SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>POTASSIUM FLUOBORATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name</td>
<td>potassium fluoroborate</td>
</tr>
<tr>
<td>Synonyms</td>
<td>KBF4; potassium fluoroborate; potassium borofluoride; avogadrite; borate(1-), tetrafluoro-, potassium; potassium tetrafluoro borate; potassium tetrafluoroborate; potassium fluoroborate</td>
</tr>
<tr>
<td>Proper shipping name</td>
<td>CORROSIVE SOLID, N.O.S. (contains Potassium Fluoborate)</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>B-F4 .K</td>
</tr>
<tr>
<td>Other means of identification</td>
<td>Not Available</td>
</tr>
<tr>
<td>CAS number</td>
<td>14075-53-7</td>
</tr>
</tbody>
</table>

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses

Component of brazing fluxes and soldering fluxes. Used in the sand casting of aluminium and magnesium. As a grinding aid in grinding wheels. In electrochemical and plating processes.

Details of the supplier of the safety data sheet

Registered company name | ALPHA CHEMICALS PTY LTD |
Address | 4 ALLEN PLACE WETHERILL PARK NSW 2099 Australia |
Telephone | 61 (0)2 9982 4622 |
Fax | Not Available |
Website | ~ |
Email | shane@alphachem.com.au |

Emergency telephone number

Association / Organisation | ALPHA CHEMICALS PTY LTD |
Emergency telephone numbers | 61 (0)418 237 771 |
Other emergency telephone numbers | Not Available |

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

HAZARDOUS CHEMICAL, DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.

CHEMWATCH HAZARD RATINGS

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Toxicity</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Body Contact</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Chronic</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Poisons Schedule | S6 |
Classification | Metal Corrosion Category 1, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation), Serious Eye Damage Category 1, Skin Corrosion/Irritation Category 1A |


Label elements

Continued...
Hazard pictogram(s)

SIGNAL WORD

DANGER

Hazard statement(s)

H290 May be corrosive to metals.
H335 May cause respiratory irritation.
H314 Causes severe skin burns and eye damage.

Precautionary statement(s) Prevention

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P234 Keep only in original container.

Precautionary statement(s) Response

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Precautionary statement(s) Storage

P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Precautionary statement(s) Disposal

P501 Dispose of contents/container in accordance with local regulations.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

<table>
<thead>
<tr>
<th>CAS No</th>
<th>%[weight]</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>14075-53-7</td>
<td>=99</td>
<td>Potassium Fluoborate</td>
</tr>
</tbody>
</table>

Mixtures

See section above for composition of Substances

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact

- If this product comes in contact with the eyes:
  - Immediately hold eyelids apart and flush the eye continuously with running water.
  - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
  - Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
  - Transport to hospital or doctor without delay.
  - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact

- If there is evidence of severe skin irritation or skin burns:
  - Avoid further contact. Immediately remove contaminated clothing, including footwear.
  - Flush skin under running water for 15 minutes.
  - Avoiding contamination of the hands, massage calcium gluconate gel into affected areas, pay particular attention to creases in skin.
  - Contact the Poisons Information Centre.
  - Continue gel application for at least 15 minutes after burning sensation ceases.
  - If no gel is available, continue washing for at least 15 minutes, using soap if available. If patient is conscious, give six calcium gluconate or calcium carbonate tablets in water by mouth.
  - Transport to hospital, or doctor, urgently.

Inhalation

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

Continued...
Indication of any immediate medical attention and special treatment needed

For acute or repeated short term exposures to boron and its compounds:
- Nausea, vomiting, diarrhoea and epigastric pain, haematemesis and blue-green discolouration of both faeces and vomitus characterise adult boron intoxication.
- Access and correct any abnormalities found in airway and circulation.
- A tidal volume of 10-15 ml/kg should be maintained.
- Emesis should be induced unless the patient is in coma, is experiencing seizures or has lost the gag reflex. If any of these are present, gastric lavage should be performed with a large-bore tube after suction and removal of endotracheal tube. A tidal volume of 10-15 ml/kg should be maintained.
- Activated charcoal is probably not of value though its use might be indicated following gastric evacuation. Catharsis might be useful to eliminate any borates remaining in the gastro-intestinal tract (magnesium sulfate: adults, 30 gms; children 250 mg/kg).
- Peritoneal dialysis and haemodialysis remove some borates.

