Safety Data Sheet

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

1.1 Product identifier
Product Name: Ceramic Coated Roofing Granules

1.2 Relevant identified uses of the substance or mixture and uses advised against
Relevant identified use(s): Roofing

1.3 Details of the supplier of the safety data sheet
Manufacturer: Firestone Building Products Company
250 West 96th Street
Indianapolis, IN 46260
United States

firestonemsds@bfdp.com

Telephone (General): 800-428-4442

1.4 Emergency telephone number
Manufacturer: (800) 424-9300 - CHEMTREC
Manufacturer: (703) 527-3887 - CHEMTREC - International

Section 2: Hazards Identification

EU/EEC
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture
CLP
- Carcinogenicity 1A - H350
- Specific Target Organ Toxicity Repeated Exposure 1 - H372
- Hazardous to the aquatic environment Chronic 3 - H412

DSD/DPD
- Toxic (T)
- Carcinogenic Substances - Category 1
- R49, R48/20, R52, R53

2.2 Label Elements
CLP
DANGER

Hazard statements
- H350 - May cause cancer.
- H372 - Causes damage to organs - Lungs through prolonged or repeated exposure via Unreported Route
- H412 - Harmful 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 dust.
- P264 - Wash thoroughly after handling.
- P270 - Do not eat, drink or smoke when using this product.
- P273 - Avoid release to the environment.
- P281 - Use personal protective equipment as required.

Response
- P308+P313 - IF exposed or concerned: Get medical advice/attention.
- P314 - Get medical advice/attention if you feel unwell.

Storage/Disposal
- P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD

Risk phrases
- R49 - May cause cancer by inhalation.
- R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
- R52 - Harmful to aquatic organisms.
- R53 - May cause long-term adverse effects in the aquatic environment.

Safety phrases
- S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S53 - Avoid exposure - obtain special instructions before use.

2.3 Other Hazards

CLP
- According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD
- According to European Directive 1999/45/EC this preparation is considered dangerous.

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

2.1 Classification of the substance or mixture

OSHA HCS 2012
- Carcinogenicity 1A - H350
- Specific Target Organ Toxicity Repeated Exposure 1 - H372

2.2 Label elements

OSHA HCS 2012

DANGER

Hazard statements
- May cause cancer. - H350
- Causes damage to organs - Lungs through prolonged or repeated exposure via inhalation - H372

Precautionary statements

Prevention
- Obtain special instructions before use. - P201
- Do not handle until all safety precautions have been read and understood. - P202
- Do not breathe dust. - P260
- Wash thoroughly after handling. - P264
- Do not eat, drink or smoke when using this product. - P270
- Wear protective gloves/protective clothing/eye protection/face protection. - P280

Response
- IF exposed or concerned: Get medical advice/attention. - P308+P313
- Get medical advice/attention if you feel unwell. - P314
Storage/Disposal

Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 Other hazards

OSHA HCS 2012


Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS

- Other Toxic Effects - D2A

2.2 Label elements

WHMIS

- Other Toxic Effects - D2A

2.3 Other hazards

WHMIS

- 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 in accordance with Regulation (EC) No 1272/2008.

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>Rhyolite</td>
<td>NDA</td>
<td>53%</td>
<td>TO 68%</td>
<td>EU DSD/DPD: Data lacking \ EU CLP: Data lacking \ OSHA HCS 2012: Data lacking</td>
<td>NDA</td>
</tr>
<tr>
<td>Quartz</td>
<td>CAS:14808-60-7 \ EC Number:238-878-4</td>
<td>28%</td>
<td>TO 44%</td>
<td>EU DSD/DPD: Self Classified: Carc. 1 \ R49; T, R48/20 \ EU CLP: Self Classified: Carc. 1A, H350; STOT RE 1, H372 \ OSHA HCS 2012: Carc. 1A; STOT RE 1 (Lungs, Inhalation)</td>
<td>NDA</td>
</tr>
<tr>
<td>Ceramic</td>
<td>NDA</td>
<td>1%</td>
<td>TO 5%</td>
<td>EU DSD/DPD: Data lacking \ EU CLP: Data lacking \ OSHA HCS 2012: Data lacking</td>
<td>NDA</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>CAS:13463-67-7 \ EC Number:236-675-5</td>
<td>&lt; 3%</td>
<td>NDA</td>
<td>EU DSD/DPD: Self Classified: Carc. 3, Xn, R40 \ EU CLP: Self Classified: Carc. 2, H351 \ OSHA HCS 2012: Carc. 2</td>
<td>NDA</td>
</tr>
</tbody>
</table>
### Section 4 - First Aid Measures

4.1 Description of first aid measures

#### Inhalation
- Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

#### Skin
- In case of contact with substance, immediately flush skin with running water for at least 20 minutes. If irritation develops and persists, get medical attention.

