SAFETY DATA SHEET

Spent Potlining

Mixed 1st and 2nd cut SPL, Used potliner, Spent cathodes, Spent Cell Liner, SCL, Spent Cell Lining, Spent Pot Liner, Pot Bottoms.

Solid.

Product name: Spent Potlining
Product code: 215
Other means of identification: Mixed 1st and 2nd cut SPL, Used potliner, Spent cathodes, Spent Cell Liner, SCL, Spent Cell Lining, Spent Pot Liner, Pot Bottoms.
Product type: Solid.

Relevant identified uses of the substance or mixture and uses advised against
Material uses: waste

Supplier's details: Rio Tinto Aluminium
400-1190 Avenue des Canadiens-de-Montréal, Montreal, Quebec H3B 0E3, Canada
Telephone: +1 514 848 8000

e-mail address of person responsible for this SDS: rta.msds@riotinto.com

Emergency telephone number: +1 215 207 0061 (Rio Tinto Aluminium)
For advice on chemical emergencies, spillages, fires or first aid.

Section 2. Hazards identification

OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture: SUBSTANCES AND MIXTURES, WHICH IN CONTACT WITH WATER, EMIT FLAMMABLE GASES - Category 3
ACUTE TOXICITY (oral) - Category 4
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
CARCINOGENICITY - Category 1
TOXIC TO REPRODUCTION - Effects on or via lactation
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) - Category 1

GHS label elements
Hazard pictograms: •

Signal word: Danger

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Version: 1.01

Section 2. Hazards identification

Hazard statements:
In contact with water releases flammable gas. Harmful if swallowed. Causes serious eye irritation. Causes skin irritation. May cause cancer. May cause harm to breast-fed children. Causes damage to organs through prolonged or repeated exposure. (lungs)

Precautionary statements:

Prevention:
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Protect from moisture. Handle under inert gas. Do not breathe dust. Avoid contact during pregnancy or while nursing. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response:
Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. 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 attention.

Storage:
Store locked up. Store in a dry place. Store in a closed container.

Disposal:
Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hazard not otherwise classified:
Contact with acids release toxic gases: hydrogen cyanide (HCN), sulfides (H2S) and fluorides (HF). Causes skin, eye and upper respiratory tract irritation. Dust may cause damage to organs through prolonged or repeated exposure.

Depending on the type of handling and use (e.g. grinding, drying), airborne respirable crystalline silica (quartz - cristobalite) may be generated. Prolonged and/or massive inhalation of respirable crystalline silica dust may cause lung fibrosis, commonly referred to as silicosis. Principal symptoms of silicosis are cough and breathlessness. Occupational exposure to respirable crystalline silica dust should be monitored and controlled.

Section 3. Composition/information on ingredients

Substance/mixture: Mixture

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>carbon</td>
<td>15 - 80</td>
<td>7440-44-0</td>
</tr>
<tr>
<td>aluminium oxide</td>
<td>&lt;30</td>
<td>1344-28-1</td>
</tr>
<tr>
<td>sodium fluoride</td>
<td>5 - 20</td>
<td>7681-49-4</td>
</tr>
<tr>
<td>trisodium hexafluoroaluminate</td>
<td>5 - 20</td>
<td>13775-53-6</td>
</tr>
<tr>
<td>andalusite</td>
<td>&lt;10</td>
<td>12183-80-1</td>
</tr>
<tr>
<td>Silicic acid, aluminum sodium salt</td>
<td>1 - 10</td>
<td>1344-00-9</td>
</tr>
<tr>
<td>silicon carbide</td>
<td>0 - 10</td>
<td>409-21-2</td>
</tr>
<tr>
<td>Aluminum</td>
<td>&lt;5</td>
<td>7429-90-5</td>
</tr>
<tr>
<td>Quartz (SiO2)</td>
<td>&lt;5</td>
<td>14808-60-7</td>
</tr>
<tr>
<td>Trilithium hexafluoroaluminate</td>
<td>0 - 4</td>
<td>13821-20-0</td>
</tr>
<tr>
<td>tetraaluminium tricarbide</td>
<td>&lt;2</td>
<td>1299-86-1</td>
</tr>
<tr>
<td>diron trioxide</td>
<td>&lt;2</td>
<td>1309-37-1</td>
</tr>
<tr>
<td>Lithium fluoride</td>
<td>0 - 2.5</td>
<td>7789-24-4</td>
</tr>
<tr>
<td>aluminium nitride</td>
<td>0 - 2</td>
<td>24304-00-5</td>
</tr>
<tr>
<td>beryllium</td>
<td>&lt;0.005</td>
<td>7440-41-7</td>
</tr>
</tbody>
</table>

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Section 3. Composition/information on ingredients

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Additional information

See annex for more detailed composition.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention if irritation occurs.

