ALUMINIUM POTASSIUM SULFATE

VWR International, Pty Ltd

Chemwatch: 13539
Version No: 4.1.1.1

Safety Data Sheet according to WHS and ADG requirements

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product identifier

Product name: ALUMINIUM POTASSIUM SULFATE

Chemical Name: aluminium potassium sulfate

Synonyms: Al2(SO4)3.K2SO4.24H2O (double salt), AK(SO4)2 anhydrous, AK(SO4)2.12H2O dodecahydrate, Burnt Alum, Exsiccated Alum, Merck Alumínium Potassium Sulfate Dodecahydrate Extra Pure PH Eur, BP, USP 1.01042, alum flour, alum kalinite potassium, alum meal, alum potassium alum dodecahydrate, aluminium potassium sulphate, aluminum potassium sulfate dodecahydrate, cube alum, potash alum, potassium alum, potassium aluminium sulphate, aluminum potassium salt (2:1:1) dodecahydrate

Proper shipping name: Not Available

Chemical formula: Not Available

Other means of identification: Not Available

CAS number: 7784-24-9

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

Relevant identified uses: Used in dyeing, printing fabrics; manufacture of dyes, lakes, paper, vegetable glue, marble cement, porcelain cement, explosives; in tanning, hardening gelatin, baking powders, purifying water, clarifying sugar. In tanning, hardening gelatin, baking powders, purifying water, clarifying sugar. In tanning, hardening gelatin, baking powders, purifying water, clarifying sugar. In tanning, hardening gelatin, baking powders, purifying water, clarifying sugar.

Details of the supplier of the safety data sheet

Registered company name: VWR International, Pty Ltd

Address: Unit 1/31 Archimedes Place 4172 QLD Australia

Telephone: 61 7 3009 4100 ; 1300 727 696

Fax: 61 7 3009 4199 ; 1300 135 123

Website: http://au.vwr.com

Email: csaus@au.vwr.com

Emergency telephone number

Association / Organisation: Not Available

Emergency telephone numbers: 61 7 3009 4100 ; 1300 727 696

Other emergency telephone numbers: 61 7 3009 4100 ; 1300 727 696

SECTION 2 Hazards identification

Classification of the substance or mixture

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

ChemWatch Hazard Ratings

<table>
<thead>
<tr>
<th>Hazard</th>
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<th>1</th>
<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>Flammability</td>
<td>Minimum</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
<td>Extreme</td>
</tr>
<tr>
<td>Toxicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Contact</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Poisons Schedule: None

GHS Classification:

STOT - SE (Resp. Irr.) Category 3, Eye Irrit. 2, Skin Corrosion/Irritation Category 2, Acute Toxicity (Oral) Category 4


Label elements

GHS label elements
aluminium potassium sulfate

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>7784-24-9</td>
<td>100</td>
<td>aluminium potassium sulfate</td>
</tr>
</tbody>
</table>

Note: exists as anhydrous CAS 7784-24-9 and as dodecahydrate CAS 10043-67-1 and as double salt dodecahydrate

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:
- Wash out immediately with fresh 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.
- Seek medical attention without delay; if pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact:
If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

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.

Ingestion:
- IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
- For advice, contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient’s condition.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
- If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.
aluminium potassium sulfate

Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

- **INDUCE** vomiting with fingers down the back of the throat, **ONLY IF CONSCIOUS**. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

