

## Safety Data Sheet

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

#### 1.1 Product identifier

**Product Name** • API Modified (silicone)  
**Synonyms** • Anti-Seize; Grease; 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, and Sealant

#### 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.topcoilsite.com  
msds@topcoilsite.com

**Telephone (General)** • 403-219-0255

#### 1.4 Emergency telephone number

- 403-219-0255 - Manufacturer
- 1-800-332-1414 - Poison & Drug Information Service (Alberta Health Services)

### Section 2: Hazards Identification

#### EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 2015/830]

#### 2.1 Classification of the substance or mixture

**CLP**

- Eye Irritation 2 - H319
- Carcinogenicity 2 - H351
- Effects on or via Lactation - H362
- Specific Target Organ Toxicity Repeated Exposure 1 - H372
- Hazardous to the aquatic environment Acute 1 - H400
- Hazardous to the aquatic environment Chronic 1 - H410

#### 2.2 Label Elements

**CLP**

**DANGER**



**Hazard statements**

- H319 - Causes serious eye irritation
- H351 - Suspected of causing cancer.
- H360FD - May damage fertility. May damage the unborn child.
- H362 - May cause harm to breast-fed children
- H372 - Causes damage to organs through prolonged or repeated exposure.

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

### Precautionary statements

- Prevention**
- P201 - Obtain special instructions before use.
  - P202 - Do not handle until all safety precautions have been read and understood.
  - P260 - Do not breathe mist, vapors, and/or spray.
  - P263 - Avoid contact during pregnancy/while nursing.
  - P264 - Wash thoroughly after handling.
  - P270 - Do not eat, drink or smoke when using this product.
  - P273 - Avoid release to the environment.
  - P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- Response**
- P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P337+P313 - If eye irritation persists: Get medical advice/attention.
  - P308+P313 - IF exposed or concerned: Get medical advice/attention.
  - P314 - Get medical advice/attention if you feel unwell.
  - P391 - Collect spillage.
- Storage/Disposal**
- P405 - Store locked up.
  - 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. May form combustible dust concentrations in air. According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

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### 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**
- Skin Mild Irritation 3
  - Eye Irritation 2
  - Carcinogenicity 2
  - Reproductive Toxicity 1A
  - Specific Target Organ Toxicity Repeated Exposure 1
  - Hazardous to the aquatic environment Acute 1
  - Hazardous to the aquatic environment Chronic 1

### 2.2 Label elements

**UN GHS**

**DANGER**



- Hazard statements**
- Causes mild skin irritation
  - Causes serious eye irritation
  - Suspected of causing cancer.
  - May damage fertility or the unborn child.
  - Causes damage to organs through prolonged or repeated exposure.
  - Very toxic to aquatic life
  - Very toxic to aquatic life with long lasting effects

## Precautionary statements

- Prevention** • Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Do not breathe mist, vapors, and/or spray.  
Wash thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Avoid release to the environment.  
Wear protective gloves/protective clothing/eye protection/face protection.
- Response** • IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice/attention.  
If skin irritation occurs: Get medical advice/attention.  
IF exposed or concerned: Get medical advice/attention.  
Get medical advice/attention if you feel unwell.  
Collect spillage.
- 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

- 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  
May form combustible dust concentrations in air.  
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**
- Eye Irritation 2  
Carcinogenicity 2  
Reproductive Toxicity 1A  
Specific Target Organ Toxicity Repeated Exposure 1  
Combustible Dust  
Hazards Not Otherwise Classified - Health Hazards - Metal fume fever

## 2.2 Label elements

OSHA HCS 2012

**DANGER**



- Hazard statements** • Causes serious eye irritation  
Suspected of causing cancer.  
May damage fertility or the unborn child.  
Causes damage to organs through prolonged or repeated exposure.  
May form combustible dust concentrations in air.

## Precautionary statements

- Prevention** • Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Do not breathe mist, vapors, and/or spray.

Wash thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Wear protective gloves/protective clothing/eye protection/face protection.

- Response** • IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice/attention.  
If exposed or concerned: Get medical advice/attention.  
Get medical advice/attention if you feel unwell.

- 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

- 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.

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## Canada

According to: WHMIS 2015

## 2.1 Classification of the substance or mixture

- WHMIS 2015**
- Eye Irritation 2
  - Carcinogenicity 2
  - Reproductive Toxicity 1A
  - Specific Target Organ Toxicity Repeated Exposure 1
  - Combustible Dusts 1
  - Health Hazards Not Otherwise Classified 1

## 2.2 Label elements

**WHMIS 2015**

**DANGER**



- Hazard statements** • Causes serious eye irritation  
Suspected of causing cancer.  
May damage fertility or the unborn child.  
Causes damage to organs through prolonged or repeated exposure.  
May form combustible dust concentrations in air.  
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** • Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Do not breathe mist, vapors, and/or spray.  
Wash thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Wear protective gloves/protective clothing/eye protection/face protection.
- Response** • IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice/attention.

IF exposed or concerned: Get medical advice/attention.  
Get medical advice/attention if you feel unwell.

**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

### 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

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Lead, powder	<b>CAS:</b> 7439-92-1 <b>EC Number:</b> 231-100-4	17.5% TO 70%	NDA	<b>EU CLP:</b> Annex VI, Table 3.1: Repr. 1A, H360FD (Orl); Lact., H362 <b>UN GHS Revision 4:</b> Repr. 1A (Orl); STOT RE 1 (CNS, GI / OrI); Aquatic Acute 3; Aquatic Chronic 1 <b>OSHA HCS 2012:</b> Repr. 1A (Orl); STOT RE 1 (CNS, GI / OrI) <b>WHMIS 2015:</b> Repr. 1A (Orl); STOT RE 1 (CNS, GI / OrI)	NDA
Graphite	<b>CAS:</b> 7782-42-5 <b>EC Number:</b> 231-955-3	10.5% TO 70%	NDA	<b>EU CLP:</b> STOT RE 1 (Lungs / Inhl), H372 <b>UN GHS Revision 4:</b> STOT RE 1 (Lungs / Inhalation) <b>OSHA HCS 2012:</b> Comb. Dust; STOT RE 1 (Lungs / Inhl) <b>WHMIS 2015:</b> Comb. Dust; STOT RE 1 (Lungs / Inhl)	NDA
Polydimethylsiloxane	<b>CAS:</b> 63148-62-9	18% TO 30%	Ingestion/Oral-Rat LD50 • >17 g/kg Skin-Rabbit LD50 • >2 g/kg	<b>EU CLP:</b> Eye Irrit. 2, H319; Aquatic Chronic 2, H411 <b>UN GHS Revision 4:</b> Skin Irrit. 3; Eye Irrit. 2; Aquatic Acute 2; Aquatic Chronic 2 <b>OSHA HCS 2012:</b> Eye Irrit. 2 <b>WHMIS 2015:</b> Eye Irrit. 2	NDA
Crystalline silica	<b>CAS:</b> 14808-60-7 <b>EC Number:</b> 238-878-4	0% TO 27.4995%	NDA	<b>EU CLP:</b> Carc. 1A, H350i; STOT RE 1, H372 <b>UN GHS Revision 4:</b> Carc. 1A; STOT RE 1 (Lungs/Inhl) <b>OSHA HCS 2012:</b> Carc. 1A; STOT RE 1 (Lungs/Inhl) <b>WHMIS 2015:</b> Carc. 1A; STOT RE 1 (Lungs/Inhl)	NDA
Asphalt	<b>CAS:</b> 8052-42-4 <b>EINECS:</b> 232-490-9	0% TO 27.4995%	Ingestion/Oral-Rat LD50 • >5000 mg/kg Skin-Rabbit LD50 • 2000 mg/kg	<b>EU CLP:</b> Carc. 2, H351 <b>UN GHS Revision 4:</b> Carc. 2 <b>OSHA HCS 2012:</b> Carc. 2 <b>WHMIS 2015:</b> Carc. 2	NDA
Zinc powder, stabilized	<b>CAS:</b> 7440-66-6 <b>EC Number:</b> 231-175-3	7% TO 10.5%	NDA	<b>EU CLP:</b> Annex VI, Table 3.1: Aquatic Acute 1, H400; Aquatic Chronic 1, H410 <b>UN GHS Revision 4:</b> Skin Irrit. 3; Aquatic Acute 1; Aquatic Chronic 1 <b>OSHA HCS 2012:</b> Comb. Dust;	NDA