Inhalation: Get medical attention immediately. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact: Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 20 minutes. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion: Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact: Causes serious eye irritation.

Inhalation: Toxic by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact: Causes skin irritation.

Ingestion: Toxic if swallowed. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact: Adverse symptoms may include the following:
- pain or irritation
- watering
- redness

Inhalation: Adverse symptoms may include the following:
- reduced fetal weight
- increase in fetal deaths
- skeletal malformations

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Section 4. First aid measures

**Skin contact**
Adverse symptoms may include the following:
- irritation
- redness
- reduced fetal weight
- increase in fetal deaths
- skeletal malformations

**Ingestion**
Adverse symptoms may include the following:
- reduced fetal weight
- increase in fetal deaths
- skeletal malformations
- May cause harm to breast-fed children.

**Protection of first-aiders**
No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Gloves should be worn when removing clothing to prevent additional exposure.

**Notes to physician**
In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

**Specific treatments**
No specific treatment.

**Indication of immediate medical attention and special treatment needed, if necessary**

**See toxicological information (Section 11)**

Section 5. Fire-fighting measures

**Extinguishing media**

**Suitable extinguishing media**
Use dry chemical or CO₂. Cover with dry earth, sand or other non-combustible material.

**Unsuitable extinguishing media**
Do not use water or foam.

**Specific hazards arising from the chemical**
In contact with water releases flammable gas. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

**Hazardous thermal decomposition products**
Decomposition products may include the following materials:
- carbon dioxide
- carbon monoxide
- nitrogen oxides
- halogenated compounds
- metal oxide/oxides
- sulfur oxides

**Special protective actions for fire-fighters**
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters**
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Keep away from water. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

For emergency responders: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill: Recycle, if possible. Avoid allowing the spilled material to get wet or using water to clean up spillages or residues, unless the quantity remaining is very small. If material is wet: Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Waste must be disposed of according to applicable regulations.

Large spill: Recycle, if possible. Approach release from upwind. Avoid allowing the spilled material to get wet or using water to clean up spillages or residues, unless the quantity remaining is very small. If material is wet: Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Waste must be disposed of according to applicable regulations.

Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures: Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid contact during pregnancy or while nursing. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Handle under inert gas. Use only with adequate ventilation. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Protect from moisture. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities: Store in accordance with local regulations. Store locked up. Keep away from water or moist air. Store so as to avoid dust generation and dispersal.
## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>carbon</td>
<td>None.</td>
</tr>
<tr>
<td>aluminium oxide</td>
<td>NIOSH REL (United States, 10/2016). TWA: 5 mg/m³, (as Al) 10 hours. Form: PYRO POWDERS AND WELDING FUMES</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>ACGIH TLV (United States, 3/2018). TWA: 15 mg/m³ 8 hours. Form: Total dust</td>
</tr>
<tr>
<td>sodium fluoride</td>
<td>ACGIH TLV (United States, 3/2018). TWA: 2.5 mg/m³, (as F) 8 hours.</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL (United States, 10/2016). TWA: 2.5 mg/m³, (as F) 10 hours.</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL (United States, 5/2018). TWA: 2.5 mg/m³, (as F) 8 hours.</td>
</tr>
<tr>
<td>trisodium hexafluoroaluminate</td>
<td>ACGIH TLV (United States, 3/2018). TWA: 1 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td>andalusite</td>
<td>None.</td>
</tr>
<tr>
<td>Silicic acid, aluminum sodium salt</td>
<td>ACGIH TLV (United States, 3/2018). TWA: 1 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td>silicon carbide</td>
<td>ACGIH TLV (United States, 3/2018). TWA: 10 mg/m³ 8 hours. Form: Inhalable fraction</td>
</tr>
<tr>
<td></td>
<td>TWA: 0.1 f/cc 8 hours. Form: Respirable fibers: length greater than 5 µm, aspect ratio equal to or greater than 3:1 as determined by the membrane filter method at 400-450X magnification (4-mm objective) phase contrast illumination.</td>
</tr>
<tr>
<td></td>
<td>TWA: 3 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL (United States, 10/2016). TWA: 5 mg/m³ 10 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>TWA: 10 mg/m³ 10 hours. Form: Total</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>ACGIH TLV (United States, 3/2018). TWA: 15 mg/m³ 8 hours. Form: Total dust</td>
</tr>
<tr>
<td>Aluminum.</td>
<td>ACGIH TLV (United States, 3/2018). TWA: 1 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL (United States, 10/2016). TWA: 5 mg/m³ 10 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>TWA: 10 mg/m³ 10 hours. Form: Total</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³, (as Al) 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>TWA: 15 mg/m³, (as Al) 8 hours. Form: Total dust</td>
</tr>
<tr>
<td>Quartz (SiO2)</td>
<td>OSHA PEL Z3 (United States, 6/2016). TWA: 250 mppcf / (%SiO2+5) 8 hours. Form: Respirable</td>
</tr>
<tr>
<td></td>
<td>TWA: 10 mg/m³ / (%SiO2+2) 8 hours. Form: Respirable</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL (United States, 5/2018). TWA: 50 µg/m³ 8 hours. Form: Respirable dust</td>
</tr>
<tr>
<td></td>
<td>ACGIH TLV (United States, 3/2018).</td>
</tr>
</tbody>
</table>
## Section 8. Exposure controls/personal protection