#### Eye
- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

#### Ingestion
- Drink 1 - 2 glasses of water. Get medical attention if symptoms occur.

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
- LARGE FIRE: Water spray, fog or regular foam.
- SMALL FIRES: Dry chemical, CO2, water spray or regular foam.

#### Unsuitable Extinguishing Media
- No data available.
Media
5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Material is non-combustible and is not expected to pose a fire or explosion hazard.

Hazardous Combustion Products
- None known.

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

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions
- Do not walk through spilled material. Avoid generating dust. Do not breathe dust. Wear appropriate personal protective equipment.

Emergency Procedures
- In the event of a major spill, wet down material with water to prevent dusting, followed by scooping up product for disposal.

6.2 Environmental precautions
- Do not flush to sewer or allow to enter waterways.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures
- Avoid generating dust. Wet down material with water prior to cleanup to control dust.
  SMALL DRY SPILLS: With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.
  LARGE SPILLS: Cover powder spill with plastic sheet or tarp to minimize spreading. Flush spill area with water spray.

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
- Do not use in areas without adequate ventilation. Minimize dust generation and accumulation. Wear appropriate personal protective equipment, avoid direct contact. 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
- Ventilate enclosed areas. Keep container closed.

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></th>
<th>Exposure Limits/Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACGIH</td>
</tr>
<tr>
<td>Carbon Black (1333-86-4)</td>
<td>TWAs</td>
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<tr>
<td>Compound</td>
<td>TWAs</td>
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</tr>
<tr>
<td>Chromium(III) oxide as Chromium (III) inorganic compounds</td>
<td>0.5 mg/m³ TWA (as Cr) as Chromium (III) inorganic compounds</td>
</tr>
<tr>
<td>Zinc oxide (1314-13-2)</td>
<td>10 mg/m³ STEL (respirable fraction) 10 mg/m³ STEL (fume)</td>
</tr>
<tr>
<td>Iron oxide (1309-37-1)</td>
<td>5 mg/m³ TWA (respirable fraction) 2 ppm TWA (as Fe, fume); 5 mg/m³ TWA (as Fe, fume)</td>
</tr>
<tr>
<td>Titanium dioxide (13463-67-7)</td>
<td>10 mg/m³ TWA</td>
</tr>
<tr>
<td>Quartz (14808-60-7)</td>
<td>0.025 mg/m³ TWA (respirable fraction) 0.1 mg/m³ TWA (alveolar dust)</td>
</tr>
<tr>
<td><strong>Exposure Limits/Guidelines (Con't.)</strong></td>
<td></td>
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<tr>
<td><strong>Result</strong></td>
<td>Canada New Brunswick</td>
</tr>
<tr>
<td>Carbon Black (1333-86-4)</td>
<td>TWA</td>
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<tr>
<td></td>
<td>STELs</td>
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<tr>
<td>Chromium(III) oxide as Chromium(III) compounds</td>
<td>TWAs</td>
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<tr>
<td></td>
<td>STELs</td>
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<tr>
<td>Substance</td>
<td>STELs</td>
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</tr>
<tr>
<td>Zinc oxide (1314-13-2)</td>
<td>10 mg/m³ STEL (fume)</td>
</tr>
<tr>
<td></td>
<td>10 mg/m³ STEL (fume)</td>
</tr>
<tr>
<td></td>
<td>2 mg/m³ TWA (respirable fraction)</td>
</tr>
</tbody>
</table>

| Iron oxide (1309-37-1)          | 5 mg/m³ TWA (particulate matter containing no Asbestos and <1% Crystalline silica, dust and fume, as Fe); 10 mg/m³ TWA (regulated under Rouge, particulate matter containing no Asbestos and <1% Crystalline silica) |
|                                 | 5 mg/m³ TWA (respirable mass); 10 mg/m³ TWA (total mass) |

| Titanium dioxide (13463-67-7)   | 10 mg/m³ TWA |
|                                 | 5 mg/m³ TWA (respirable mass); 10 mg/m³ TWA (total mass) |

| Quartz (14808-60-7)             | 0.1 mg/m³ TWA (respirable fraction) |
|                                 | 0.1 mg/m³ TWA (respirable mass); 0.3 mg/m³ TWA (total mass) |