				Hazard Not Otherwise Classified - Health Hazard - Metal fume fever <b>WHMIS 2015:</b> Comb. Dust; Hazard Not Otherwise Classified - Health Hazard - Metal fume fever	
Copper oxide	<b>CAS:</b> 1317-38-0 <b>EU Index:</b> 029-016-00-6 <b>EINECS:</b> 215-269-1	0.7% TO 3.5%	Ingestion/Oral-Rat LD50 • 470 mg/kg	<b>EU CLP:</b> Annex VI, Table 3.1: Aquatic Acute 1, H400 (M=100); Aquatic Chronic 1, H410 (M=100) <b>UN GHS Revision 4:</b> Acute Tox. 4 (Orl); Aquatic Acute 1 (M=10); Aquatic Chronic 1 (M=1) <b>OSHA HCS 2012:</b> Acute Tox. 4 (Orl); Hazard Not Otherwise Classified - Health Hazard - Metal Fume Fever <b>WHMIS 2015:</b> Acute Tox. 4 (Orl); Hazard Not Otherwise Classified - Health Hazard - Metal Fume Fever	NDA
Silica, amorphous, fumed	<b>CAS:</b> 112945-52-5 <b>EC Number:</b> 601-216-3	1.5% TO 3%	Ingestion/Oral-Rat LD50 • 3160 mg/kg	<b>EU CLP:</b> Not Classified <b>UN GHS Revision 4:</b> Acute Tox. 5 (Orl) <b>OSHA HCS 2012:</b> Not Classified <b>WHMIS 2015:</b> Not Classified	NDA
Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	<b>CAS:</b> 68457-79-4 <b>EINECS:</b> 270-608-0	0.4998%	NDA	<b>EU CLP:</b> Not Classified <b>UN GHS Revision 4:</b> Acute Tox. 5 (Orl) <b>OSHA HCS 2012:</b> Not Classified <b>WHMIS 2015:</b> Not Classified	NDA
Other components below reportable levels	NDA	< 0.3%	NDA	<b>EU CLP:</b> Not Classified <b>UN GHS Revision 4:</b> Not Classified <b>OSHA HCS 2012:</b> Not Classified <b>WHMIS 2015:</b> Not Classified	NDA

See Section 16 for full text of H-statements.

## 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.  
LARGE FIRE: Water spray, fog or regular foam.  
SMALL FIRES: Dry chemical, CO<sub>2</sub>, water spray or regular foam.

- Unsuitable Extinguishing Media** • No data available

## 5.2 Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards** • Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
- Hazardous Combustion Products** • Hazardous decomposition products formed under fire conditions: Carbon oxides, Zinc oxide, Lead oxides.

## 5.3 Advice for firefighters

- Structural firefighters' protective clothing will only provide limited protection. Wear positive pressure self-contained breathing apparatus (SCBA).  
Runoff from fire control may cause pollution.

## 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. Ventilate the area before entry. Use appropriate Personal Protective Equipment (PPE)
- Emergency Procedures** • Keep unauthorized personnel away. Stay upwind. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

### 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** • Avoid generating dust.  
Use clean nonsparking tools to collect material.  
Carefully shovel or sweep up spilled material and place in suitable container.  
Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

### 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. Keep away from heat, sparks, and flame. Minimize dust generation and accumulation. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe dust. 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

#### Exposure Limits/Guidelines

	Result	ACGIH	Argentina	Australia	Canada Alberta	Canada British Columbia
Asphalt (8052-42-4)	TWAs	0.5 mg/m3 TWA (fume, inhalable particulate matter, as benzene-soluble aerosol)	0.5 mg/m3 TWA [CMP] (Bitumen, inhalable fraction, as soluble aerosol in benzene)	5 mg/m3 TWA (fume)	5 mg/m3 TWA (Petroleum; Bitumen, fume)	0.5 mg/m3 TWA (inhalable fume, as Benzene-soluble aerosol)
Crystalline silica (14808-60-7)	TWAs	0.025 mg/m3 TWA (respirable particulate matter)	0.05 mg/m3 TWA [CMP] (respirable fraction)	0.1 mg/m3 TWA (respirable dust)	0.025 mg/m3 TWA (respirable particulate)	0.025 mg/m3 TWA (respirable)
Copper oxide	TWAs	1 mg/m3 TWA (dust and mist, as Cu) <i>as Copper compounds</i>	Not established	Not established	Not established	Not established
Graphite	TWAs	2 mg/m3 TWA (all forms except graphite fibers, respirable particulate matter)	2 mg/m3 TWA [CMP] (all forms except fibers, respirable fraction)	3 mg/m3 TWA (containing no asbestos and <1% crystalline silica; all forms except fibres; natural and synthetic, respirable dust)	2 mg/m3 TWA (all forms except Graphite fibres, respirable)	2 mg/m3 TWA (all forms except Graphite fibres, respirable)
Lead, powder (7439-92-1)	TWAs	0.05 mg/m3 TWA	0.05 mg/m3 TWA [CMP]	0.15 mg/m3 TWA (dust and fume)	0.05 mg/m3 TWA	0.05 mg/m3 TWA
Exposure Limits/Guidelines (Con't.)						
	Result	Canada Manitoba	Canada New Brunswick	Canada Northwest Territories	Canada Nova Scotia	Canada Nunavut
Asphalt (8052-42-4)	TWAs	0.5 mg/m3 TWA (fume, inhalable particulate matter, as Benzene soluble aerosol)	5 mg/m3 TWA (petroleum fumes)	0.5 mg/m3 TWA (Bitumen, fume, as Benzene soluble aerosol (inhalable fraction))	0.5 mg/m3 TWA (fume, inhalable particulate matter, as Benzene soluble aerosol)	0.5 mg/m3 TWA (Bitumen, fume, as Benzene soluble aerosol (inhalable fraction))
	STELs	Not established	Not established	1.5 mg/m3 STEL (Bitumen, fume, as Benzene soluble aerosol (inhalable fraction))	Not established	1.5 mg/m3 STEL (Bitumen, fume, as Benzene soluble aerosol (inhalable fraction))
Crystalline silica (14808-60-7)	TWAs	0.025 mg/m3 TWA (respirable particulate matter)	0.1 mg/m3 TWA (respirable fraction)	0.05 mg/m3 TWA (respirable fraction, listed under Silica - crystalline)	0.025 mg/m3 TWA (respirable particulate matter)	0.05 mg/m3 TWA (respirable fraction, listed under Silica - crystalline)
Copper oxide	TWAs	1 mg/m3 TWA (dust and mist, as Cu) <i>as Copper compounds</i>	Not established	Not established	1 mg/m3 TWA (dust and mist, as Cu) <i>as Copper compounds</i>	Not established
Graphite	TWAs	2 mg/m3 TWA (all forms except Graphite fibers, respirable particulate matter)	2 mg/m3 TWA (all forms except graphite fibres)	2 mg/m3 TWA (natural, all forms, except Graphite fibres, respirable fraction)	2 mg/m3 TWA (all forms except Graphite fibers, respirable particulate matter)	2 mg/m3 TWA (natural, all forms, except Graphite fibres, respirable fraction)
	STELs	Not established	Not established	4 mg/m3 STEL (natural, all forms, except Graphite fibres, respirable fraction)	Not established	4 mg/m3 STEL (natural, all forms, except Graphite fibres, respirable fraction)
Lead, powder (7439-92-1)	TWAs	0.05 mg/m3 TWA	0.05 mg/m3 TWA	0.05 mg/m3 TWA	0.05 mg/m3 TWA	0.05 mg/m3 TWA
	STELs	Not established	Not established	0.15 mg/m3 STEL	Not established	0.15 mg/m3 STEL
Exposure Limits/Guidelines (Con't.)						
	Result	Canada Ontario	Canada Quebec	Canada Saskatchewan	Canada Yukon	China
Asphalt (8052-42-4)	STELs	Not established	Not established	1.5 mg/m3 STEL (fume and inhalable fraction, as Benzene soluble aerosol)	10 mg/m3 STEL (fume)	12.5 mg/m3 STEL (fume, as Benzene soluble matter)



