



Section 1. Identification

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

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.
- Hazards 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

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

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 |

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.

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

- 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.
- 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.

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

Ingredient name	Exposure limits
carbon aluminium oxide	None. NIOSH REL (United States, 10/2016). TWA: 5 mg/m ³ , (as Al) 10 hours. Form: PYRO POWDERS AND WELDING FUMES OSHA PEL (United States, 5/2018). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust ACGIH TLV (United States, 3/2018). TWA: 1 mg/m ³ 8 hours. Form: Respirable fraction
sodium fluoride	ACGIH TLV (United States, 3/2018). TWA: 2.5 mg/m ³ , (as F) 8 hours. NIOSH REL (United States, 10/2016). TWA: 2.5 mg/m ³ , (as F) 10 hours. OSHA PEL (United States, 5/2018). TWA: 2.5 mg/m ³ , (as F) 8 hours. Rio Tinto recommended OEL (United States, 4/2015). TWA: 0.5 mg/m ³ , (as F) 8 hours. OSHA PEL Z2 (United States, 2/2013). TWA: 2.5 mg/m ³ 8 hours. Form: Dust
trisodium hexafluoroaluminate	ACGIH TLV (United States, 3/2018). TWA: 1 mg/m ³ 8 hours. Form: Respirable fraction ACGIH TLV (United States). TWA: 2.5 mg/m ³ , (as F) 8 hours.
andalusite Silicic acid, aluminum sodium salt	None. ACGIH TLV (United States, 3/2018). TWA: 1 mg/m ³ 8 hours. Form: Respirable fraction
silicon carbide	ACGIH TLV (United States, 3/2018). TWA: 10 mg/m ³ 8 hours. Form: Inhalable fraction 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. TWA: 3 mg/m ³ 8 hours. Form: Respirable fraction NIOSH REL (United States, 10/2016). TWA: 5 mg/m ³ 10 hours. Form: Respirable fraction TWA: 10 mg/m ³ 10 hours. Form: Total OSHA PEL (United States, 5/2018). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust
Aluminum.	ACGIH TLV (United States, 3/2018). TWA: 1 mg/m ³ 8 hours. Form: Respirable fraction NIOSH REL (United States, 10/2016). TWA: 5 mg/m ³ 10 hours. Form: Respirable fraction TWA: 10 mg/m ³ 10 hours. Form: Total OSHA PEL (United States, 5/2018). TWA: 5 mg/m ³ , (as Al) 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ , (as Al) 8 hours. Form: Total dust
Quartz (SiO ₂)	OSHA PEL Z3 (United States, 6/2016). TWA: 250 mppcf / (%SiO ₂ +5) 8 hours. Form: Respirable TWA: 10 mg/m ³ / (%SiO ₂ +2) 8 hours. Form: Respirable OSHA PEL (United States, 5/2018). TWA: 50 µg/m ³ 8 hours. Form: Respirable dust ACGIH TLV (United States, 3/2018).

Section 8. Exposure controls/personal protection

<p>Trilithium hexafluoroaluminate</p> <p>tetraaluminium tricarbonide diiron trioxide</p>	<p>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</p> <p>Rio Tinto recommended OEL (United States, 4/2015). TWA: 0.5 mg/m³, (as F) 8 hours.</p> <p>None.</p> <p>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: 5 mg/m³ 8 hours. Form: Respirable fraction</p>
<p>Lithium fluoride</p>	<p>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</p>
<p>aluminium nitride beryllium</p>	<p>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.</p>

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

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

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 reactions	: Hazardous reactions or instability may occur under certain conditions of storage or use. 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 products	: Contact with water liberates extremely flammable gases. Contact with acids liberates very toxic gas.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Section 11. Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
aluminium oxide	LD50 Intraperitoneal	Mouse	>3600 mg/kg	-
sodium fluoride	LD50 Oral	Rat	31 mg/kg	-
trisodium hexafluoroaluminate	LD50 Oral	Rat	4470 µg/kg Sprague-Dawley rats (4hr)	-
Aluminum.	LC50 Inhalation Dusts and mists	Rat	>2350 mg/l	4 hours
	LD50 Oral	Rat	>5000 mg/kg	-
Quartz (SiO ₂)	LD50 Dermal	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-
Lithium fluoride	LD50 Oral	Rat	143 mg/kg	-

Conclusion/Summary : Toxic to humans or animal life.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
sodium fluoride	Eyes - Moderate irritant	Rabbit	-	-	-

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

Product/ingredient name	OSHA	IARC	NTP
sodium fluoride	-	3	-
silicon carbide	-	2A	-
Quartz (SiO ₂)	-	1	Known to be a human carcinogen.
diiron trioxide	-	3	-
beryllium	-	1	Known to be a human carcinogen.

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)

Name	Category	Route of exposure	Target organs
beryllium	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
trisodium hexafluoroaluminate	Category 1	Not determined	Not determined
Quartz (SiO ₂) - Respirable	Category 1	Inhalation	lungs
beryllium	Category 1	Inhalation	lungs

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

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

Section 11. Toxicological information

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

Route	ATE value
Oral	812.3 mg/kg
Inhalation (vapors)	106.6 mg/l

Section 12. Ecological information

Toxicity

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

Section 12. Ecological information

salts of hydrogen cyanide and mercuric oxycyanide	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 Chronic NOEC 29 µg/l Marine water	Fish - Lepomis macrochirus Fish - Cyprinodon variegatus - Embryo	96 hours 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.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
aluminium oxide	-	-	Not readily
Aluminum.	-	-	Not readily

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

	DOT Classification	TDG Classification	Mexico Classification	ADR/RID	IMDG	IATA
UN number	UN3170	UN3170	UN3170	UN3170	UN3170	UN3170
UN proper shipping name	ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMELTING BY-PRODUCTS	ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMELTING BY-PRODUCTS	ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMELTING BY-PRODUCTS	ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMELTING BY-PRODUCTS	ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMELTING BY-PRODUCTS	ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMELTING BY-PRODUCTS

Section 14. Transport information

Transport hazard class(es)	4.3 	4.3 	4.3 	4.3 	4.3 	4.3 
Packing group	III	III	III	III	III	III
Environmental hazards	No.	No.	No.	No.	No.	No.

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.

Packaging instruction Exceptions: None. Non-bulk: 213. Bulk: 241.

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. Cargo Aircraft Only: 100 kg. Packaging instructions: 491. Limited Quantities - Passenger Aircraft: 10 kg. Packaging instructions: Y477.

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
 CARCINOGENICITY - Category 1
 TOXIC TO REPRODUCTION - Effects on or via lactation
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) - Category 1

Composition/information on ingredients

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

Section 15. Regulatory information

		SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) (inhalation) - Category 1
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SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Aluminum.	7429-90-5	<5
Supplier notification	Aluminum.	7429-90-5	<5

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.

Ingredient name	No significant risk level	Maximum acceptable dosage level
Silica, crystalline	-	-
Hydrogen cyanide & cyanide salts	-	Yes.
Beryllium	Yes.	-

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.

International lists

- Australia** : All components are listed or exempted.

Section 15. Regulatory information

China	: Not determined.
Europe	: Not determined.
Japan	: Japan inventory (ENCS) : Not determined. Japan inventory (ISHL) : Not determined.
Malaysia	: Not determined.
New Zealand	: All components are listed or exempted.
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.)

Health	*	4
Flammability		0
Physical hazards		2

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.)



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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

Classification	Justification
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	Expert judgment Calculation method Calculation method Calculation method Expert judgment Calculation method Calculation method

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
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

✓ Indicates information that has changed from previously issued version.

United States / 4.9.3 / EN-US

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