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<tr>
<th>Exposure Limits/Guidelines (Con’t.)</th>
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<table>
<thead>
<tr>
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<th>Canada Saskatchewan</th>
<th>Canada Yukon</th>
<th>Denmark</th>
<th>Germany DFG</th>
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<tr>
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<td>TWAs</td>
<td>3.5 mg/m³ TWAEV</td>
<td>3.5 mg/m³ TWA</td>
<td>3.5 mg/m³ TWA</td>
<td>3.5 mg/m³ TWA</td>
<td>Not established</td>
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<tr>
<td></td>
<td>STELs</td>
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<td>Not established</td>
<td>7 mg/m³ STEL</td>
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<td>Chromium(III) oxide as Chromium(III) compounds</td>
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<td>0.5 mg/m³ TWAEV (as Cr)</td>
<td>0.5 mg/m³ TWA (as Cr)</td>
<td>Not established</td>
<td>Not established</td>
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<td></td>
<td>as Chromium(III) compounds</td>
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<tr>
<td>Zinc oxide (1314-13-2)</td>
<td>TWAs</td>
<td>10 mg/m³ TWAEV (containing no Asbestos and &lt;1% Crystalline silica, total dust); 5 mg/m³ TWA (fume)</td>
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<td></td>
<td>STELs</td>
<td>10 mg/m³ STEV (fume)</td>
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<td>Not established</td>
<td>10 mg/m³ TWA (fume); 20 mg/m³ STEL (dust)</td>
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<td>1 mg/m³ Peak (respirable fraction, fume)</td>
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<td>Not established</td>
<td>1 mg/m³ TWA MAK (fume, respirable fraction)</td>
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<td>5 mg/m³ TWAEV</td>
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<td>Substance</td>
<td>TWAs</td>
<td>STELs</td>
<td>Result</td>
<td>Germany TRGS</td>
<td>NIOSH</td>
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<tr>
<td>Iron oxide (1309-37-1)</td>
<td>(dust and fume, as Fe); 10 mg/m³ TWAEV (containing no Asbestos and &lt;1% Crystalline silica, regulated under Rouge, total dust)</td>
<td>Not established</td>
<td>5 mg/m³ TWA (dust and fume, as Fe); 10 mg/m³ TWA (regulated under Rouge)</td>
<td></td>
<td>3.5 mg/m³ TWA (as Fe)</td>
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<td>Titanium dioxide (13463-67-7)</td>
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<td></td>
<td>10 mg/m³ TWAEV (containing no Asbestos and &lt;1% Crystalline silica, total dust)</td>
<td>Not established</td>
<td>10 mg/m³ TWA (equals to 6 mg/m³ TWA (as Ti))</td>
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<td>Quartz (14808-60-7)</td>
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<td></td>
<td>0.1 mg/m³ TWAEV (respirable dust)</td>
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<td>0.05 mg/m³ TWA (respirable fraction, listed under Silica - crystalline)</td>
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<td>300 particle/mL TWA (listed under Silica)</td>
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**Exposure Limits/Guidelines (Cont.)**

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<thead>
<tr>
<th>Substance</th>
<th>TWAs</th>
<th>STELs</th>
<th>Result</th>
<th>Germany TRGS</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
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<tbody>
<tr>
<td>Carbon Black (1333-86-4)</td>
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<tr>
<td></td>
<td>TWAs</td>
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<td></td>
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<td></td>
<td>3.5 mg/m³ TWA; 0.1 mg/m³ TWA (Carbon black in presence of Polycyclic aromatic hydrocarbons, as PAH)</td>
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<td>Chromium(III) oxide as Chromium(III) compounds</td>
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<td>TWAs</td>
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<td></td>
<td>2 mg/m³ TWA AGW (inhalable fraction, exposure factor 1, listed under Chromium)</td>
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<td>Zinc oxide (1314-13-2)</td>
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<td>TWAs</td>
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<td></td>
<td>5 mg/m³ TWA (dust and fume)</td>
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<td>Iron oxide (1309-37-1)</td>
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<td></td>
<td>5 mg/m³ TWA (dust and fume, as Fe)</td>
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<tr>
<td>Titanium dioxide (13463-67-7)</td>
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<td>Quartz (14808-60-7)</td>
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<tr>
<td></td>
<td>TWAs</td>
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<td></td>
<td>0.05 mg/m³ TWA (respirable dust)</td>
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</tbody>
</table>

**Exposure Control Notations**

*Germany DFG*

- Carbon Black (1333-86-4): **Carcinogens**: (Category 3B (could be carcinogenic for man, inhalable fraction))
- Chromium(III) oxide as Chromium(III) inorganic compounds
- Zinc oxide (1314-13-2)
- Iron oxide (1309-37-1)
- Titanium dioxide (13463-67-7)
- Quartz (14808-60-7)
inhaleable fraction with the exception of ultra small particles)) | **Carcinogens:** (Category 1 (causes cancer in man, alveola fraction))
• Chromium(III) oxide as Chromium(III) compounds: **Sensitizers:** (skin sensitizer)

### 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**
  - Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149.
- **Eye/Face**
  - Wear safety goggles.
- **Skin/Body**
  - Wear appropriate gloves.