**NOTE:** Wear a protective glove when inducing vomiting by mechanical means.

### Indication of any immediate medical attention and special treatment needed

**for poisons (where specific treatment regime is absent):**

<table>
<thead>
<tr>
<th>BASIC TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Establish a patent airway with suction where necessary.</td>
</tr>
<tr>
<td>- Watch for signs of respiratory insufficiency and assist ventilation as necessary.</td>
</tr>
<tr>
<td>- Administer oxygen by non-rebreather mask at 10 to 15 L/min.</td>
</tr>
<tr>
<td>- Monitor and treat, where necessary, for pulmonary oedema.</td>
</tr>
<tr>
<td>- Monitor and treat, where necessary, for shock.</td>
</tr>
<tr>
<td>- Anticipate seizures.</td>
</tr>
<tr>
<td>- <strong>DO NOT</strong> use emetics.</td>
</tr>
<tr>
<td>- Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADVANCED TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.</td>
</tr>
<tr>
<td>- Positive-pressure ventilation using a bag-valve mask might be of use.</td>
</tr>
<tr>
<td>- Monitor and treat, where necessary, for arrhythmias.</td>
</tr>
<tr>
<td>- Start an IV DSW TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.</td>
</tr>
<tr>
<td>- Drug therapy should be considered for pulmonary oedema.</td>
</tr>
<tr>
<td>- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.</td>
</tr>
<tr>
<td>- Treat seizures with diazepam.</td>
</tr>
<tr>
<td>- Proparacaine hydrochloride should be used to assist eye irrigation.</td>
</tr>
</tbody>
</table>

BRONSTEIN, A.C. and CURRANCE, P.L.
EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994

- Manifestation of aluminium toxicity include hypercalcaemia, anaemia, Vitamin D refractory osteodystrophy and a progressive encephalopathy (mixed dysarthria-apraxia of speech, asterixis, tremulousness, myoclonus, dementia, focal seizures). Bone pain, pathological fractures and proximal myopathy can occur.
- Symptoms usually develop insidiously over months to years (in chronic renal failure patients) unless dietary aluminium loads are excessive.
- Serum aluminium levels above 60 ug/ml indicate increased absorption. Potential toxicity occurs above 100 ug/ml and clinical symptoms are present when levels exceed 200 ug/ml.
- Deferoxamine has been used to treat dialysis encephalopathy and osteomalacia. CaNa2EDTA is less effective in chelating aluminium.

[Ellenhorn and Barceloux: Medical Toxicology]

### SECTION 5 Firefighting measures

**Extinguishing media**

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

**Special hazards arising from the substrate or mixture**

**Fire Incompatibility:**
None known.

**Advice for firefighters**

**Fire Fighting:**

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves in the event of a fire.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.

**Fire/Explosion Hazard:**

- Non combustible.
- Not considered a significant fire risk, however containers may burn.
- Decomposition may produce toxic fumes of sulfur oxides (SOx)

### SECTION 6 Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

**Minor Spills:**

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.

**Major Spills:**

Moderate hazard:

- **CAUTION:**Advise personnel in area.

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

### SECTION 7 Handling and storage

**Precautions for safe handling**

**Safe handling**

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
aluminium potassium sulfate

- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.

Other information
- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuffs containers.

Conditions for safe storage, including any incompatibilities

Suitable container:
- DO NOT use aluminium, galvanised or tin-plated containers
- DO NOT use unlined steel containers

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.

Package Material Incompatibilities:

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>TEEL-0</th>
<th>TEEL-1</th>
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<th>TEEL-3</th>
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<td>aluminium potassium sulfate</td>
<td>35.2 / 19.1 (ppm)</td>
<td>105 / 57.4 (ppm)</td>
<td>176 / 95.7 (ppm)</td>
<td>500 / 100 (ppm)</td>
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</table>

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Original IDLH</th>
<th>Revised IDLH</th>
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<tbody>
<tr>
<td>ALUMINIUM POTASSIUM SULFATE</td>
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<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.

Personal protection

Eye and face protection:
- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task.

Skin protection:
- See Hand protection below

Hand protection:

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.

Body protection:
- See Other protection below

Other protection:
- Overalls.
- P.V.C. apron.
- Barrier cream.

