PERSONAL AND COMPACT MINIFLARES

WesCom Signal and Rescue Germany GmbH

Classified: Explosive Division 1.4, Eye Irritation Category 2B

Hazard Statement(s)

H204 | Fire or projection hazard.
H320 | Causes eye irritation.

Precautionary Statement(s)

P210 | Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P250 | Do not subject to grinding/shock/sources of friction.
Wear protective gloves/protective clothing/eye protection/face protection.

Ground/bond container and receiving equipment.

In case of fire: Evacuate area.

DO NOT fight fire when fire reaches explosives.

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 advice/attention.

In event of fire: Evacuate area.

DO NOT fight fire when fire reaches explosives.

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 advice/attention.

DO NOT fight fire when fire reaches explosives.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Dispense in accordance with local regulations.

Store according to local regulations for explosives.

Dispose of contents/container in accordance with local regulations.

Substances
See section below for composition of Mixtures

Mixtures

<table>
<thead>
<tr>
<th>CAS No</th>
<th>%[weight]</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>7439-95-4</td>
<td>30-60</td>
<td>magnesium</td>
</tr>
<tr>
<td>10042-76-9</td>
<td>30-60</td>
<td>strontium nitrate</td>
</tr>
<tr>
<td>7757-79-1</td>
<td>1-10</td>
<td>potassium nitrate</td>
</tr>
<tr>
<td>7704-34-9</td>
<td>&lt;1</td>
<td>sulfur</td>
</tr>
<tr>
<td>7429-90-5</td>
<td>&lt;1</td>
<td>aluminium</td>
</tr>
</tbody>
</table>

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

Description of first aid measures

Eye Contact
If this product comes in contact with eyes:

- Wash out immediately with water.
- If irritation continues, 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

- Not considered a normal route of entry.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casually can comfortably drink.
- Seek medical advice.

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIRE-FIGHTING MEASURES

Extinguishing media

magnesium
strontium nitrate
potassium nitrate
sulfur
**DANGER:** Deliver media remotely.
- For minor fires: Flooding quantities only.
- For large fires: Do not attempt to extinguish.

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

| Fire Incompatibility | Avoid contact with other chemicals. |

**Special protective equipment and precautions for fire-fighters**

**Fire Fighting**

- WARNING: EXPLOSIVE MATERIALS / ARTICLES PRESENT!
- Evacuate all personnel and move upwind.
- Prevent re-entry.
- Alert Fire Brigade and tell them location and nature of hazard.
- May detonate and burning material may be propelled from fire.
- Wear full-body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage and fire effluent from entering drains and water courses.
- Fight fire from safe distances and from protected locations.
- Use flooding quantities of water.
- DO NOT approach containers or packages suspected to be hot.
- Cool any exposed containers not involved in fire from a protected location.
- Equipment should be thoroughly decontaminated after use.
- Slight hazard when exposed to heat, flame and oxidisers.

**Fire/Explosion Hazard**

Division 1.4 Substances, mixtures and articles which present no significant hazard: substances, mixtures and articles which present only a small hazard in the event of ignition or initiation. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire shall not cause virtually instantaneous explosion of almost the entire contents of the package.

Compatibility Group G explosives are pyrotechnic substances, or article containing a pyrotechnic substances, or article containing both an explosive substance and an illuminating, incendiary, tear- or smoke-producing substance (other than a water-activated article or one containing white phosphorus, phosphides, a pyrophoric substance, a flammable liquid or gel, or hyperglycolic liquids).

Combustible. Will burn if ignited.

Combustion products include:
- carbon monoxide (CO)
- carbon dioxide (CO2)
- other pyrolysis products typical of burning organic material.

**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**

**Minor Spills**

- WARNING!: EXPLOSIVE.
- BLAST and/or PROJECTION and/or FIRE HAZARD
- Clean up all spills immediately.
- Avoid inhalation of the material and avoid contact with eyes and skin.
- Wear impervious gloves and safety glasses.
- Remove all ignition sources.
- Use spark-free tools when handling.
- Sweep into non-sparking containers or barrels and moisten with water.
- Place spilled material in clean, sealable, labelled container for disposal.
- Flush area with large amounts of water.

**Major Spills**

- WARNING!: EXPLOSIVE.
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear full body protective clothing with breathing apparatus.
- Consider evacuation (or protect in place).
- In case of transport accident notify Police, Emergency Authority, Competent Explosives Authority or Manufacturer.
- No smoking, naked lights, heat or ignition sources.
- Increase ventilation.
- Use extreme caution to prevent physical shock.
- Use only spark-free shovels and explosion-proof equipment.
- Collect recoverable material and segregate from spilled material.
- Wash spill area with large quantities of water.