**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
- OSHA = Occupational Safety and Health Administration
- NIOSH = National Institute of Occupational Safety and Health
- STEL = Short Term Exposure Limits are based on 15-minute exposures
- TWA = Time-Weighted Average Exposure Value
- TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures
- ACGIH = American Conference of Governmental Industrial Hygiene

### Section 9 - Physical and Chemical Properties

#### 9.1 Information on Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Physical Form</th>
<th>Appearance/Description</th>
<th>General Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Form</strong></td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Black White Buff</td>
<td>Odor</td>
<td>Data lacking</td>
</tr>
<tr>
<td><strong>Particulate Type</strong></td>
<td>Dust</td>
<td>Odor Threshold</td>
<td>Data lacking</td>
</tr>
</tbody>
</table>

#### General Properties
- **Boiling Point**
  - Data lacking
- **Decomposition Temperature**
  - Data lacking
- **Specific Gravity/Relative Density**
  - 2.6 Water=1
- **Viscosity**
  - Data lacking
- **Oxidizing Properties**
  - Data lacking

#### Volatility
- **Vapor Pressure**
  - Data lacking
- **Evaporation Rate**
  - Data lacking

#### Flammability
- **Flash Point**
  - Data lacking
- **UEL**
  - Data lacking
- **LEL**
  - Data lacking
- **Autoignition**
  - 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 not indicated.

10.4 Conditions to avoid
- No data available

10.5 Incompatible materials
- No data available.

10.6 Hazardous decomposition products
- No data available.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz (28% TO 44%)</td>
<td>14808-60-7</td>
<td>Tumorigen/Carcinogen: ihl-rat TCLo:50 mg/m3/6H/71W-I</td>
</tr>
<tr>
<td>Chromium(III) oxide (&lt; 1%)</td>
<td>1308-38-9</td>
<td>Acute Toxicity: orl-mam LD50:621 mg/kg</td>
</tr>
<tr>
<td>Zinc oxide (&lt; 2%)</td>
<td>1314-13-2</td>
<td>Irritation: eye-rbt 500 mg/24H MLD; skn-rbt 500 mg/24H MLD; Reproductive: orl-rat TDL0:6846 mg/kg (1-22D preg)</td>
</tr>
<tr>
<td>Titanium dioxide (&lt; 3%)</td>
<td>13463-67-7</td>
<td>Irritation: skn-hmn 300 ug/3D-I MLD; Tumorigen/Carcinogen: ihl-rat TCL0:250 mg/m3/6H/2Y-I</td>
</tr>
<tr>
<td>Carbon Black (&lt; 1%)</td>
<td>1333-86-4</td>
<td>Acute Toxicity: orl-rat LD50:&gt;15400 mg/kg; Tumorigen/Carcinogen: ihl-rat TCL0:11600 ug/m3/3H/2Y-I</td>
</tr>
</tbody>
</table>

GHS Properties

<table>
<thead>
<tr>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
</tr>
<tr>
<td>EU/CLP: Classification criteria not met</td>
</tr>
<tr>
<td>OSHA HCS 2012: Classification criteria not met</td>
</tr>
<tr>
<td>Aspiration Hazard</td>
</tr>
<tr>
<td>EU/CLP: Classification criteria not met</td>
</tr>
<tr>
<td>OSHA HCS 2012: Classification criteria not met</td>
</tr>
<tr>
<td>Carcinogenicity</td>
</tr>
<tr>
<td>EU/CLP: Carcinogenicity 1A</td>
</tr>
<tr>
<td>OSHA HCS 2012: Carcinogenicity 1A</td>
</tr>
<tr>
<td>Germ Cell Mutagenicity</td>
</tr>
<tr>
<td>EU/CLP: Classification criteria not met</td>
</tr>
<tr>
<td>OSHA HCS 2012: Classification criteria not met</td>
</tr>
<tr>
<td>Skin corrosion/Irritation</td>
</tr>
<tr>
<td>EU/CLP: Classification criteria not met</td>
</tr>
<tr>
<td>OSHA HCS 2012: Classification criteria not met</td>
</tr>
<tr>
<td>Skin sensitization</td>
</tr>
<tr>
<td>EU/CLP: Classification criteria not met</td>
</tr>
<tr>
<td>OSHA HCS 2012: Classification criteria not met</td>
</tr>
<tr>
<td>STOT-RE</td>
</tr>
<tr>
<td>EU/CLP: Specific Target Organ Toxicity Repeated Exposure 1:Specific Target Organ Toxicity Repeated Exposure 2</td>
</tr>
<tr>
<td>OSHA HCS 2012: Specific Target Organ Toxicity Repeated Exposure 1</td>
</tr>
</tbody>
</table>
STOT-SE
EU/CLP • Classification criteria not met
OSHA HCS 2012 • Classification criteria not met

Toxicity for Reproduction
EU/CLP • Classification criteria not met
OSHA HCS 2012 • Classification criteria not met

Respiratory sensitization
EU/CLP • Classification criteria not met
OSHA HCS 2012 • Classification criteria not met

Serious eye damage/Irritation
EU/CLP • Classification criteria not met
OSHA HCS 2012 • Classification criteria not met

Route(s) of entry/exposure
• Inhalation, Skin, Eye, Ingestion

Medical Conditions Aggravated by Exposure
• Disorders of the lungs.