<table>
<thead>
<tr>
<th>Substance</th>
<th>Recommended monitoring procedures</th>
</tr>
</thead>
</table>
| Trilithium hexafluoroaluminate | TWA: 0.025 mg/m³ 8 hours. Form: Respirable fraction  
NIOSH REL (United States, 10/2016).  
TWA: 0.05 mg/m³ 10 hours. Form: respirable dust.  
Rio Tinto recommended OEL (United States, 4/2015).  
TWA: 0.5 mg/m³, (as F) 8 hours.  
None. |
| Tetraaluminium tricarbide | NIOSH REL (United States, 10/2016).  
TWA: 5 mg/m³, (as Fe) 10 hours. Form: Dust and fumes  
OSHA PEL (United States, 5/2018).  
TWA: 10 mg/m³ 8 hours.  
ACGIH TLV (United States, 3/2018).  
TWA: 2.5 mg/m³ 8 hours. Form: Respirable fraction  
OSHA PEL (United States, 5/2018).  
TWA: 2.5 mg/m³, (as F) 8 hours.  
Rio Tinto recommended OEL (United States, 4/2015).  
TWA: 0.5 mg/m³, (as F) 8 hours.  
OSHA PEL Z2 (United States, 2/2013).  
TWA: 2.5 mg/m³ 8 hours. Form: Dust  
None.  
ACGIH TLV (United States, 3/2018). Inhalation sensitizer.  
TWA: 0.00005 mg/m³, (as Be) 8 hours. Form: Inhalable fraction  
OSHA PEL Z2 (United States, 2/2013).  
TWA: 2 mg/m³ 8 hours.  
CEIL: 5 mg/m³  
AMP: 25 mg/m³ 30 minutes.  
NIOSH REL (United States, 6/2009).  
TWA: 0.0005 mg/m³, (as Be) 10 hours.  
NIOSH REL (United States, 10/2016).  
CEIL: 0.0005 mg/m³, (as Be)  
OSHA PEL (United States, 5/2018).  
TWA: 0.2 µg/m³, (as Be) 8 hours.  
STEL: 2 µg/m³, (as Be) 15 minutes. |
| Diiron trioxide | TWA: 0.5 mg/m³, (as F) 8 hours.  
OSHA PEL (United States, 5/2018).  
TWA: 10 mg/m³ 8 hours.  
ACGIH TLV (United States, 3/2018).  
TWA: 5 mg/m³, (as Fe) 10 hours. Form: Dust and fumes  
OSHA PEL (United States, 5/2018).  
TWA: 2.5 mg/m³, (as F) 8 hours.  
Rio Tinto recommended OEL (United States, 4/2015).  
TWA: 0.5 mg/m³, (as F) 8 hours.  
OSHA PEL Z2 (United States, 2/2013).  
TWA: 2.5 mg/m³ 8 hours. Form: Dust  
None.  
ACGIH TLV (United States, 3/2018). Inhalation sensitizer.  
TWA: 0.00005 mg/m³, (as Be) 8 hours. Form: Inhalable fraction  
OSHA PEL Z2 (United States, 2/2013).  
TWA: 2 mg/m³ 8 hours.  
CEIL: 5 mg/m³  
AMP: 25 mg/m³ 30 minutes.  
NIOSH REL (United States, 6/2009).  
TWA: 0.0005 mg/m³, (as Be) 10 hours.  
NIOSH REL (United States, 10/2016).  
CEIL: 0.0005 mg/m³, (as Be)  
OSHA PEL (United States, 5/2018).  
TWA: 0.2 µg/m³, (as Be) 8 hours.  
STEL: 2 µg/m³, (as Be) 15 minutes. |
| Lithium fluoride | TWA: 2.5 mg/m³ 8 hours. Form: Respirable fraction  
ACGIH TLV (United States, 3/2018).  
TWA: 2.5 mg/m³, (as F) 8 hours.  
OSHA PEL (United States, 5/2018).  
TWA: 2.5 mg/m³, (as F) 8 hours.  
Rio Tinto recommended OEL (United States, 4/2015).  
TWA: 0.5 mg/m³, (as F) 8 hours.  
OSHA PEL Z2 (United States, 2/2013).  
TWA: 2.5 mg/m³ 8 hours. Form: Dust  
None.  
ACGIH TLV (United States, 3/2018). Inhalation sensitizer.  
TWA: 0.00005 mg/m³, (as Be) 8 hours. Form: Inhalable fraction  
OSHA PEL Z2 (United States, 2/2013).  
TWA: 2 mg/m³ 8 hours.  
CEIL: 5 mg/m³  
AMP: 25 mg/m³ 30 minutes.  
NIOSH REL (United States, 6/2009).  
TWA: 0.0005 mg/m³, (as Be) 10 hours.  
NIOSH REL (United States, 10/2016).  
CEIL: 0.0005 mg/m³, (as Be)  
OSHA PEL (United States, 5/2018).  
TWA: 0.2 µg/m³, (as Be) 8 hours.  
STEL: 2 µg/m³, (as Be) 15 minutes. |
| Aluminium nitride | TWA: 2.5 mg/m³ 8 hours. Form: Dust  
None.  
ACGIH TLV (United States, 3/2018). Inhalation sensitizer.  
TWA: 0.00005 mg/m³, (as Be) 8 hours. Form: Inhalable fraction  
OSHA PEL Z2 (United States, 2/2013).  
TWA: 2 mg/m³ 8 hours.  
CEIL: 5 mg/m³  
AMP: 25 mg/m³ 30 minutes.  
NIOSH REL (United States, 6/2009).  
TWA: 0.0005 mg/m³, (as Be) 10 hours.  
NIOSH REL (United States, 10/2016).  
CEIL: 0.0005 mg/m³, (as Be)  
OSHA PEL (United States, 5/2018).  
TWA: 0.2 µg/m³, (as Be) 8 hours.  
STEL: 2 µg/m³, (as Be) 15 minutes. |
| Beryllium | TWA: 0.2 µg/m³, (as Be) 8 hours.  
STEL: 2 µg/m³, (as Be) 15 minutes. |