Fluorides in urine
These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Index</th>
<th>Sampling Time</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorides in urine</td>
<td>3 mg/gm creatinine</td>
<td>Prior to shift</td>
<td>B, NS</td>
</tr>
<tr>
<td></td>
<td>10 mg/gm creatinine</td>
<td>End of shift</td>
<td>B, NS</td>
</tr>
</tbody>
</table>

NS: Non-specific determinant; also observed after exposure to other exposures.

Treat symptomatically. Ingestion - Intravenous injection of 10% calcium gluconate repeated hourly is a routine treatment for systemic poisoning. Inhalation - continue observation for 48 hours due to danger of pulmonary oedema.
SECTION 5 FIREFIGHTING MEASURES

Extinguishing media
- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

Special hazards arising from the substrate or mixture

<table>
<thead>
<tr>
<th>Fire Incompatibility</th>
<th>None known.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid contact with oxidizing agents and acids.</td>
<td></td>
</tr>
</tbody>
</table>

Advice for firefighters

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding area.
- Do not approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

Fire/Explosion Hazard
- Non combustible.
- Not considered a significant fire risk, however containers may burn.
- Decomposition may produce toxic fumes of:
  - hydrogen fluoride
  - metal oxides
- May emit corrosive fumes.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
- See section 8

Environmental precautions
- See section 12

Methods and material for containment and cleaning up

<table>
<thead>
<tr>
<th>Minor Spills</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Remove all ignition sources.</td>
</tr>
<tr>
<td>▶ Clean up all spills immediately.</td>
</tr>
<tr>
<td>▶ Avoid contact with skin and eyes.</td>
</tr>
<tr>
<td>▶ Control personal contact with the substance, by using protective equipment.</td>
</tr>
<tr>
<td>▶ Use dry clean-up procedures and avoid generating dust.</td>
</tr>
<tr>
<td>▶ Place in a suitable, labelled container for waste disposal.</td>
</tr>
<tr>
<td>▶ Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.</td>
</tr>
<tr>
<td>▶ Check regularly for spills and leaks.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Spills</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Clear area of personnel and move upwind.</td>
</tr>
<tr>
<td>▶ Alert Fire Brigade and tell them location and nature of hazard.</td>
</tr>
<tr>
<td>▶ Wear full body protective clothing with breathing apparatus.</td>
</tr>
<tr>
<td>▶ Prevent, by any means available, spillage from entering drains or water course.</td>
</tr>
<tr>
<td>▶ Consider evacuation (or protect in place).</td>
</tr>
<tr>
<td>▶ Stop leak if safe to do so.</td>
</tr>
<tr>
<td>▶ Contain spill with sand, earth or vermiculite.</td>
</tr>
<tr>
<td>▶ Collect recoverable product into labelled containers for recycling.</td>
</tr>
</tbody>
</table>

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

<table>
<thead>
<tr>
<th>Safe handling</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Avoid all personal contact, including inhalation.</td>
</tr>
<tr>
<td>▶ Wear protective clothing when risk of exposure occurs.</td>
</tr>
<tr>
<td>▶ Use in a well-ventilated area.</td>
</tr>
<tr>
<td>▶ WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.</td>
</tr>
<tr>
<td>▶ Avoid smoking, naked lights or ignition sources.</td>
</tr>
<tr>
<td>▶ Avoid contact with incompatible materials.</td>
</tr>
<tr>
<td>▶ When handling, DO NOT eat, drink or smoke.</td>
</tr>
<tr>
<td>▶ Keep containers securely sealed when not in use.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Material is hygroscopic, i.e. absorbs moisture from the air. Keep containers well sealed in storage.</td>
</tr>
<tr>
<td>▶ Store in original containers.</td>
</tr>
<tr>
<td>▶ Keep containers securely sealed.</td>
</tr>
<tr>
<td>▶ Store in a cool, dry, well-ventilated area.</td>
</tr>
<tr>
<td>▶ Store away from incompatible materials and foodstuff containers.</td>
</tr>
<tr>
<td>▶ Protect containers against physical damage and check regularly for leaks.</td>
</tr>
<tr>
<td>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</td>
</tr>
</tbody>
</table>
Conditions for safe storage, including any incompatibilities