Potential Health Effects
Inhalation
Acute (Immediate)
• Exposure to dust may cause irritation. Processes such as cutting, grinding, crushing, or impact may result in generation of excessive amounts of airborne dusts in the workplace. Nuisance dust may affect the lungs but reactions are typically reversible.

Chronic (Delayed)
• Chronic overexposure to dust containing respirable sized crystalline silica can cause delayed lung injury (silicosis). Inhalation of dust containing crystalline silica pulmonary diseases such as asthma and lung disorder associated with smoking.

Skin
Acute (Immediate)
• Exposure to dust may cause mechanical irritation.

Chronic (Delayed)
• No data available.

Eye
Acute (Immediate)
• Exposure to dust may cause mechanical irritation. Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.

Chronic (Delayed)
• No data available.

Ingestion
Acute (Immediate)
• Excessive concentrations of nuisance dust in the workplace may cause mechanical irritation to mucous membranes.

Chronic (Delayed)
• No data available.

Carcinogenic Effects
• May cause cancer.

<table>
<thead>
<tr>
<th>Carcinogenic Effects</th>
<th>CAS</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>Group 2B-Possible Carcinogen</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>Group 1-Carcinogenic</td>
<td>Known Human Carcinogen</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>Group 2B-Possible Carcinogen</td>
<td>Evidence of Carcinogenicity</td>
</tr>
</tbody>
</table>

Key to abbreviations
LD  = Lethal Dose
MLD = Mild
TC  = Toxic Concentration

Section 12 - Ecological Information

12.1 Toxicity
Ceramic Coated Roofing Granules

<table>
<thead>
<tr>
<th>Dosage</th>
<th>Species</th>
<th>Duration</th>
<th>Results</th>
<th>Exposure Conditions</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 1 mg/L</td>
<td>Crustacea: Daphnia Magna</td>
<td>48 Hour(s)</td>
<td>EC50</td>
<td>NDA</td>
<td>Data for Zinc Oxide</td>
</tr>
<tr>
<td>≥ 0.04 mg/L</td>
<td>Crustacea: Daphnia Magna</td>
<td>48 Hour(s)</td>
<td>NOEC</td>
<td>NDA</td>
<td>Data for Zinc Oxide</td>
</tr>
</tbody>
</table>

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
- Harmful to aquatic life with long lasting effects.

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></th>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
<td>NDA</td>
<td>Not regulated</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
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<td>NDA</td>
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<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
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<tr>
<td>IMO/IMDG</td>
<td>NDA</td>
<td>Not regulated</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
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<tr>
<td>ADN</td>
<td>NDA</td>
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<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
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<tr>
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<td>NDA</td>
<td>NDA</td>
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<tr>
<td>IATA/ICAO</td>
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<td>Not regulated</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
</tr>
</tbody>
</table>

14.6 Special precautions for user
- None known.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
- Not relevant.

Section 15 - Regulatory Information

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

### Chronic

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>MA</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Chromium(III) oxide</td>
<td>1308-38-9</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Distillates (petroleum), hydrotreated middle</td>
<td>64742-46-7</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Beta-(3,4-epoxycyclohexyl) ethyliethoxysilane</td>
<td>10217-34-2</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>1314-13-2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rhyolite</td>
<td>NDA</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Ceramic</td>
<td>NDA</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>Canada DSL</th>
<th>Canada NDSL</th>
<th>EU EINECS</th>
<th>EU ELNICS</th>
<th>TSCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Chromium(III) oxide</td>
<td>1308-38-9</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Distillates (petroleum), hydrotreated middle</td>
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<td>Yes</td>
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<td>Yes</td>
</tr>
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<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>1314-13-2</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Rhyolite</td>
<td>NDA</td>
<td>No</td>
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<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Ceramic</td>
<td>NDA</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Belgium

**Labor**
- Belgium - Substances and Preparations - Carcinogens and Mutagens
  - Carbon Black 1333-86-4 Not Listed
  - Iron oxide 1309-37-1 Not Listed
  - Iron oxide as Iron compounds Not Listed
  - Titanium dioxide 13463-67-7 Not Listed
  - Zinc oxide 1314-13-2 Not Listed
  - Zinc oxide as Zinc compounds Not Listed
  - Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
  - Chromium(III) oxide 1308-38-9 Not Listed
  - Chromium(III) oxide as Chromium(III) compounds Not Listed
  - Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
Bulgaria

Environment

Bulgaria - Air Quality - Maximum Admissible Hazardous Contaminant Levels - 24 Hour

- Carbon Black 1333-86-4 Not Listed
- Iron oxide 1309-37-1 Not Listed
- Iron oxide as Iron compounds Not Listed
- Titanium dioxide 13463-67-7 Not Listed
- Zinc oxide 1314-13-2 Not Listed
- Zinc oxide as Zinc compounds Not Listed
- Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
- Chromium(III) oxide 1308-38-9 Not Listed
- Chromium(III) oxide as Chromium(III) compounds Not Listed
- Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
- Quartz 14808-60-7 Not Listed
- Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