	TWAs	0.5 mg/m3 TWA (fume, inhalable, 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)	5 mg/m3 TWA (fume, as Benzene soluble matter)
Crystalline silica (14808-60-7)	STELs	Not established	Not established	Not established	Not established	2 mg/m3 STEL (containing 10 - 50% free SiO <sub>2</sub> , total dust); 1.4 mg/m3 STEL (containing 50 - 80% free SiO <sub>2</sub> , total dust); 1 mg/m3 STEL (containing >80% free SiO <sub>2</sub> , total dust); 1.4 mg/m3 STEL (containing 10 - 50% free SiO <sub>2</sub> , respirable dust); 0.6 mg/m3 STEL (containing 50 - 80% free SiO <sub>2</sub> , respirable dust); 0.4 mg/m3 STEL (containing >80% free SiO <sub>2</sub> , respirable dust)
	TWAs	0.10 mg/m3 TWA (designated substances regulation, respirable, listed under Silica, crystalline)	0.1 mg/m3 TWAEV (respirable dust)	0.05 mg/m3 TWA (respirable fraction, listed under Silica - crystalline (Trydimite removed))	300 particle/mL TWA (listed under Silica - Quartz, crystalline)	0.7 mg/m3 TWA (containing 50 - 80% free SiO <sub>2</sub> , total dust); 0.3 mg/m3 TWA (containing 50 - 80% free SiO <sub>2</sub> , respirable dust); 1 mg/m3 TWA (containing 10 - 50% free SiO <sub>2</sub> , total dust); 0.7 mg/m3 TWA (containing 10 - 50% free SiO <sub>2</sub> , respirable dust); 0.5 mg/m3 TWA (containing >80% free SiO <sub>2</sub> , total dust); 0.2 mg/m3 TWA (containing >80% free SiO <sub>2</sub> , respirable dust)
Graphite	STELs	Not established	Not established	4 mg/m3 STEL (natural, except Graphite fibres, respirable fraction)	Not established	8 mg/m3 STEL (total dust); 4 mg/m3 STEL (respirable dust)
	TWAs	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)
Lead, powder (7439-92-1)	STELs	Not established	Not established	0.15 mg/m3 STEL	0.45 mg/m3 STEL (dust and fume)	0.15 mg/m3 STEL (dust); 0.09 mg/m3 STEL (fume)
	TWAs	0.05 mg/m3 TWA (designated substances regulation); 0.05 mg/m3 TWA (applies to workplaces to which the designated substances regulation does not apply)	0.05 mg/m3 TWAEV	0.05 mg/m3 TWA	0.15 mg/m3 TWA (dust and fume)	0.05 mg/m3 TWA (dust); 0.03 mg/m3 TWA (fume)
<b>Exposure Limits/Guidelines (Con't.)</b>						

	Result	China Highly Toxic Goods	France	Germany DFG	India	Indonesia
Asphalt (8052-42-4)	TWAs	Not established	Not established	Not established	Not established	0.5 mg/m <sup>3</sup> TWA (soluble aerosol, fume)
Crystalline silica (14808-60-7)	TWAs	Not established	0.1 mg/m <sup>3</sup> TWA [VME] (restrictive limit, alveolar fraction)	Not established	(10600)/(%Quartz + 10) mppcm TWA, dust count; (10)/(%Quartz + 2) mg/m <sup>3</sup> TWA, respirable dust; (30)/(%Quartz + 3) mg/m <sup>3</sup> TWA, total dust	0.1 mg/m <sup>3</sup> TWA (respirable particulate)
Silica, amorphous, fumed (112945-52-5)	MAKs	Not established	Not established	4 mg/m <sup>3</sup> TWA MAK (inhalable fraction)	Not established	Not established
Zinc powder, stabilized (7440-66-6)	Ceilings	Not established	Not established	0.4 mg/m <sup>3</sup> Peak (respirable fraction); 4 mg/m <sup>3</sup> Peak (inhalable fraction)	Not established	Not established
	MAKs	Not established	Not established	0.1 mg/m <sup>3</sup> TWA MAK (respirable fraction); 2 mg/m <sup>3</sup> TWA MAK (inhalable fraction)	Not established	Not established
Graphite (7782-42-5)	TWAs	Not established	2 mg/m <sup>3</sup> TWA [VME] (alveolar fraction)	Not established	Not established	2 mg/m <sup>3</sup> TWA
	MAKs	Not established	Not established	1.5 mg/m <sup>3</sup> TWA MAK (respirable fraction); 4 mg/m <sup>3</sup> TWA MAK (inhalable fraction)	Not established	Not established
Lead, powder (7439-92-1)	TWAs	Not established	0.1 mg/m <sup>3</sup> TWA [VME] (restrictive limit)	Not established	Not established	0.05 mg/m <sup>3</sup> TWA
	Ceilings	0.05 mg/m <sup>3</sup> Ceiling (dust); 0.03 mg/m <sup>3</sup> Ceiling (fume)	Not established	Not established	Not established	Not established