Suitable container

- Lined metal can, lined metal pail/can.
- Plastic pail.
- Polyliner drum.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

For materials with a viscosity of at least 2680 cSt (23 deg. C) and solids (between 15 C deg. and 40 deg. C.):

- Removable head packaging;
- Cans with friction closures and low pressure tubes and cartridges may be used.

Where combination packages are used, and the inner packages are of glass, porcelain or stoneware, there must be sufficient inert cushioning material in contact with inner and outer packages unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic.

Storage incompatibility

- Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
- These trifluorides are hypergolic oxidisers. They ignite on contact (without external source of heat or ignition) with recognised fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition.
- The state of subdivision may affect the results.
- Dangerous goods of other classes.
- Avoid strong acids, acid chlorides, acid anhydrides and chlorofluorocarbons.
- Avoid reaction with oxidising agents

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Not Available

EMERGENCY LIMITS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Material name</th>
<th>TEEL-1</th>
<th>TEEL-2</th>
<th>TEEL-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Fluoborate</td>
<td>Potassium tetrafluoroborate(1-)</td>
<td>12 mg/m³</td>
<td>140 mg/m³</td>
<td>830 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Original IDLH</th>
<th>Revised IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Fluoborate</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Exposure controls

Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

- Process controls which involve changing the way a job activity or process is done to reduce the risk.
- Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure.

Local exhaust ventilation usually required.

Personal protection

- Safety glasses with unperforated side shields may be used where continuous eye protection is desirable, as in laboratories; spectacles are not sufficient where complete eye protection is needed such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure.
- Chemical goggles whenever there is a danger of the material coming in contact with the eyes; goggles must be properly fitted.
- Full face shield (20 cm, 8 in minimum) may be required for supplementary, but never for primary protection of eyes; these afford face protection.
- Alternatively a gas mask may replace splash goggles and face shields.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available.

Eye and face protection

Skin protection

See Hand protection below

Hands/feet protection

- Elbow length PVC gloves

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. Suitability and durability of glove type is dependent on usage.

Body protection

See Other protection below

Continued...
Other protection

- Overalls.
- PVC Apron.
- PVC protective suit may be required if exposure severe.
- Eyewash unit.
- Ensure there is ready access to a safety shower.

Respiratory protection

- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Try to avoid creating dust conditions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Material is hygroscopic, absorbs moisture from surrounding air.</td>
</tr>
<tr>
<td></td>
<td>White or colourless crystals. Soluble in water. No odour. Insoluble in alcohol, ether, alkalis. Decomposes above 350°C and releases highly irritating and toxic hydrogen fluoride gas, and fumes of boron trifluoride and potassium fluoride. Solutions in water should not be handled in glass.</td>
</tr>
<tr>
<td>Physical state</td>
<td>Divided Solid</td>
</tr>
<tr>
<td>Odour</td>
<td>Not Available</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not Available</td>
</tr>
<tr>
<td>pH (as supplied)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Melting point / freezing point (°C)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Initial boiling point and boiling range (°C)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flash point (°C)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Vapour pressure (kPa)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Partly miscible</td>
</tr>
<tr>
<td>Vapour density (Air = 1)</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

SECTION 10 STABILITY AND REACTIVITY

Reactivity

See section 7

Chemical stability

- Unstable in the presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Possibility of hazardous reactions

See section 7

Conditions to avoid

See section 7

Incompatible materials

See section 7

Hazardous decomposition products

See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled

The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.