Thermal hazards:

Recommended material(s): Respiratory protection:

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance

White, odourless crystals having a sweetish astringent taste. Soluble in water forming acid solution. Insoluble in alcohol. Available in a range of grades, technical, pure and BP.
aluminium potassium sulfate

| Physical state       | Divided Solid                | Odour              | Not Available            | Odour threshold | Not Available            | pH (as supplied) | Not applicable            | Melting point / freezing point (°C) | 92               | Initial boiling point and boiling range (°C) | 64.5 | Flash point (°C) | Not Available            | Evaporation rate | Non Volatile            | Flammability | Not Available            | Upper Explosive Limit (%) | Not applicable            | Lower Explosive Limit (%) | Not applicable            | Vapour pressure (kPa) | Not Available            | Solubility in water (g/L) | Miscible            | Vapour density (Air = 1) | Not applicable. |
|----------------------|------------------------------|--------------------|--------------------------|-----------------|--------------------------|-----------------|--------------------------|-------------------------------|------|------------------------|-----------------|--------------------------|--------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Relative density (Water = 1) | 1.75                         | Partition coefficient n-octanol / water | Not Available            | Auto-ignition temperature (°C) | Not applicable            | Decomposition temperature | Not Available            | Viscosity (cSt) | Not Applicable            | Molecular weight (g/mol) | 474.39(dodecahy)            | Taste | Not Available            | Explosive properties | Not Available            | Oxidising properties | Not Available            | Gas group | Not Available            | pH as a solution(%) | 3.3 @ 9.4%            |

**SECTION 10 Stability and reactivity**

**Reactivity:**
See section 7

**Chemical stability:**
- 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:**
Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.

**Ingestion:**
Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. Sulfate salts are poorly absorbed from the gastro-intestinal tract but because of osmotic activity are able to draw water from the lumen to produce diarrhoea (purging). Sulfate ion usually has little toxicological potential.

**Skin Contact:**
Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.

**Eye:**
Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

**Chronic:**
Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. 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. A prime symptom is breathlessness.

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
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<tbody>
<tr>
<td>aluminium potassium sulfate</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

* Value obtained from manufacturer's msds unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

**ALUMINIUM POTASSIUM SULFATE**
Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS.
aluminium potassium sulfate

**Acute Toxicity:**
- Acute Toxicity (Oral) Category 4

**Carcinogenicity:**
- Not Applicable

**Skin Irritation/Corrosion:**
- Skin Corrosion/Irritation Category 2

**Serious Eye Damage/Irritation:**
- Eye Irrit. 2

**Reproductivity:**
- Not Applicable

**STOT - Single Exposure:**
- STOT - SE (Resp. Irr.) Category 3

**STOT - Repeated Exposure:**
- Not Applicable

**Aspiration Hazard:**
- Not Applicable

**CMR STATUS**

**SECTION 12 Ecological information**

**Toxicity**

For inorganic sulfates:

**Environmental fate:**

Data from tap water studies with human volunteers indicate that sulfates produce a laxative effect at concentrations of 1000 - 1200 mg/litre, but no increase in diarrhoea, dehydration or weight loss. The presence of sulfate in drinking-water can also result in a noticeable taste; the lowest taste threshold concentration for sulfate is approximately 250 mg/litre as the sodium salt.

**Persistence and degradability**

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<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
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**Bioaccumulative potential**

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**Mobility in soil**

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<th>Mobility</th>
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</thead>
<tbody>
<tr>
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<td>Not Available</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 cannot 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.

**SECTION 14 Transport information**

**Labels Required:**

- Marine Pollutant: NO

**HAZCHEM:**

- Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
- Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
- Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

**SECTION 15 Regulatory information**

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

aluminium potassium sulfate (7784-24-9) is found on the following regulatory lists:

- "Sigma-AldrichTransport Information"
- "Across Transport Information"
- "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix B (Part 3)"
- "OECD List of High Production Volume (HPV) Chemicals"
- "Australia Inventory of Chemical Substances (AICS)"
- "International Numbering System for Food Additives"
- "Australia Hazardous Substances Information System - Consolidated Lists"
- "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards [Domestic water supply - inorganic chemicals]"
- "WHO Guidelines for Drinking Water Quality - Chemicals for which guideline values have not been established"
- "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (STOCK)"
- "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm - Domestic water supply quality"
- "Australia Drinking Water Guideline Values For Physical and Chemical Characteristics"

**SECTION 16 Other information**

**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.

A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references

The MSDS 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.

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