**Recommended monitoring procedures:** A recommended practice for persons with continual high exposure to this dust is, aside from appropriate protective clothing and use of a NIOSH and/or CEN approved respiratory protective device, to undergo a periodic medical examination by a physician specialized in occupational medicine. This exam may include the measurement of urinary fluoride levels.

ACGIH recommends that pre-shift urinary fluorides levels should not exceed 2 mg/g of creatinine and post-shift should not exceed 3 mg/g of creatinine for an 8 hour shift.

Medical surveillance for beryllium is recommended for employees exposed to concentration higher than 0.1 µg/m³.

NIOSH = National Institute for Occupational Safety and Health  
CEN = European Committee for Standardisation  
ACGIH = American Conference of Governmental Industrial Hygienists
Section 8. Exposure controls/personal protection

Appropriate engineering controls: If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Engineering controls may be required to control the primary or secondary risks associated with this product. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state: Solid.
Color: Grey to Black
Odor: Ammoniacal. [Slight]
Odor threshold: 0.04 to 57 ppm (Ammonia.)
pH: Not applicable.
Melting point: Not applicable.
Boiling point: Not applicable.
Flash point: Not applicable.
Evaporation rate: Not applicable.
Section 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability (solid, gas)</td>
<td>Flammable in the presence of the following materials or conditions: moisture.</td>
</tr>
<tr>
<td>Lower and upper explosive</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>(flammable) limits</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Bulk density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Granulometry</td>
<td></td>
</tr>
<tr>
<td>Relative density</td>
<td>2 to 2.5</td>
</tr>
<tr>
<td>Solubility</td>
<td>Very slightly soluble in the following materials: cold water.</td>
</tr>
<tr>
<td>Partition coefficient: n-</td>
<td></td>
</tr>
<tr>
<td>octanol/water</td>
<td></td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flow time (ISO 2431)</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Section 10. Stability and reactivity