Bulgaria - Air Quality - Maximum Admissible Hazardous Contaminant Levels - 30 Minute

- Carbon Black 1333-86-4 Not Listed
- Iron oxide 1309-37-1 Not Listed
- Iron oxide as Iron compounds Not Listed
- Titanium dioxide 13463-67-7 Not Listed
- Zinc oxide 1314-13-2 Not Listed
- Zinc oxide as Zinc compounds Not Listed
- Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
- Chromium(III) oxide 1308-38-9 Not Listed
- Chromium(III) oxide as Chromium(III) compounds Not Listed
- Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
- Quartz 14808-60-7 Not Listed
- Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

Bulgaria - Air Quality - Maximum Admissible Hazardous Contaminant Levels - Annual

- Carbon Black 1333-86-4 Not Listed
- Iron oxide 1309-37-1 Not Listed
- Iron oxide as Iron compounds Not Listed
- Titanium dioxide 13463-67-7 Not Listed
- Zinc oxide 1314-13-2 Not Listed
- Zinc oxide as Zinc compounds Not Listed
- Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
- Chromium(III) oxide 1308-38-9 Not Listed
- Chromium(III) oxide as Chromium(III) compounds Not Listed
- Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
- Quartz 14808-60-7 Not Listed
- Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

Canada

Labor

Canada - WHMIS - Classifications of Substances

- Carbon Black 1333-86-4 D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Carbon Black, non-respirable on Health Canada's WHMIS Division website.)
<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>Uncontrolled product according to WHMIS classification criteria</td>
</tr>
<tr>
<td>Iron oxide as Iron compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Titanium dioxide, mixture containing on Health Canada's WHMIS Division website.)</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>1314-13-2</td>
<td>Uncontrolled product according to WHMIS classification criteria</td>
</tr>
<tr>
<td>Zinc oxide as Zinc compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Distillates (petroleum), hydrotreated middle</td>
<td>64742-46-7</td>
<td>Uncontrolled product according to WHMIS classification criteria</td>
</tr>
<tr>
<td>Chromium(III) oxide</td>
<td>1308-38-9</td>
<td>Uncontrolled product according to WHMIS classification criteria</td>
</tr>
<tr>
<td>Chromium(III) oxide as Chromium (III) compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Chromium(III) oxide as Chromium (III) inorganic compounds</td>
<td></td>
<td>D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Silica, crystalline, encapsulated on Health Canada's WHMIS Division website.)</td>
</tr>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane</td>
<td>10217-34-2</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

**Canada - WHMIS - Ingredient Disclosure List**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>1 %</td>
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<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>1 %</td>
</tr>
<tr>
<td>Iron oxide as Iron compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>1314-13-2</td>
<td>1 %</td>
</tr>
<tr>
<td>Zinc oxide as Zinc compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Distillates (petroleum), hydrotreated middle</td>
<td>64742-46-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Chromium(III) oxide</td>
<td>1308-38-9</td>
<td>1 %</td>
</tr>
<tr>
<td>Chromium(III) oxide as Chromium (III) compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Chromium(III) oxide as Chromium (III) inorganic compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>1 %</td>
</tr>
<tr>
<td>Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane</td>
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<td>Not Listed</td>
</tr>
</tbody>
</table>

**Environment**

**Canada - CEPA - Priority Substances List**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
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</tr>
<tr>
<td>Iron oxide as Iron compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>1314-13-2</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Zinc oxide as Zinc compounds</td>
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<td>Not Listed</td>
</tr>
<tr>
<td>Distillates (petroleum), hydrotreated middle</td>
<td>64742-46-7</td>
<td>Not Listed</td>
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<tr>
<td>Chromium(III) oxide</td>
<td>1308-38-9</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Chromium(III) oxide as Chromium (III) compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Chromium(III) oxide as Chromium (III) inorganic compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane</td>
<td>10217-34-2</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

**Denmark**

**Environment**

**Denmark - List of Undesirable Substances - Product Groups/Function**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>Not Listed</td>
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</table>

Preparation Date: 04/January/2012
Revision Date: 21/August/2013

Page 15 of 26
• Iron oxide as Iron compounds  Not Listed
• Titanium dioxide  13463-67-7  Not Listed
• Zinc oxide  1314-13-2  Not Listed
• Zinc oxide as Zinc compounds  Not Listed
• Distillates (petroleum), hydrotreated middle  64742-46-7  Not Listed
• Chromium(III) oxide  1308-38-9  Not Listed
• Chromium(III) oxide as Chromium(III) compounds  Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds  Not Listed
• Quartz  14808-60-7  Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane  10217-34-2  Not Listed

