s) 14 Week(s)-Intermittent; Sense Organs and Special Senses: Olfaction: Tumors; Behavioral: Food intake (animal); Nutritional and Gross Metabolic: Gross Metabolite Changes: Weight loss or decreased weight gain; Inhalation-Human TDL0 • 10 mg/m³ 5.5 Year(s)-Intermittent; Sense Organs and Special Senses: Eye: Conjunctive irritation; Lungs, Thorax, or Respiration: Cough; Gastrointestinal: Changes in structure or function of salivary glands; Tumorigen / Carcinogen: Skin-Mouse • 69 g/kg 43 Week(s)-Intermittent; Tumorigenic: Equivocal tumorigenic agent by RTECS criteria; Lungs, Thorax, or Respiration: Tumors; Skin and Appendages: Other: Tumors</td>
<td>EU/CLP - Data lacking</td>
</tr>
<tr>
<td>Zinc O,O-bis(mixed isobutyl and pentyl) phosphorodithioate (1.071%)</td>
<td>68457-79-4</td>
<td>Acute Toxicity: Ingestion/Oral-Rat LD50 • 3.6 g/kg; Behavioral: Somnolence (general depressed activity); Lungs, Thorax, or Respiration: Other changes; Gastrointestinal: Hypermotility, diarrhea</td>
<td>EU/CLP - Data lacking</td>
</tr>
</tbody>
</table>

### GHS Properties

<table>
<thead>
<tr>
<th>GHS Properties</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>EU/CLP - Data lacking</td>
</tr>
<tr>
<td>Skin corrosion/Irritation</td>
<td>EU/CLP - Data lacking</td>
</tr>
<tr>
<td>Serious eye damage/Irritation</td>
<td>EU/CLP - Data lacking</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>EU/CLP - Data lacking</td>
</tr>
<tr>
<td>Respiratory sensitization</td>
<td>EU/CLP - Data lacking</td>
</tr>
<tr>
<td>Aspiration Hazard</td>
<td>EU/CLP - Carcinogenicity 2; Suspected of causing cancer</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>EU/CLP - Data lacking</td>
</tr>
</tbody>
</table>
### Germ Cell Mutagenicity

| UN GHS 4 | Data lacking |
| OSHA HCS 2012 | Data lacking |
| WHMIS 2015 | Data lacking |

### Toxicity for Reproduction

| EU/CLP | Data lacking |
| UN GHS 4 | Data lacking |
| OSHA HCS 2012 | Data lacking |
| WHMIS 2015 | Data lacking |

### STOT-SE

| EU/CLP | Data lacking |
| UN GHS 4 | Data lacking |
| OSHA HCS 2012 | Data lacking |
| WHMIS 2015 | Data lacking |

### STOT-RE

| EU/CLP | Data lacking |
| UN GHS 4 | Data lacking |
| OSHA HCS 2012 | Data lacking |
| WHMIS 2015 | Data lacking |

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### Potential Health Effects

#### Inhalation

**Acute (Immediate)**
- Under normal conditions of use, no health effects are expected.

**Chronic (Delayed)**
- No data available

#### Skin

**Acute (Immediate)**
- Under normal conditions of use, no health effects are expected.

**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)**
- Under normal conditions of use, no health effects are expected.

**Chronic (Delayed)**
- No data available

#### Carcinogenic Effects

- Repeated and prolonged exposure may cause cancer.

<table>
<thead>
<tr>
<th>Carcinogenic Effects</th>
<th>CAS</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>8052-42-4</td>
<td>Group 2B-Possible Carcinogen</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Crystalline silica</td>
<td>14808-60-7</td>
<td>Group 1-Carcinogenic</td>
<td>Known Human Carcinogen</td>
</tr>
</tbody>
</table>

---

### Section 12 - Ecological Information

#### 12.1 Toxicity

- Material data lacking.

#### 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>
<thead>
<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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</thead>
<tbody>
<tr>
<td>DOT</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>NDA</td>
</tr>
<tr>
<td>TDG</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>NDA</td>
</tr>
<tr>
<td>IMO/IMDG</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>NDA</td>
</tr>
<tr>
<td>IATA/ICAO</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>NDA</td>
</tr>
</tbody>
</table>

14.6 Special precautions for user
- None specified.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
- Data lacking.

Section 15 - Regulatory Information

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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>State Right To Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>8052-42-4</td>
<td>Yes</td>
</tr>
<tr>
<td>Crystalline silica</td>
<td>14808-60-7</td>
<td>Yes</td>
</tr>
<tr>
<td>Ethene, homopolymer</td>
<td>9002-88-4</td>
<td>No</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>Yes</td>
</tr>
<tr>
<td>Naturally occurring mineral</td>
<td>999999-99-4</td>
<td>No</td>
</tr>
<tr>
<td>Zinc O,O-bis(mixed)</td>
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<td></td>
</tr>
<tr>
<td>Component</td>
<td>CAS</td>
<td>Australia AICS</td>
</tr>
<tr>
<td>-----------</td>
<td>---------</td>
<td>----------------</td>
</tr>
<tr>
<td>Asphalt</td>
<td>8052-42-4</td>
<td>Yes</td>
</tr>
<tr>
<td>Crystalline silica</td>
<td>14808-60-7</td>
<td>Yes</td>
</tr>
<tr>
<td>Ethene, homopolymer</td>
<td>9002-88-4</td>
<td>Yes</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>Yes</td>
</tr>
<tr>
<td>Naturally occurring mineral (inert ash)</td>
<td>999999-99-4</td>
<td>No</td>
</tr>
<tr>
<td>Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate</td>
<td>68457-79-4</td>
<td>Yes</td>
</tr>
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</table>

### Inventory (Con't.)

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>EU ELNICS</th>
<th>Japan ENCS</th>
<th>TSCA</th>
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<tbody>
<tr>
<td>Asphalt</td>
<td>8052-42-4</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Crystalline silica</td>
<td>14808-60-7</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ethene, homopolymer</td>
<td>9002-88-4</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Naturally occurring mineral (inert ash)</td>
<td>999999-99-4</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate</td>
<td>68457-79-4</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### United States - California

#### Environment

**U.S. - California - Proposition 65 - Carcinogens List**

- Asphalt 8052-42-4 Not Listed
- Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate 68457-79-4 Not Listed
- Ethene, homopolymer 9002-88-4 Not Listed
- Crystalline silica 14808-60-7 Not Listed
- Graphite 7782-42-5 Not Listed
- Naturally occurring mineral (inert ash) 999999-99-4 Not Listed

**U.S. - California - Proposition 65 - Developmental Toxicity**

- Asphalt 8052-42-4 Not Listed
- Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate 68457-79-4 Not Listed
- Ethene, homopolymer 9002-88-4 Not Listed
- Crystalline silica 14808-60-7 Not Listed
- Graphite 7782-42-5 Not Listed
- Naturally occurring mineral (inert ash) 999999-99-4 Not Listed

**U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)**

- Asphalt 8052-42-4 Not Listed
- Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate 68457-79-4 Not Listed
- Ethene, homopolymer 9002-88-4 Not Listed
- Crystalline silica 14808-60-7 Not Listed
- Graphite 7782-42-5 Not Listed
15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H350i - May cause cancer by inhalation.
- H372 - Causes damage to organs through prolonged or repeated exposure.

Revision Date

18/September/2018

Last Revision Date

18/September/2018

Preparation Date

18/September/2018

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