| Reactivity                      | No specific test data related to reactivity available for this product or its ingredients. |
| Chemical stability              | The product is stable.                                                             |
| Possibility of hazardous        | Hazardous reactions or instability may occur under certain conditions of storage or use. |
| reactions                       | Conditions may include the following: contact with water                            |
|                                 | contact with acids                                                                |
|                                 | Reactions may include the following: liberation of flammable gas                   |
|                                 | liberation of toxic gas                                                           |
| Conditions to avoid             | Avoid all possible sources of ignition (spark or flame). Reactive or incompatible with the following materials: oxidizing materials, acids, alkalis and moisture. |
| Incompatible materials          | Reactive or incompatible with the following materials: oxidizing materials, acids, alkalis and moisture. Incompatible with water (evolving flammable hydrogen gas), oxidising agents, acids (evolving hydrogen sulfide, hydrogen cyanide) alkalis, heat and ignition sources. |
| Hazardous decomposition         | Contact with water liberates extremely flammable gases. Contact with acids liberates very toxic gas. |
| products                        |                                                                                   |

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity
### Spent Potlining

### Section 11. Toxicological information

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>aluminium oxide</td>
<td>LD50 Intraperitoneal Mouse</td>
<td>&gt;3600 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sodium fluoride</td>
<td>LD50 Oral Rat</td>
<td>&gt;31 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>trisodium hexafluoroaluminate</td>
<td>LD50 Oral Rat</td>
<td>&gt;4470 µg/kg Sprague-Dawley rats (4hr)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum.</td>
<td>LC50 Inhalation Dusts and mists Rat</td>
<td>&gt;2350 mg/l 4 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quartz (SiO2)</td>
<td>LD50 Oral Rat</td>
<td>&gt;5000 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithium fluoride</td>
<td>LD50 Oral Rat</td>
<td>&gt;2000 mg/kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Conclusion/Summary**: Toxic to humans or animal life.

### Irritation/Corrosion

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium fluoride</td>
<td>Eyes - Moderate irritant Rabbit</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusion/Summary**

**Skin**: Causes skin irritation.

**Eyes**: Irritant

### Sensitization

**Conclusion/Summary**

**Skin**: High exposure to Beryllium caused by dust and fumes inhalation may cause sensitization.

### Mutagenicity

**Conclusion/Summary**: No known significant effects or critical hazards.

### Carcinogenicity

**Conclusion/Summary**: Contains material which can cause cancer.

### Classification

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium fluoride</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>silicon carbide</td>
<td>-</td>
<td>2A</td>
<td>-</td>
</tr>
<tr>
<td>Quartz (SiO2)</td>
<td>-</td>
<td>1</td>
<td>Known to be a human carcinogen.</td>
</tr>
<tr>
<td>diiron trioxide</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>beryllium</td>
<td>-</td>
<td>1</td>
<td>Known to be a human carcinogen.</td>
</tr>
</tbody>
</table>

### Reproductive toxicity

**Conclusion/Summary**: No known significant effects or critical hazards.

### Teratogenicity

**Conclusion/Summary**: No known significant effects or critical hazards.

### Specific target organ toxicity (single exposure)

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>beryllium</td>
<td>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

### Specific target organ toxicity (repeated exposure)
Section 11. Toxicological information

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>trisodium hexafluoroaluminate</td>
<td>Category 1</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
<tr>
<td>Quartz (SiO2) - Respirable</td>
<td>Category 1</td>
<td>Inhalation</td>
<td>lungs</td>
</tr>
<tr>
<td>beryllium</td>
<td>Category 1</td>
<td>Inhalation</td>
<td>lungs</td>
</tr>
</tbody>
</table>

Aspiration hazard
Not available.

Information on the likely routes of exposure

Potential acute health effects

Eye contact: Causes serious eye irritation.
Inhalation: Toxic by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Skin contact: Causes skin irritation.
Ingestion: Toxic if swallowed. Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact: Adverse symptoms may include the following:
- pain or irritation
- watering
- redness

Inhalation: Adverse symptoms may include the following:
- reduced fetal weight
- increase in fetal deaths
- skeletal malformations

Skin contact: Adverse symptoms may include the following:
- irritation
- redness
- reduced fetal weight
- increase in fetal deaths
- skeletal malformations

Ingestion: Adverse symptoms may include the following:
- reduced fetal weight
- increase in fetal deaths
- skeletal malformations
- May cause harm to breast-fed children.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects: Causes skin, eye and upper respiratory tract irritation.
Potential delayed effects: No known significant effects or critical hazards.