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

	Result	Israel	Italy	Japan	Malaysia	Mexico
Asphalt (8052-42-4)	STELs	Not established	Not established	Not established	Not established	10 mg/m <sup>3</sup> STEL [PPT-CT]
	TWAs	0.5 mg/m <sup>3</sup> TWA (fume, inhalable fraction, as benzene soluble aerosol)	Not established	Not established	5 mg/m <sup>3</sup> TWA (fume)	5 mg/m <sup>3</sup> TWA VLE-PPT
Crystalline silica (14808-60-7)	TWAs	0.025 mg/m <sup>3</sup> TWA (respirable fraction)	Not established	0.03 mg/m <sup>3</sup> OEL (respirable dust) <i>as Silica, crystalline (general form)</i>	0.1 mg/m <sup>3</sup> TWA (respirable fraction)	0.1 mg/m <sup>3</sup> TWA VLE-PPT (respirable fraction)
Copper oxide	TWAs	1 mg/m <sup>3</sup> TWA (dust and mist, as Cu) <i>as Copper compounds</i>	Not established	Not established	Not established	Not established
Graphite (7782-42-5)	TWAs	2 mg/m <sup>3</sup> TWA (respirable fraction, all forms except graphite fibers)	Not established	2 mg/m <sup>3</sup> OEL (Class 1 Dust, total dust); 0.5 mg/m <sup>3</sup> OEL (Class 1 Dust, respirable dust)	2 mg/m <sup>3</sup> TWA (all forms except Graphite fibres, respirable fraction)	2 mg/m <sup>3</sup> TWA VLE-PPT (synthetic and natural)
Lead, powder (7439-92-1)	TWAs	0.05 mg/m <sup>3</sup> TWA	0.075 mg/m <sup>3</sup> TWA Media Ponderata nel Tempo	0.03 mg/m <sup>3</sup> OEL (provisional)	0.05 mg/m <sup>3</sup> TWA	0.15 mg/m <sup>3</sup> TWA VLE-PPT (dust and fume, as Pb)

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

	Result	Netherlands	NIOSH	OSHA	OSHA Vacated	Portugal
Asphalt (8052-42-4)	TWAs	Not established	Not established	Not established	Not established	0.5 mg/m3 TWA [VLE-MP] (fumes, inhalable fraction, as Benzene soluble aerosol)
	Ceilings	Not established	5 mg/m3 Ceiling (fume, 15 min)	Not established	Not established	Not established
Crystalline silica (14808-60-7)	TWAs	0.075 mg/m3 TWA (respirable dust, listed under Silicium dioxide)	0.05 mg/m3 TWA (respirable dust)	50 µg/m3 TWA (listed under Respirable crystalline silica)	0.1 mg/m3 TWA (respirable dust)	0.025 mg/m3 TWA [VLE-MP] (respirable fraction)
Copper oxide	TWAs	Not established	0.1 mg/m3 TWA (fume, as Cu)	Not established	Not established	Not established
Graphite	TWAs	Not established	2.5 mg/m3 TWA (natural, respirable dust)	15 mg/m3 TWA (synthetic, total dust); 5 mg/m3 TWA (synthetic, respirable fraction)	2.5 mg/m3 TWA (natural, respirable dust); 10 mg/m3 TWA (synthetic, total dust); 5 mg/m3 TWA (synthetic, respirable fraction)	2 mg/m3 TWA [VLE-MP] (all forms except Graphite fibers, respirable fraction)
Lead, powder (7439-92-1)	TWAs	0.15 mg/m3 TWA	0.050 mg/m3 TWA	50 µg/m3 TWA	Not established	0.15 mg/m3 TWA [VLE-MP] (mandatory indicative limit value)

**Exposure Limits/Guidelines (Con't.)**

	Result	Russia	Singapore	Thailand	United Kingdom	United States - California
Asphalt (8052-42-4)	TWAs	Not established	5 mg/m3 PEL (fume)	0.5 mg/m3 TWA (as Benzene soluble aerosol)	5 mg/m3 TWA (fumes)	5 mg/m3 PEL (fume)
	STELs	Not established	Not established	Not established	10 mg/m3 STEL (fumes)	Not established
Crystalline silica	TWAs	1 mg/m3 TWA (quartz glass, disintegration aerosol, total mass of aerosols, listed under Silicon dioxide amorphous and vitreous); 1 mg/m3 TWA (containing >70% Silicon dioxide in dust, total mass of aerosols, listed under Crystalline silicon dioxide)	0.1 mg/m3 PEL (respirable dust)	0.025 mg/m3 TWA (respirable dust)	0.1 mg/m3 TWA (respirable) <i>as Silica, crystalline (general form)</i>	0.3 mg/m3 PEL (total dust); 0.1 mg/m3 PEL (respirable dust)
	STELs	3 mg/m3 STEL (quartz glass, disintegration aerosol, total mass of aerosols, listed under Silicon dioxide amorphous and vitreous); 3 mg/m3 STEL (containing >70% Silicon dioxide in dust, total mass of aerosols, listed under Silicon dioxide crystalline)	Not established	Not established	0.3 mg/m3 STEL (calculated, respirable) <i>as Silica, crystalline (general form)</i>	Not established
Graphite (7782-42-5)	TWAs	Not established	2 mg/m3 PEL (respirable dust)	Not established	10 mg/m3 TWA (inhalable dust); 4 mg/m3 TWA (respirable dust)	2.5 mg/m3 PEL (natural, respirable dust); 10 mg/m3 PEL (synthetic total dust); 5 mg/m3 PEL (synthetic respirable fraction)

	STELs	Not established	Not established	Not established	30 mg/m3 STEL (calculated, inhalable dust); 12 mg/m3 STEL (calculated, respirable dust)	Not established
Lead, powder (7439-92-1)	TWAs	0.05 mg/m3 TWA (aerosol)	0.15 mg/m3 PEL	Not established	0.15 mg/m3 TWA	0.05 mg/m3 PEL (dust and fume)
	STELs	Not established	Not established	Not established	0.45 mg/m3 STEL (calculated)	Not established
Exposure Limits/Guidelines (Con't.)						
	Result		Venezuela			
Asphalt (8052-42-4)	TWAs		0.5 mg/m3 TWA [VTRE-L-8/40 (fume, as Benzene soluble aerosols)]			
Crystalline silica (14808-60-7)	TWAs		0.025 mg/m3 TWA [VTRE-L-8/40 (respirable fraction)]			
Graphite	TWAs		2 mg/m3 TWA [VTRE-L-8/40 (dust)]			
Lead, powder (7439-92-1)	TWAs		0.05 ppm TWA [VTRE-L-8/40 (protection of the health and safety of workers from risks related to this chemical agent at work)]			

## Exposure Control Notations

### Japan

- Lead, powder (7439-92-1): **Carcinogens:** (Group 2B - Possibly Carcinogenic to Humans)
- Copper oxide as Copper compounds: **Sensitizers:** (Group 2 skin sensitizer (Evaluation does not necessarily apply to all individuals within the group))
- Crystalline silica as Silica, crystalline (general form): **Carcinogens:** (Group 1 - Carcinogenic to Humans)

### Mexico

- Lead, powder (7439-92-1): **Carcinogens:** (A3 - Confirmed animal carcinogen)
- Asphalt (8052-42-4): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)

### Egypt

- Lead, powder (7439-92-1): **Carcinogens:** (Animal Carcinogen)
- 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

- Lead, powder (7439-92-1): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)
- Crystalline silica (14808-60-7): **Carcinogens:** (A2 - Suspected Human Carcinogen)
- Asphalt (8052-42-4): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen (fumes))