Europe

Other
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification
• Carbon Black  1333-86-4  Not Listed
• Iron oxide  1309-37-1  Not Listed
• Iron oxide as Iron compounds  Not Listed
• Titanium dioxide  13463-67-7  Not Listed
• Zinc oxide  1314-13-2  N; R50-53
• Zinc oxide as Zinc compounds  Not Listed
• Distillates (petroleum), hydrotreated middle  64742-46-7  Carc.Cat.2; R45
• Chromium(III) oxide  1308-38-9  Not Listed
• Chromium(III) oxide as Chromium(III) compounds  Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds  Not Listed
• Quartz  14808-60-7  Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane  10217-34-2  R43 R52-53

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits
• Carbon Black  1333-86-4  Not Listed
• Iron oxide  1309-37-1  Not Listed
• Iron oxide as Iron compounds  Not Listed
• Titanium dioxide  13463-67-7  Not Listed
• Zinc oxide  1314-13-2  Not Listed
• Zinc oxide as Zinc compounds  Not Listed
• Distillates (petroleum), hydrotreated middle  64742-46-7  Not Listed
• Chromium(III) oxide  1308-38-9  Not Listed
• Chromium(III) oxide as Chromium(III) compounds  Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds  Not Listed
• Quartz  14808-60-7  Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane  10217-34-2  Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling
• Carbon Black  1333-86-4  Not Listed
• Iron oxide  1309-37-1  Not Listed
• Iron oxide as Iron compounds  Not Listed
• Titanium dioxide  13463-67-7  Not Listed
• Zinc oxide  1314-13-2  N R:50/53 S:60-61
• Zinc oxide as Zinc compounds  Not Listed
• Distillates (petroleum), hydrotreated middle  64742-46-7  T R:45 S:53-45
• Chromium(III) oxide  1308-38-9  Not Listed
• Chromium(III) oxide as Chromium(III) compounds  Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds  Not Listed
• Quartz  14808-60-7  Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Xi R:43-52/53 S:(2)-24-37-61

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 N
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 S:60-61
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 S:53-45
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 S:(2)-24-37-61

Germany

Labor

Germany - Immission Control - Qualifying Quantities for Major Accident Prevention

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

Germany - Immission Control - Qualifying Quantities for Safety Reporting

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - TRGS 505 - Specific Lead Regulations**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - TRGS 511 - Specific Ammonium Nitrate Regulations**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Environment**

**Germany - TA Luft - Types and Classes**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - TA Luft - Emission Limits for Carcinogenic Substances**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - TA Luft - Emission Limits for Fibers**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - TA Luft - Emission Limits for Inorganic Dusts**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - TA Luft - Emission Limits for Inorganic Gases**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - TA Luft - Emission Limits for Organic Substances**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed

• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - Water Classification (VwVwS) - Annex 1**

• Carbon Black 1333-86-4 ID Number 1742, not considered hazardous to water
• Iron oxide 1309-37-1 ID Number 800, not considered hazardous to water
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 ID Number 1345, not considered hazardous to water
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 ID Number 806, not considered hazardous to water
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 ID Number 849, not considered hazardous to water
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 ID Number 5350, hazard class 1 - low hazard to waters
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

**Germany - Water Classification (VwVwS) - Annex 3**

• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 ID Number 2187, hazard class 2 - hazard to waters
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 ID Number 849, not considered hazardous to water
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed
## United States

### Labor

**U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals**
- Carbon Black: 1333-86-4, Not Listed
- Iron oxide: 1309-37-1, Not Listed
- Iron oxide as Iron compounds: Not Listed
- Titanium dioxide: 13463-67-7, Not Listed
- Zinc oxide: 1314-13-2, Not Listed
- Zinc oxide as Zinc compounds: Not Listed
- Distillates (petroleum), hydrotreated middle: 64742-46-7, Not Listed
- Chromium(III) oxide: 1308-38-9, Not Listed
- Chromium(III) oxide as Chromium(III) compounds: Not Listed
- Chromium(III) oxide as Chromium (III) inorganic compounds: Not Listed
- Quartz: 14808-60-7, Not Listed
- Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane: 10217-34-2, Not Listed

**U.S. - OSHA - Specifically Regulated Chemicals**
- Carbon Black: 1333-86-4, Not Listed
- Iron oxide: 1309-37-1, Not Listed
- Iron oxide as Iron compounds: Not Listed
- Titanium dioxide: 13463-67-7, Not Listed
- Zinc oxide: 1314-13-2, Not Listed
- Zinc oxide as Zinc compounds: Not Listed
- Distillates (petroleum), hydrotreated middle: 64742-46-7, Not Listed
- Chromium(III) oxide: 1308-38-9, Not Listed
- Chromium(III) oxide as Chromium(III) compounds: Not Listed
- Chromium(III) oxide as Chromium (III) inorganic compounds: Not Listed
- Quartz: 14808-60-7, Not Listed
- Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane: 10217-34-2, Not Listed