Long term exposure

Potential immediate effects: Respiratory diseases.
Potential delayed effects: Increase fluorides in bones, lung diseases.

Potential chronic health effects

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Conclusion/Summary: Prolonged overexposure to fluorides may increase fluoride content of bones and teeth, and may result in fluorosis, with mottling of teeth (in children) and brittleness of bones. High exposure to Beryllium caused by dust and fumes inhalation may cause sensitization. Beryllium sensitization may result in a serious progressive chronic lung disease called Chronic Beryllium Disease (CBD) or berylliosis. Prolonged contact may result in skin irritation and rashes.

General: Causes damage to organs through prolonged or repeated exposure.

Carcinogenicity: Prolonged and/or massive exposure to respirable crystalline silica-containing dust may cause silicosis, a nodular pulmonary fibrosis caused by deposition in the lungs of fine respirable particles of crystalline silica.

Worker protection against silicosis should be assured by respecting the existing regulatory occupational exposure limits and implementing additional risk management measures where required (see section 16 below).

In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However it pointed out that not all industrial circumstances, nor all crystalline silica types, were to be incriminated. (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.)

Contains >0.1% crystalline silica which in the form of quartz or cristobalite dust is regarded by IARC as carcinogenic to humans (Group 1).

Mutagenicity: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Developmental effects: May cause harm to breast-fed children.

Fertility effects: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

<table>
<thead>
<tr>
<th>Route</th>
<th>ATE value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>812.3 mg/kg</td>
</tr>
<tr>
<td>Inhalation (vapors)</td>
<td>106.6 mg/l</td>
</tr>
</tbody>
</table>

Section 12. Ecological information

Toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>EC50 &gt;100 mg/l</td>
<td>Algae - Selenastrum capricomutum</td>
<td>72 hours</td>
</tr>
<tr>
<td>trisodium hexafluoroaluminate</td>
<td>EC50 &gt;100 mg/l</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>EC50 &gt;100 mg/l</td>
<td>Fish - Salmo trutta</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 5 mg/l Fresh water</td>
<td>Crustaceans - Simocephalus serrulatus - Larvae</td>
<td>48 hours</td>
</tr>
<tr>
<td>sodium fluoride</td>
<td>Acute EC50 10 mg/l Fresh water</td>
<td>Daphnia - Daphnia pulex - Larvae</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 47 mg/l Fresh water</td>
<td>Fish - Oncorhynchus mykiss</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 98000 µg/l Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 &gt;300000 µg/l Marine water</td>
<td>Crustaceans - Crangon crangon - Adult</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 51000 µg/l Fresh water</td>
<td>Fish - Oncorhynchus mykiss</td>
<td>96 hours</td>
</tr>
</tbody>
</table>

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| Salts of hydrogen cyanide and mercuric oxy cyanide | Chronic NOEC 110000 µg/l Fresh water | Daphnia - Daphnia magna | 48 hours |
| Acute EC50 258 µg/l Fresh water | Algae - Navicula seminulum | 96 hours |
| Acute EC50 2.52 mg/l Fresh water | Crustaceans - Ceriodaphnia dubia - Neonate | 48 hours |
| Acute LC50 120 µg/l Fresh water | Fish - Lepomis macrochirus | 96 hours |
| Chronic NOEC 29 µg/l Marine water | Fish - Cyprinodon variegatus - Embryo | 28 days |

**Conclusion/Summary**: Soluble fluorides may result from the leaching of that product. No acute or chronic classification is appropriate for Al metal massive based on non toxic results below the Ecotoxicity Reference Value (ERV) of tests with aluminum metal, oxide and hydroxide at loadings of 100 mg/l at pH 8-8.5 (maximum solubility of Al expected).

**Persistence and degradability**

**Conclusion/Summary**: Low dissociation of cyanides in nature.

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Aquatic half-life</th>
<th>Photolysis</th>
<th>Biodegradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>aluminium oxide</td>
<td>-</td>
<td>-</td>
<td>Not readily</td>
</tr>
<tr>
<td>Aluminum.</td>
<td>-</td>
<td>-</td>
<td>Not readily</td>
</tr>
</tbody>
</table>

**Bioaccumulative potential**

Not available.