### Indonesia

- Lead, powder (7439-92-1): **Carcinogens:** (A3 - confirmed animal carcinogen)
- Asphalt (8052-42-4): **Carcinogens:** (A4 - not classifiable as a human carcinogen)

### Argentina

- Lead, powder (7439-92-1): **Carcinogens:** (A3 - Confirmed animal carcinogen with unknown relevance to humans)
- Crystalline silica (14808-60-7): **Carcinogens:** (A2 - Suspected human carcinogen)
- Asphalt (8052-42-4): **Carcinogens:** (A4 - Not classifiable as a human carcinogen (fumes))

### Canada Alberta

- Lead, powder (7439-92-1): **Designated Substances:** (Designated substance - requires code of practice)
- Crystalline silica as Silica, crystalline (general form): **Designated Substances:** (Designated substance - requires code of practice (respirable))

### Canada British Columbia

- Lead, powder (7439-92-1): **Carcinogens:** (IARC Category 2B - Possible Human Carcinogen) | **Designated Substances:** (IARC Category 2B - Possible Human Carcinogen; Adverse reproductive effect) | **Substances with Reproductive Critical Effects:** (Adverse reproductive effect)
- Crystalline silica (14808-60-7): **Carcinogens:** (ACGIH Category A2 - Suspected Human Carcinogen; IARC Category 1 - Human Carcinogen) | **Designated Substances:** (ACGIH Category A2 - Suspected Human Carcinogen; IARC Category 1 - Human Carcinogen)
- Asphalt (8052-42-4): **Carcinogens:** (IARC 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:** (IARC Category 2B - Possible Human Carcinogen (fume; occupational exposure to straight-run Bitumens and their emissions during road paving); IARC Category 2A - Probable Human Carcinogen (fume; occupational exposure to oxidized Bitumens and their emissions during road paving))

### Canada Manitoba

- Lead, powder (7439-92-1): **Carcinogens:** (A3 Confirmed Animal Carcinogen with Unknown Relevance to Humans)
- 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

- Lead, powder (7439-92-1): **Carcinogens:** (A3 - Animal Carcinogen)
- Asphalt (8052-42-4): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen (fumes))

### Canada Nova Scotia

- Lead, powder (7439-92-1): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)

- 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

- Lead, powder (7439-92-1): **Designated Substances:** (0.05 mg/m<sup>3</sup> TWA)
- Crystalline silica (14808-60-7): **Designated Substances:** (0.10 mg/m<sup>3</sup> TWA (respirable fraction, listed under Silica, crystalline))

#### Canada Quebec

- Lead, powder (7439-92-1): **Carcinogens:** (C3 carcinogen - effect detected in animals)
- Crystalline silica (14808-60-7): **Carcinogens:** (C2 carcinogen - effect suspected in humans)

#### Canada Saskatchewan

- Lead, powder (7439-92-1): **Designated Substances:** (Present)
- Crystalline silica as Silica, crystalline (general form): **Designated Substances:** (Present (respirable size))

#### France

- Lead, powder (7439-92-1): **Carcinogens:** (Carcinogen categories 1A, 1B, 2) | **Reproductive Toxins:** (Reproductive Toxin categories 1A, 1B, 2)

#### Venezuela

- Lead, powder (7439-92-1): **Ceilings:** (Present)
- Crystalline silica (14808-60-7): **Ceilings:** (Present)
- Asphalt (8052-42-4): **Ceilings:** (Present)

#### ACGIH

- Lead, powder (7439-92-1): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)
- 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 TRGS

- Lead, powder (7439-92-1): **Developmental Toxins:** (Category 1A (metal)) | **Reproductive Toxins:** (Category 2 (metal))

#### Germany DFG

- Lead, powder (7439-92-1): **Carcinogens:** (Category 2 (considered to be carcinogenic for man))
- Zinc powder, stabilized (7440-66-6): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (respirable; inhalable))
- 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))
- Silica, amorphous, fumed (112945-52-5): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

## 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/m<sup>3</sup> TWA (total dust); 50 mppcf TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable dust))
- Crystalline silica (14808-60-7): **Mineral Dusts:** (TWA ((250/(%SiO<sub>2</sub> + 5)), mppcf, respirable dust); TWA ((10/(%SiO<sub>2</sub> + 2)), mg/m<sup>3</sup>, respirable dust); TWA ((30/(%SiO<sub>2</sub> + 2)), mg/m<sup>3</sup>, total dust))

#### Argentina

- Lead, powder (7439-92-1): **BEIs:** (30 µg/100 mL blood not critical Pb (Women of child bearing potential, whose blood Pb level exceeds 10 mg/dL, are at risk of delivering a child with blood Pb level over the current CDC guideline. If the blood Pb of such children remains elevated, they may be at increased risk of cognitive deficiencies. The blood Pb of these children should be closely monitored and appropriate steps should be taken to minimize the child's exposure to environmental lead.))

#### Canada Yukon

- Lead, powder (7439-92-1): **Miximum Acceptable Body Burdens:** (80 µg/100 mL Medium: blood; 200 µg/L Medium: urine)

#### Israel

- Lead, powder (7439-92-1): **Action Levels:** (0.025 mg/m<sup>3</sup> AL (as Pb)) | **Biological Markers of Occupational Exposure:** (30 µg/100 mL Medium: blood Parameter: Lead)
- Asphalt (8052-42-4): **Biological Markers of Occupational Exposure:** (Medium: urine Time: end of shift at end of workweek Parameter: 1-Hydroxypyrene with hydrolysis (nonquantitative))

#### Venezuela

- Lead, powder (7439-92-1): **Biological Exposure Indices:** (30 µg/100 mL blood not critical Lead (Note: Women of reproductive age, whose levels of blood Pb exceed 10 µg/dL are at risk of giving birth to children with Pb blood values exceeding said level, which was established by the Center of Disease Control in the United States. If Pb levels in said children remain elevated, they may be at an increased risk of cognitive deficits. The Pb in the blood of those children must be watched very closely and the children must be kept from being exposed to environmental lead.))

#### 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/m<sup>3</sup> TWA (respirable fraction); 50 mppcf TWA (total dust); 15 mg/m<sup>3</sup> TWA (total dust))
- Crystalline silica (14808-60-7): **Mineral Dusts:** ((250)/( %SiO<sub>2</sub> + 5) mppcf TWA, respirable fraction; (10)/( %SiO<sub>2</sub> + 2) mg/m<sup>3</sup> TWA, respirable fraction)

#### ACGIH

- Lead, powder (7439-92-1): **BEIs:** (200 µg/L Medium: blood Time: not critical Parameter: Lead (Note: Persons applying this BEI are encouraged to counsel female workers of child-bearing age about the risk of delivering a child with a PbB (lead in blood level) over the current CDC reference value.)) | **TLV Basis - Critical Effects:** (CNS and PNS impairment; hematologic effects)
- 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))

- 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))
- Germany TRGS**
- Lead, powder (7439-92-1): **BELs:** (300 µg/L Medium: whole blood Time: no restriction Parameter: Lead (women age below 45 years); 400 µg/L Medium: whole blood Time: no restriction Parameter: Lead)

## 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	PEL = Permissible Exposure Level determined by the Occupational Safety and Health Administration (OSHA)
BEI = Biological Exposure Indices	STEL = Short Term Exposure Limits are based on 15-minute exposures
MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration	TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)
NIOSH = National Institute of Occupational Safety and Health	TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures
OSHA = Occupational Safety and Health Administration	TWAEV = Time-Weighted Average Exposure Value

## Section 9 - Physical and Chemical Properties

### 9.1 Information on Basic Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Brown/copper semi-solid paste with mild petroleum odor.
Color	Brown/copper	Odor	Mild, petroleum.
Odor Threshold	Data lacking		
General Properties			
Boiling Point	Data lacking	Melting Point/Freezing Point	Data lacking
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	= 1.01 Water=1	Density	8.42 lbs/gal
Water Solubility	Data lacking	Viscosity	Data lacking
Explosive Properties	Data lacking	Oxidizing Properties:	Data lacking
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking	VOC (Wt.)	100 %
Flammability			
Flash Point	> 200 °F(> 93.3333 °C)	UEL	Data lacking
LEL	Data lacking	Auto ignition	Data lacking
Flammability (solid, gas)	Data lacking		
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. Hazardous polymerization not indicated.