Borates may act as simple airway irritants. Dryness of the mouth, nose or throat, dry cough, nose bleeds, sore throat, productive cough, shortness of breath, chest tightness and difficulty breathing were related to higher dose long term exposures. Not normally a hazard due to non-volatile nature of product. Acute effects of fluoride inhalation include irritation of nose and throat, coughing and chest discomfort. A single acute over-exposure may even cause nose bleed.
The material can produce severe chemical burns within the oral cavity and gastrointestinal tract following ingestion. Accidental ingestion of the material may be damaging to the health of the individual.

**Skin Contact**

The material can produce severe chemical burns following direct contact with the skin. Skin contact with the material may damage the health of the individual; systemic effects may result following absorption. Open cuts, abraded or irritated skin should not be exposed to this material.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

**Eye**

The material can produce severe chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating. If applied to the eyes, this material causes severe eye damage.

**Chronic**

Repeated or prolonged exposure to corrosives may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue.

Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

Long-term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis, caused by particles less than 0.5 micron penetrating and remaining in the lung.

Borate can accumulate in the testes and deplete germ cells and cause withering of the testicles, according to animal testing. Hair loss, skin inflammation, stomach ulcer and anaemia can all occur.

Extended exposure to inorganic fluorides causes fluorosis, which includes signs of joint pain and stiffness, tooth discoloration, nausea and vomiting, loss of appetite, diarrhoea or constipation, weight loss, anaemia, weakness and general unwellness. There may also be frequent urination and thirst.

Fluoroborates, unlike other inorganic fluorides, are not stored in the bone. Much of it is rather excreted in the urine, leaving little opportunity for fluoride ion storage. However, fluoroborates do accumulate in the thyroid gland, preventing uptake of iodine. Animal testing shows that chronic exposure to boron trifluoride may cause elevated levels of bone fluoride and fluorosis of the teeth.

**Legend:**

- Data either not available or does not fill the criteria for classification
- Data available to make classification

---

**POTASSIUM FLUOBORATE**

Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production.

Extended exposure to inorganic fluorides causes fluorosis, which includes signs of joint pain and stiffness, tooth discoloration, nausea and vomiting, loss of appetite, diarrhoea or constipation, weight loss, anaemia, weakness and general unwellness. There may also be frequent urination and thirst.

Oral (man) LDLo: 240-590 mg/kg No data Estimated adult fatal dose: 6 gram. [Allied Chemical Estimate]

**Acute Toxicity**

- Carcinogenicity

**Skin Irritation/Corrosion**

- Reproductivity

**Serious Eye Damage/ Irritation**

- STOT - Single Exposure

**Respiratory or Skin sensitisation**

- STOT - Repeated Exposure

**Mutagenicity**

- Aspiration Hazard

**Legend:**

- Data either not available or does not fill the criteria for classification
- Data available to make classification
for Boron and Borates:

Environmental Fate - Boron is generally found in nature bound to oxygen and is never found as the free element. As an element, boron itself cannot be degraded in the environment, however; it may undergo various reactions that change the form of boron (e.g., precipitation, polymerization, and acid-base reactions) depending on conditions such as its concentration in water and pH. As boron is a natural component of the environment, individuals will have some exposure from foods and drinking water.

Atmospheric Fate: Atmospheric boron may be in the form of particulate matter or aerosols as borides, boron oxides, borates, organoboron compounds, trihalide boron compounds, or borazines. Boron and borates will probably be removed from the atmosphere by precipitation and dry deposition. The half-life of airborne particles is usually on the order of days, depending on the size of the particle and atmospheric conditions.

Aquatic Fate: Borates are relatively soluble in water. Boron readily hydrolyses in water and, in concentrated solutions, may polymerize.

Prevent, by any means available, spillage from entering drains or water courses.

DO NOT discharge into sewer or waterways.

Persistence and degradability

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Fluoborate</td>
<td>LOW</td>
<td>LOW</td>
</tr>
</tbody>
</table>

Bioaccumulative potential

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Fluoborate</td>
<td>LOW (LogKOW = 0.2166)</td>
</tr>
</tbody>
</table>

Mobility in soil

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Fluoborate</td>
<td>LOW (KOC = 48.64)</td>
</tr>
</tbody>
</table>

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

- Containers may still present a chemical hazard/danger when empty.
- Return to supplier for reuse/recycling if possible.
- Otherwise:
  - If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
  - Where possible retain label warnings and SDS and observe all notices pertaining to the product.