**Mobility in soil**

**Soil/water partition coefficient (K_{OC})**: Not available.

**Other adverse effects**: No known significant effects or critical hazards.

Section 13. Disposal considerations

**Disposal methods**: The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Recycle, if possible.

Section 14. Transport information

<table>
<thead>
<tr>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>Mexico Classification</th>
<th>ADR/RID</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN number</td>
<td>UN3170</td>
<td>UN3170</td>
<td>UN3170</td>
<td>UN3170</td>
<td>UN3170</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMelTING BY-PRODUCTS</td>
<td>ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMelTING BY-PRODUCTS</td>
<td>ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMelTING BY-PRODUCTS</td>
<td>ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMelTING BY-PRODUCTS</td>
<td>ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMelTING BY-PRODUCTS</td>
</tr>
</tbody>
</table>

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## Section 14. Transport information

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
<th>4.3</th>
<th>4.3</th>
<th>4.3</th>
<th>4.3</th>
<th>4.3</th>
<th>4.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing group</td>
<td>III</td>
<td>III</td>
<td>III</td>
<td>III</td>
<td>III</td>
<td>III</td>
</tr>
</tbody>
</table>

### Additional information

**DOT Classification**: Reportable quantity 8000 lbs / 3632 kg. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

- **Limited quantity** No.
- **Quantity limitation** Passenger aircraft/rail: 25 kg. Cargo aircraft: 100 kg.
- **Special provisions** 128, B115, IB8, IP21, T1, TP33, W31

**TDG Classification**: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.20-2.22 (Class 4).

- **Explosive Limit and Limited Quantity Index**
  - 1 kg
- **Passenger Carrying Road or Rail Index**
  - 25 kg

**Mexico Classification**: Special provisions 223, 244

**ADR/RID**: Hazard identification number 423

- **Limited quantity**
  - 1 kg
- **Special provisions**
  - 244

- **Tunnel code** (E)

**IMDG**: Emergency schedules F-G, S-P

**Special provisions** 223, 244

**IATA**: Quantity limitation Passenger and Cargo Aircraft: 25 kg. Packaging instructions: 486.

- **Special provisions** A3, A102, A803

### Special precautions for user
Not applicable.

### Transport in bulk according to Annex II of MARPOL and the IBC Code
Not applicable.
Section 15. Regulatory information

U.S. Federal regulations:
- TSCA 8(a) CDR Exempt/Partial exemption: Not determined
- Commerce control list precursor: sodium fluoride
- Clean Water Act (CWA) 307: Cyanide; beryllium compounds
- Clean Water Act (CWA) 311: sodium fluoride

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs):
- Listed

Clean Air Act Section 602 Class I Substances:
- Not listed

Clean Air Act Section 602 Class II Substances:
- Not listed

DEA List I Chemicals (Precursor Chemicals):
- Not listed

DEA List II Chemicals (Essential Chemicals):
- Not listed

SARA 302/304

Composition/information on ingredients
No products were found.

SARA 304 RQ:
- Not applicable.

SARA 311/312
Classification:
- SUBSTANCES AND MIXTURES, WHICH IN CONTACT WITH WATER, EMIT FLAMMABLE GASES - Category 3
- ACUTE TOXICITY (oral) - Category 4
- SKIN IRRITATION - Category 2
- EYE IRRITATION - Category 2A
- SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
- SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) - Category 1
- SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) - Category 1
- SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

Composition/information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium fluoride</td>
<td>5 - 20</td>
<td>ACUTE TOXICITY (oral) - Category 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SKIN IRRITATION - Category 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EYE IRRITATION - Category 2A</td>
</tr>
<tr>
<td>trisodium hexafluoroaluminate</td>
<td>5 - 20</td>
<td>ACUTE TOXICITY (inhalation) - Category 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TOXIC TO REPRODUCTION - Effects on or via lactation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(lungs) (inhalation) - Category 1</td>
</tr>
<tr>
<td>Quartz (SiO2)</td>
<td>&lt;5</td>
<td>CARCINOGENICITY (inhalation) - Category 1A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE)</td>
</tr>
<tr>
<td>tetraaluminium tricarbide</td>
<td>&lt;2</td>
<td>SUBSTANCES AND MIXTURES, WHICH IN CONTACT WITH WATER, EMIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FLAMMABLE GASES - Category 2</td>
</tr>
<tr>
<td>Lithium fluoride</td>
<td>0 - 2.5</td>
<td>ACUTE TOXICITY (oral) - Category 3</td>
</tr>
<tr>
<td>beryllium</td>
<td>&lt;0.005</td>
<td>ACUTE TOXICITY (oral) - Category 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACUTE TOXICITY (inhalation) - Category 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACUTE TOXICITY (inhalation) - Category 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACUTE TOXICITY (inhalation) - Category 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SKIN IRRITATION - Category 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EYE IRRITATION - Category 2A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SKIN SENSITIZATION - Category 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CARCINOGENICITY (inhalation) - Category 1B</td>
</tr>
</tbody>
</table>