### 10.4 Conditions to avoid

- Keep away from heat, sparks and flame. Avoid generating dust.

### 10.5 Incompatible materials

- None in particular.

### 10.6 Hazardous decomposition products

- Hazardous decomposition products formed under fire conditions: Carbon oxides, Zinc oxide, Lead oxides.

## Section 11 - Toxicological Information

### 11.1 Information on toxicological effects

Components		
Lead, powder (17.5% TO 70%)	7439-92-1	<p><b>Acute Toxicity:</b> Ingestion/Oral-Rat TDLo • 0.2 mg/kg; <i>Reproductive Effects:Paternal Effects:Spermatogenesis</i>; Inhalation-Human TCLo • 10 µg/m<sup>3</sup>; <i>Gastrointestinal:Gastritis; Liver:Other changes</i>;</p> <p><b>Multi-dose Toxicity:</b> Ingestion/Oral-Rat TDLo • 43.75 mg/kg 1 Week(s)-Continuous; <i>Blood:Other changes; Kidney, Ureter, and Bladder:Other changes in urine composition; Biochemical:Metabolism (intermediary):Porphyrin, including bile pigments</i>; Inhalation-Human TCLo • 0.011 mg/m<sup>3</sup> 26 Week(s)-Intermittent; <i>Brain and Coverings:Other degenerative changes</i>; Inhalation-Man TCLo • 0.03 mg/m<sup>3</sup> 5 Year(s)-Intermittent; <i>Endocrine:Androgenic</i>;</p> <p><b>Mutagen:</b> Cytogenetic analysis • Ingestion/Oral-Monkey • 42 mg/kg 30 Week(s); Cytogenetic analysis • Inhalation-Rat • 23 µg/m<sup>3</sup> 16 Week(s);</p> <p><b>Reproductive:</b> Ingestion/Oral-Rat TDLo • 790 mg/kg (multigenerations); <i>Reproductive Effects:Effects on Embryo or Fetus:Fetotoxicity (except death, e.g., stunted fetus)</i>; <i>Reproductive Effects:Effects on Embryo or Fetus:Fetal death</i>; Inhalation-Rat TCLo • 10 mg/m<sup>3</sup> 24 Hour(s)(1-21D preg); <i>Reproductive Effects:Effects on Embryo or Fetus:Fetotoxicity (except death, e.g., stunted fetus)</i>; <i>Reproductive Effects:Specific Developmental Abnormalities:Blood and lymphatic system</i></p>
Zinc powder, stabilized (7% TO 10.5%)	7440-66-6	<p><b>Irritation:</b> Skin-Human • 300 µg 3 Day(s)-Intermittent • Mild irritation;</p> <p><b>Tumorigen / Carcinogen:</b> Ingestion/Oral-Mouse TDLo • 12.6 mg/kg 46 Week(s)-Continuous; <i>Tumorigenic:Carcinogenic by RTECS criteria; Gastrointestinal:Tumors; Tumorigenic:Facilitates action of known carcinogen</i></p>
Copper oxide (0.7% TO 3.5%)	1317-38-0	<p><b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • 470 mg/kg</p>
Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate (0.4998%)	68457-79-4	<p><b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • 3.6 g/kg; <i>Behavioral:Somnolence (general depressed activity); Lungs, Thorax, or Respiration:Other changes; Gastrointestinal:Hypermotility, diarrhea</i></p>
Crystalline silica (0% TO 27.4995%)	14808-60-7	<p><b>Acute Toxicity:</b> Inhalation-Human TCLo • 16 mppcf 8 Hour(s) 17.9 Year(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Fibrosis, focal (pneumoconiosis); Lungs, Thorax, or Respiration:Cough; Lungs, Thorax, or Respiration:Dyspnea</i>; Inhalation-Rat TCLo • 200 mg/kg; <i>Lungs, Thorax, or Respiration:Fibrosis, focal (pneumoconiosis); Lungs, Thorax, or Respiration:Other changes; Nutritional and Gross Metabolic:Changes in Chemistry or Temperature:Fe</i>;</p> <p><b>Multi-dose Toxicity:</b> Inhalation-Rat TCLo • 80 mg/m<sup>3</sup> 26 Week(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Fibrosis, focal (pneumoconiosis); Blood:Changes in spleen; Immunological Including Allergic:Decrease in cellular immune response</i>; Inhalation-Rat TCLo • 6.2 mg/m<sup>3</sup> 6 Hour(s) 6 Week(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Other changes; Blood:Changes in spleen; Immunological Including Allergic:Increase in cellular immune response</i>;</p> <p><b>Mutagen:</b> Micronucleus test • Unreported Route-Hamster • Lung (Somatic cell) • 160 µg/cm<sup>3</sup>; DNA damage • Unreported Route-Human • Other Cell Type • 120 mg/L 24 Hour(s); Micronucleus test • Unreported Route-Human • Lung (Somatic cell) • 40 µg/cm<sup>3</sup>;</p> <p><b>Tumorigen / Carcinogen:</b> Inhalation-Rat TCLo • 50 mg/m<sup>3</sup> 6 Hour(s) 71 Week(s)-Intermittent; <i>Tumorigenic:Carcinogenic by RTECS criteria; Liver:Tumors</i></p>