### Environment

**U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**
- Carbon Black: 1333-86-4, Not Listed
- Iron oxide: 1309-37-1, Not Listed
- Iron oxide as Iron compounds: Not Listed
- Titanium dioxide: 13463-67-7, Not Listed
- Zinc oxide: 1314-13-2, Not Listed
- Zinc oxide as Zinc compounds: Not Listed
- Distillates (petroleum), hydrotreated middle: 64742-46-7, Not Listed
- Chromium(III) oxide: 1308-38-9, Not Listed
- Chromium(III) oxide as Chromium(III) compounds: Not Listed
- Chromium(III) oxide as Chromium (III) inorganic compounds: Not Listed
- Quartz: 14808-60-7, Not Listed
- Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane: 10217-34-2, Not Listed

**U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities**
- Carbon Black: 1333-86-4, Not Listed
- Iron oxide: 1309-37-1, Not Listed
- Iron oxide as Iron compounds: Not Listed
- Titanium dioxide: 13463-67-7, Not Listed
- Zinc oxide: 1314-13-2, Not Listed
- Zinc oxide as Zinc compounds: Not Listed
- Distillates (petroleum), hydrotreated middle: 64742-46-7, Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities
• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs
• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs
• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting
• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
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<th>Chemical</th>
<th>CAS Number</th>
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<tr>
<td>Zinc oxide as Zinc compounds</td>
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<td>Not Listed</td>
</tr>
<tr>
<td>Distillates (petroleum), hydrotreated middle</td>
<td>64742-46-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Chromium(III) oxide</td>
<td>1308-38-9</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Chromium(III) oxide as Chromium(III) compounds</td>
<td></td>
<td>1.0 % de minimis concentration (except for Chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the Chromite ore processing residue (COPR), Chemical Category N090)</td>
</tr>
<tr>
<td>Chromium(III) oxide as Chromium (III) inorganic compounds</td>
<td></td>
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</tr>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane</td>
<td>10217-34-2</td>
<td>Not Listed</td>
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**U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing**

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<th>Chemical</th>
<th>CAS Number</th>
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<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Iron oxide as Iron compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>1314-13-2</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Zinc oxide as Zinc compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Distillates (petroleum), hydrotreated middle</td>
<td>64742-46-7</td>
<td>Not Listed</td>
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<tr>
<td>Chromium(III) oxide</td>
<td>1308-38-9</td>
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<td>Chromium(III) oxide as Chromium(III) compounds</td>
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<td>Chromium(III) oxide as Chromium (III) inorganic compounds</td>
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<td>Not Listed</td>
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<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane</td>
<td>10217-34-2</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

**United States - California**

**Environment**

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

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
<th>List Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>carcinogen, initial date 2/21/03 (airborne, unbound particles of respirable size)</td>
</tr>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Iron oxide as Iron compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>carcinogen, initial date 9/2/11 (airborne, unbound particles of respirable size)</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>1314-13-2</td>
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<td>Zinc oxide as Zinc compounds</td>
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<td>Not Listed</td>
</tr>
<tr>
<td>Distillates (petroleum), hydrotreated middle</td>
<td>64742-46-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Chromium(III) oxide</td>
<td>1308-38-9</td>
<td>Not Listed</td>
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<tr>
<td>Chromium(III) oxide as Chromium(III) compounds</td>
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<td>Not Listed</td>
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<tr>
<td>Chromium(III) oxide as Chromium (III) inorganic compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>carcinogen, initial date 10/1/88 (airborne particles of respirable size)</td>
</tr>
<tr>
<td>Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane</td>
<td>10217-34-2</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
<th>List Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Iron oxide as Iron compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>1314-13-2</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Zinc oxide as Zinc compounds</td>
<td></td>
<td>Not Listed</td>
</tr>
<tr>
<td>Distillates (petroleum), hydrotreated middle</td>
<td>64742-46-7</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)
• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)
• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female
• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 Not Listed
• Zinc oxide as Zinc compounds Not Listed
• Distillates (petroleum), hydrotreated middle 64742-46-7 Not Listed
• Chromium(III) oxide 1308-38-9 Not Listed
• Chromium(III) oxide as Chromium(III) compounds Not Listed
• Chromium(III) oxide as Chromium (III) inorganic compounds Not Listed
• Quartz 14808-60-7 Not Listed
• Beta-(3,4-epoxycyclohexyl)ethyltriethoxysilane 10217-34-2 Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male
• Carbon Black 1333-86-4 Not Listed
• Iron oxide 1309-37-1 Not Listed
• Iron oxide as Iron compounds Not Listed
• Titanium dioxide 13463-67-7 Not Listed
• Zinc oxide 1314-13-2 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.

Section 16 - Other Information

Last Revision Date: 21/August/2013
Preparation Date: 04/January/2012
Disclaimer/Statement of Liability:
- The information contained herein is based on data considered accurate which has been obtained from other companies and organizations. However, no warranty or representation is expressed or implied that the information, is accurate, complete or
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**Key to abbreviations**
NDA = No data available