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Section 15. Regulatory information

<table>
<thead>
<tr>
<th>SARA 313</th>
<th>Product name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form R - Reporting requirements</td>
<td>Aluminum.</td>
<td>7429-90-5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Supplier notification</td>
<td>Aluminum.</td>
<td>7429-90-5</td>
<td>&lt;5</td>
</tr>
</tbody>
</table>

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts: The following components are listed: ALUMINUM OXIDE; SODIUM FLUORIDE; SILICON CARBIDE; ALUMINUM; SILICA, CRYSTALLINE, QUARTZ; ROUGE DUST; IRON OXIDE DUST

New York: The following components are listed: Sodium fluoride

New Jersey: The following components are listed: ALUMINUM OXIDE; alpha-ALUMINA; SODIUM FLUORIDE; SILICON CARBIDE; ALUMINUM; SILICA, QUARTZ; QUARTZ (SiO2); IRON OXIDE; FERRIC OXIDE; ALUMINUM CARBIDE; FLUORIDES

Pennsylvania: The following components are listed: ALUMINUM OXIDE; SODIUM FLUORIDE; SILICON CARBIDE; ALUMINUM; QUARTZ DUST; QUARTZ; IRON OXIDE

California Prop. 65

⚠️ WARNING: This product can expose you to chemicals including Silica, crystalline, Beryllium, which are known to the State of California to cause cancer, and Hydrogen cyanide & cyanide salts, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>No significant risk level</th>
<th>Maximum acceptable dosage level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica, crystalline</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hydrogen cyanide &amp; cyanide salts</td>
<td>-</td>
<td>Yes.</td>
</tr>
<tr>
<td>Beryllium</td>
<td>Yes.</td>
<td>-</td>
</tr>
</tbody>
</table>

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals
Not listed.

Montreal Protocol (Annexes A, B, C, E)
Not listed.

Stockholm Convention on Persistent Organic Pollutants
Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)
Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals
Not listed.

Australia: All components are listed or exempted.
Section 15. Regulatory information

**China**: Not determined.
**Europe**: Not determined.
**Japan**: Not determined.
- **Japan inventory (ENCS)**: Not determined.
- **Japan inventory (ISHL)**: Not determined.
**Malaysia**: Not determined.
**New Zealand**: Not determined.
**Philippines**: Not determined.
**Republic of Korea**: Not determined.
**Taiwan**: Not determined.
**Thailand**: Not determined.
**Turkey**: Not determined.
**United States**: All components are listed or exempted.
**Viet Nam**: Not determined.

**Canada**
- **WHMIS (Canada)**: SUBSTANCES AND MIXTURES, WHICH IN CONTACT WITH WATER, EMIT
  - FLAMMABLE GASES - Category 3
  - ACUTE TOXICITY (oral) - Category 4
  - ACUTE TOXICITY (inhalation) - Category 4
  - EYE IRRITATION - Category 2A
  - CARCINOGENICITY - Category 1
  - TOXIC TO REPRODUCTION - Effects on or via lactation
  - SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) - Category 1

**Canadian NPRI**: The following components are listed: sodium fluoride; aluminum (fume or dust only)

Section 16. Other information

**Hazardous Material Information System (U.S.A.)**

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<td>0</td>
<td>2</td>
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Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

**National Fire Protection Association (U.S.A.)**

Flammability

Health: 0

Instability/Reactivity: 3

Special: 3

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Section 16. Other information

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

<table>
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<th>Classification</th>
<th>Justification</th>
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<td>Expert judgment</td>
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<td>ACUTE TOXICITY (oral) - Category 4</td>
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<td>CARCINOGENICITY - Category 1</td>
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<td>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) - Category 1</td>
<td>Calculation method</td>
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History

- **Date of issue/Date of revision**: 30/05/2019
- **Date of previous issue**: 29/02/2016
- **Version**: 1.01

Key to abbreviations

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- IMSBC = International Maritime Solid Bulk Cargoes Code
- LogPow = logarithm of the octanol/water partition coefficient
- UN = United Nations

- **References**: Not available.

- Indicates information that has changed from previously issued version.

United States / 4.9.3 / EN-US

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.