Asphalt (0% TO 27.4995%)	8052-42-4	<b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • >5000 mg/kg; <i>Gastrointestinal:Hypermotility, diarrhea</i> ; Inhalation-Rat LC50 • >94.4 mg/m <sup>3</sup> ; <b>Multi-dose Toxicity:</b> Inhalation-Rat TCLo • 100 mg/m <sup>3</sup> 6 Hour(s) 14 Week(s)-Intermittent; <i>Sense Organs and Special Senses:Olfaction:Tumors</i> ; <i>Behavioral:Food intake (animal)</i> ; <i>Nutritional and Gross Metabolic:Gross Metabolite Changes:Weight loss or decreased weight gain</i> ; Inhalation-Human TDLo • 10 mg/m <sup>3</sup> 5.5 Year(s)-Intermittent; <i>Sense Organs and Special Senses:Eye:Conjunctive irritation</i> ; <i>Lungs, Thorax, or Respiration:Cough</i> ; <i>Gastrointestinal:Changes in structure or function of salivary glands</i> ; <b>Mutagen:</b> DNA adduct • Skin-Mouse • 600 mg/kg; <b>Tumorigen / Carcinogen:</b> Skin-Mouse TDLo • 130 g/kg 81 Week(s)-Intermittent; <i>Tumorigenic:Carcinogenic by RTECS criteria</i> ; <i>Lungs, Thorax, or Respiration:Tumors</i> ; <i>Skin and Appendages:Other:Tumors</i>
Polydimethylsiloxane (18% TO 30%)	63148-62-9	<b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • >17 g/kg; <i>Kidney, Ureter, and Bladder:Other changes</i> ; <i>Nutritional and Gross Metabolic:Changes in Chemistry or Temperature:Other changes</i> ; Skin-Rabbit LD50 • >2 g/kg; <i>Behavioral:Food intake (animal)</i> ; <i>Gastrointestinal:Hypermotility, diarrhea</i> ; <i>Skin and Appendages:After systemic exposure:Dermatitis, other</i> ; <b>Irritation:</b> Eye-Rabbit • 100 µL 24 Hour(s) • Mild irritation; Skin-Rabbit • 500 µL 24 Hour(s) • Mild irritation
Silica, amorphous, fumed (1.5% TO 3%)	112945-52-5	<b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • 3160 mg/kg; <b>Multi-dose Toxicity:</b> Inhalation-Rat TCLo • 154 mg/m <sup>3</sup> 6 Hour(s) 4 Week(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi</i> ; <i>Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels:Dehydrogenases</i> ; <i>Biochemical:Metabolism (intermediary):Other proteins</i>

GHS Properties	Classification
Acute toxicity	EU/CLP•Data lacking UN GHS 4•Data lacking OSHA HCS 2012•Data lacking WHMIS 2015•Data lacking
Skin corrosion/Irritation	EU/CLP•Data lacking UN GHS 4•Skin Mild Irritation 3 OSHA HCS 2012•Data lacking WHMIS 2015•Data lacking
Serious eye damage/Irritation	EU/CLP•Eye Irritation 2 UN GHS 4•Eye Irritation 2 OSHA HCS 2012•Eye Irritation 2 WHMIS 2015•Eye Irritation 2
Skin sensitization	EU/CLP•Data lacking UN GHS 4•Data lacking OSHA HCS 2012•Data lacking WHMIS 2015•Data lacking
Respiratory sensitization	EU/CLP•Data lacking UN GHS 4•Data lacking OSHA HCS 2012•Data lacking WHMIS 2015•Data lacking
Aspiration Hazard	EU/CLP•Data lacking UN GHS 4•Data lacking OSHA HCS 2012•Data lacking WHMIS 2015•Data lacking
Carcinogenicity	EU/CLP•Carcinogenicity 2; Suspected of causing cancer UN GHS 4•Carcinogenicity 2 OSHA HCS 2012•Carcinogenicity 2 WHMIS 2015•Carcinogenicity 2
Germ Cell Mutagenicity	EU/CLP•Data lacking UN GHS 4•Data lacking OSHA HCS 2012•Data lacking WHMIS 2015•Data lacking



Toxicity for Reproduction	<b>EU/CLP</b> •Effects on or via lactation; Toxic to Reproduction 1A <b>UN GHS 4</b> •Toxic to Reproduction 1A <b>OSHA HCS 2012</b> •Toxic to Reproduction 1A <b>WHMIS 2015</b> •Toxic to Reproduction 1A
STOT-SE	<b>EU/CLP</b> •Data lacking <b>UN GHS 4</b> •Data lacking <b>OSHA HCS 2012</b> •Data lacking <b>WHMIS 2015</b> •Data lacking
STOT-RE	<b>EU/CLP</b> •Specific Target Organ Toxicity Repeated Exposure 1 <b>UN GHS 4</b> •Specific Target Organ Toxicity Repeated Exposure 1 <b>OSHA HCS 2012</b> •Specific Target Organ Toxicity Repeated Exposure 1 <b>WHMIS 2015</b> •Specific Target Organ Toxicity Repeated Exposure 1

## 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)** • Causes serious eye irritation.

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

### Ingestion

**Acute (Immediate)** • No data available

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

### Other

**Chronic (Delayed)** • Repeated and prolonged exposure to lead may cause effects on the gastrointestinal tract and central nervous system.

**Carcinogenic Effects** • Repeated and prolonged exposure may cause cancer.

Carcinogenic Effects			
	CAS	IARC	NTP
Asphalt	8052-42-4	Group 2B-Possible Carcinogen	Not Listed
Crystalline silica	14808-60-7	Group 1-Carcinogenic	Known Human Carcinogen
Lead, powder	7439-92-1	Group 2A-Probable Carcinogen	Reasonably Anticipated to be Human Carcinogen

**Reproductive Effects** • Repeated and prolonged exposure may cause reproductive effects. May cause harm to breast-fed children.

## 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

LC = Lethal Concentration

LD = Lethal Dose

TC = Toxic Concentration

TD = Toxic Dose

## Section 12 - Ecological Information

### 12.1 Toxicity

Components		
Lead, powder (17.5% TO 70%)	7439-92-1	<b>Aquatic Toxicity-Fish:</b> 96 Hour(s) LC50 <i>Cyprinus carpio</i> (Common Carp) 0.4 mg/L Comments: Acute Toxicity of Heavy Metals to Common Carp ( <i>Cyprinus carpio</i> ) 28 Day(s) NOEC <i>Cyprinus carpio</i> (Common Carp) 0.00003 mg/L Comments: Bioaccumulation of Micropollutants and Biomarker Responses in Caged Carp ( <i>Cyprinus carpio</i> ) <b>Aquatic Toxicity-Crustacea:</b> 28 Day(s) NOEC <i>Hyalella azteca</i> (Scud) 0.006 mg/L Comments: Acute and Chronic Toxicity of Lead in Water and Diet to the Amphipod <i>Hyalella azteca</i> <b>Aquatic Toxicity-Algae and Other Aquatic Plant(s):</b> 72 Hour(s) EC50 <i>Chaetoceros sp. (Diatom)</i> 0.105 mg/L Comments: Toxicity and Bioaccumulation of Copper and Lead in Five Marine Microalgae
Zinc powder, stabilized (7% TO 10.5%)	7440-66-6	<b>Aquatic Toxicity-Fish:</b> 96 Hour(s) LC50 <i>Pimephales promelas</i> (Fathead Minnow) 0.238 mg/L 28 Day(s) NOEC <i>Cyprinus carpio</i> (Common Carp) 0.0026 mg/L <b>Aquatic Toxicity-Crustacea:</b> 21 Day(s) NOEC <i>Daphnia magna</i> (Water Flea) 0.062 mg/L 48 Hour(s) EC50 <i>Ceriodaphnia dubia</i> 0.07 mg/L <b>Aquatic Toxicity-Algae and Other Aquatic Plant(s):</b> 72 Hour(s) EC50 <i>Pseudokirchneriella subcapitata</i> (Green Algae) 0.106 mg/L 14 Day(s) NOEC <i>Euglena gracilis</i> (Flagellate Euglenoid) 0.0075 mg/L
Copper oxide (0.7% TO 3.5%)	1317-38-0	<b>Aquatic Toxicity-Fish:</b> 96 Hour(s) LC50 <i>Gambusia affinis</i> (Western Mosquitofish) >56000 mg/L 15 Day(s) NOEC <i>Cyprinus carpio</i> (Common Carp) 0.0128 mg/L <b>Aquatic Toxicity-Crustacea:</b> 48 Hour(s) EC50 <i>Daphnia magna</i> (Water Flea) 92.7 mg/L <b>Aquatic Toxicity-Algae and Other Aquatic Plant(s):</b> 72 Hour(s) EC50 <i>Pseudokirchneriella subcapitata</i> (Green Algae) 0.014 mg/L 3 Day(s) NOEC <i>Pseudokirchneriella subcapitata</i> (Green Algae) 0.421 mg/L
Polydimethylsiloxane (18% TO 30%)	63148-62-9	<b>Aquatic Toxicity-Fish:</b> 96 Hour(s) LC50 <i>Ictalurus punctatus</i> (Channel Catfish) 3.6 mg/L <b>Aquatic Toxicity-Crustacea:</b> 48 Hour(s) LC50 <i>Daphnia magna</i> (Water Flea) 44.5 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