Legislation addressing waste disposal requirements may differ by country, state and/or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:
- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in-use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.

For small quantities:
- Cautiously dissolve in water
- Neutralise with sodium carbonate or if product does not dissolve completely add a small quantity of hydrochloric acid followed by sodium carbonate
- Add excess calcium chloride to precipitate the fluoride and/or carbonate
- Remove solids to site approved for hazardous waste
- Recycle wherever possible.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Treat and neutralise at an approved treatment plant. Treatment should involve: Mixing or stirring in water; Neutralisation followed by: burial in a land-fill specifically licensed to accept chemical and/or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

SECTION 14 TRANSPORT INFORMATION

Labels Required

- Marine Pollutant: NO
- HAZCHEM: 2X

Land transport (ADG)

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN proper shipping name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1759</td>
<td>CORROSIVE SOLID, N.O.S. (contains Potassium Fluoborate)</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>Class</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Subrisk</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

**Packing group** II

**Environmental hazard** Not Applicable

**Special precautions for user**

- Special provisions: 274
- Limited quantity: 1 kg

### Air transport (ICAO-IATA / DGR)

<table>
<thead>
<tr>
<th>UN number</th>
<th>1759</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>Corrosive solid, n.o.s. * (contains Potassium Fluoborate)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
<th>ICAO/IATA Class</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICAO / IATA Subrisk</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td>ERG Code</td>
<td>8L</td>
<td></td>
</tr>
</tbody>
</table>

**Packing group** II

**Environmental hazard** Not Applicable

**Special precautions for user**

- Special provisions: A3 A803
- Cargo Only Packing Instructions: 863
- Cargo Only Maximum Qty / Pack: 50 kg
- Passenger and Cargo Packing Instructions: 859
- Passenger and Cargo Maximum Qty / Pack: 15 kg
- Passenger and Cargo Limited Quantity Packing Instructions: Y844
- Passenger and Cargo Limited Maximum Qty / Pack: 5 kg

### Sea transport (IMDG-Code / GGVSee)

<table>
<thead>
<tr>
<th>UN number</th>
<th>1759</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>CORROSIVE SOLID, N.O.S. (contains Potassium Fluoborate)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
<th>IMDG Class</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMDG Subrisk</td>
<td>Not Applicable</td>
<td></td>
</tr>
</tbody>
</table>

**Packing group** II

**Environmental hazard** Not Applicable

**Special precautions for user**

- EMS Number: F-A , S-B
- Special provisions: 274
- Limited Quantities: 1 kg

### Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

## SECTION 15 REGULATORY INFORMATION

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

<table>
<thead>
<tr>
<th>POTASSIUM FLUOBORATE(14075-53-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List</td>
</tr>
<tr>
<td>Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes</td>
</tr>
<tr>
<td>Australia Inventory of Chemical Substances (AICS)</td>
</tr>
<tr>
<td>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4</td>
</tr>
<tr>
<td>International Air Transport Association (IATA) Dangerous Goods Regulations</td>
</tr>
<tr>
<td>International Maritime Dangerous Goods Requirements (IMDG Code)</td>
</tr>
<tr>
<td>United Nations Recommendations on the Transport of Dangerous Goods Model Regulations</td>
</tr>
</tbody>
</table>

### National Inventory Status

<table>
<thead>
<tr>
<th>National Inventory</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia - AICS</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada - DSL</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada - NDSL</td>
<td>No (Potassium Fluoborate)</td>
</tr>
<tr>
<td>China - IECSC</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe - EINEC / ELINCS / NLP</td>
<td>Yes</td>
</tr>
<tr>
<td>Japan - ENCS</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea - KECI</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand - NZIoC</td>
<td>Yes</td>
</tr>
</tbody>
</table>
SECTION 16 OTHER INFORMATION

Revision Date: 27/06/2017
Initial Date: Not Available

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC – TWA: Permissible Concentration-Time Weighted Average
PC – STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit,
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL: No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

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