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN3077	Environmentally hazardous solid, n.o.s. (Zinc, Copper oxide, Lead)	9	III	NDA
TDG	UN3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. ( Zinc, Copper oxide, Lead )	9	III	NDA

<b>IMO/IMDG</b>	UN3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. ( Zinc, Copper oxide, Lead )	9	III	NDA
<b>IATA/ICAO</b>	UN3077	Environmentally hazardous solid, n.o.s. (Zinc, Copper oxide, Lead)	9	III	NDA

**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**

State Right To Know		
Component	CAS	PA
Asphalt	8052-42-4	Yes
Copper oxide	1317-38-0	No
Crystalline silica	14808-60-7	Yes
Graphite	7782-42-5	Yes
Lead, powder	7439-92-1	Yes
Polydimethylsiloxane	63148-62-9	No
Silica, amorphous, fumed	112945-52-5	No
Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	68457-79-4	No
Zinc powder, stabilized	7440-66-6	Yes

Inventory						
Component	CAS	Australia AICS	Canada DSL	Canada NDSL	China	EU EINECS
Asphalt	8052-42-4	Yes	Yes	No	Yes	Yes
Copper oxide	1317-38-0	Yes	Yes	No	Yes	Yes
Crystalline silica	14808-60-7	Yes	Yes	No	Yes	Yes
Graphite	7782-42-5	Yes	Yes	No	Yes	Yes
Lead, powder	7439-92-1	Yes	Yes	No	Yes	Yes
Polydimethylsiloxane	63148-62-9	Yes	Yes	No	Yes	No
Silica, amorphous, fumed	112945-52-5	Yes	Yes	No	Yes	No
Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	68457-79-4	Yes	Yes	No	Yes	Yes
Zinc powder, stabilized	7440-66-6	Yes	Yes	No	Yes	Yes

Inventory (Con't.)				
Component	CAS	EU ELNICS	Japan ENCS	TSCA
Asphalt	8052-42-4	No	Yes	Yes
Copper oxide	1317-38-0	No	Yes	Yes
Crystalline silica	14808-60-7	No	Yes	Yes
Graphite	7782-42-5	No	No	Yes
Lead, powder	7439-92-1	No	No	Yes
Polydimethylsiloxane	63148-62-9	No	No	Yes
Silica, amorphous, fumed	112945-52-5	No	Yes	No

Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	68457-79-4	No	Yes	Yes
Zinc powder, stabilized	7440-66-6	No	No	Yes

## United States - California

### Environment

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

•Polydimethylsiloxane	63148-62-9	Not Listed
•Copper oxide	1317-38-0	Not Listed
•Lead, powder	7439-92-1	carcinogen, 10/1/1992
•Asphalt	8052-42-4	Not Listed
•Zinc powder, stabilized	7440-66-6	Not Listed
•Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	68457-79-4	Not Listed
•Crystalline silica	14808-60-7	Not Listed
•Silica, amorphous, fumed	112945-52-5	Not Listed
•Graphite	7782-42-5	Not Listed

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

•Polydimethylsiloxane	63148-62-9	Not Listed
•Copper oxide	1317-38-0	Not Listed
•Lead, powder	7439-92-1	developmental toxicity, 2/27/1987
•Asphalt	8052-42-4	Not Listed
•Zinc powder, stabilized	7440-66-6	Not Listed
•Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	68457-79-4	Not Listed
•Crystalline silica	14808-60-7	Not Listed
•Silica, amorphous, fumed	112945-52-5	Not Listed
•Graphite	7782-42-5	Not Listed

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

•Polydimethylsiloxane	63148-62-9	Not Listed
•Copper oxide	1317-38-0	Not Listed
•Lead, powder	7439-92-1	0.5 µg/day MADL
•Asphalt	8052-42-4	Not Listed
•Zinc powder, stabilized	7440-66-6	Not Listed
•Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	68457-79-4	Not Listed
•Crystalline silica	14808-60-7	Not Listed
•Silica, amorphous, fumed	112945-52-5	Not Listed
•Graphite	7782-42-5	Not Listed

#### U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

•Polydimethylsiloxane	63148-62-9	Not Listed
•Copper oxide	1317-38-0	Not Listed
•Lead, powder	7439-92-1	15 µg/day NSRL (oral)
•Asphalt	8052-42-4	Not Listed
•Zinc powder, stabilized	7440-66-6	Not Listed
•Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	68457-79-4	Not Listed
•Crystalline silica	14808-60-7	Not Listed
•Silica, amorphous, fumed	112945-52-5	Not Listed
•Graphite	7782-42-5	Not Listed

#### U.S. - California - Proposition 65 - Reproductive Toxicity - Female

•Polydimethylsiloxane	63148-62-9	Not Listed
•Copper oxide	1317-38-0	Not Listed
•Lead, powder	7439-92-1	female reproductive toxicity 2/27/87
•Asphalt	8052-42-4	Not Listed
•Zinc powder, stabilized	7440-66-6	Not Listed
•Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	68457-79-4	Not Listed
•Crystalline silica	14808-60-7	Not Listed
•Silica, amorphous, fumed	112945-52-5	Not Listed
•Graphite	7782-42-5	Not Listed

#### U.S. - California - Proposition 65 - Reproductive Toxicity - Male

•Polydimethylsiloxane	63148-62-9	Not Listed
•Copper oxide	1317-38-0	Not Listed

•Lead, powder	7439-92-1	male reproductive toxicity, 2/27/87
•Asphalt	8052-42-4	Not Listed
•Zinc powder, stabilized	7440-66-6	Not Listed
•Zinc O,O-bis(mixed iso-butyl and pentyl) phosphorodithioate	68457-79-4	Not Listed
•Crystalline silica	14808-60-7	Not Listed
•Silica, amorphous, fumed	112945-52-5	Not Listed
•Graphite	7782-42-5	Not Listed

## 15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

## 15.3 Other Information

- WARNING: This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

## Section 16 - Other Information

### Relevant Phrases (code & full text)

- H350i - May cause cancer by inhalation.
- H360FD - May damage fertility. May damage the unborn child.
- H411 - Toxic to aquatic life with long lasting effects

### Revision Date

- 10/October/2018

### Last Revision Date

- 10/October/2018

### Preparation Date

- 10/October/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