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

**SECTION 7 HANDLING AND STORAGE**

**Precautions for safe handling**

**Safe handling**

- Handle gently. Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this SDS.
- Avoid all personal contact, including inhalation.
- Avoid smoking, naked lights, heat or ignition sources.
- Explosives must not be struck with metal implements.
> Avoid mechanical and thermal shock and friction.
> Use in a well ventilated area.
> Avoid contact with incompatible materials.
> When handling DO NOT eat, drink or smoke.
> Avoid physical damage to containers.
> Always wash hands with soap and water after handling.
> Work clothes should be laundered separately.

> Store cases in a well ventilated magazine licensed for the appropriate Class, Division and Compatibility Group.
> Rotate stock to prevent ageing. Use on FIFO (first in-first out) basis.
> Observe manufacturer's storage and handling recommendations contained within this SDS.
> Store in a cool place in original containers.
> Keep containers securely sealed.
> No smoking, naked lights, heat or ignition sources.
> Store in an isolated area away from other materials.
> Keep storage area free of debris, waste and combustibles.
> Protect containers against physical damage.
> Check regularly for spills and leaks.

**NOTE:** If explosives need to be destroyed contact the Competent Authority.
> Store away from incompatible materials.

Keep out of reach of children.

**Conditions for safe storage, including any incompatibilities**

**Suitable container**
- All packaging for Class 1 Goods shall be in accordance with the requirements of the relevant Code for the transport of Dangerous Goods.
- Class 1 is unique in that the type of packaging used frequently has a very decisive effect on the hazard and therefore on the assignment to a particular division.

**Storage incompatibility**
- Avoid contact with other explosives, pyrotechnics, solvents, adhesives, paints, cleaners and unauthorized metals, plastics, packing equipment and materials.
- Avoid contamination with acids, alkalis, reducing agents, amines and phosphorus.
- Explosion hazard may follow contact with incompatible materials.

**SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Control parameters**

<table>
<thead>
<tr>
<th>OCCUPATIONAL EXPOSURE LIMITS (OEL)</th>
<th>INGREDIENT DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>Ingredient</td>
</tr>
<tr>
<td>US NIOSH Recommended Exposure Limits (RELs)</td>
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</tr>
<tr>
<td>US ACGIH Threshold Limit Values (TLV)</td>
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</tr>
<tr>
<td>US OSHA Permissible Exposure Levels (PELS) - Table Z1</td>
<td>aluminium</td>
</tr>
<tr>
<td>US OSHA Permissible Exposure Levels (PELS) - Table Z1</td>
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</tr>
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</table>

**EMERGENCY LIMITS**

<table>
<thead>
<tr>
<th>Ingredient</th>
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<th>TEEL-1</th>
<th>TEEL-2</th>
<th>TEEL-3</th>
</tr>
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<tbody>
<tr>
<td>magnesium</td>
<td>Magnesium</td>
<td>18 mg/m3</td>
<td>200 mg/m3</td>
<td>1,200 mg/m3</td>
</tr>
<tr>
<td>strontium nitrate</td>
<td>Strontium nitrate</td>
<td>5.7 mg/m3</td>
<td>62 mg/m3</td>
<td>370 mg/m3</td>
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<tr>
<td>potassium nitrate</td>
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<td>100 mg/m3</td>
<td>600 mg/m3</td>
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<tr>
<td>sulfur</td>
<td>Sulfur</td>
<td>30 mg/m3</td>
<td>330 mg/m3</td>
<td>2,000 mg/m3</td>
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</table>

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Original IDLH</th>
<th>Revised IDLH</th>
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<tr>
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</tr>
<tr>
<td>potassium nitrate</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>sulfur</td>
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<td>Not Available</td>
</tr>
<tr>
<td>aluminium</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

**MATERIAL DATA**

**Exposure controls**

Engineering controls for explosive articles are designed to reduce or eliminate fragmentation and/or blast effects either by suppression of the source of detonation or by protection at the exposed location, or both. Barricades, shields, contained detonation chambers, and “zero quantity-distance (Q-D)” magazines are examples of engineering controls. Engineering controls are designed and tested in a rigorous fashion. The construction of the engineering control must be carefully duplicated in field applications to assure it will function properly. It is thus imperative that engineering controls be built exactly in accordance with the design package, and that they be used only for the articles (e.g.munitions) for which they are authorised.
Personal protection

Eye and face protection
- Safety glasses with side shields
- Chemical goggles

Skin protection
See Hand protection below

Hands/feet protection
- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber

Body protection
See Other protection below

Other protection
- Fire resistant/heat resistant gloves where practical, otherwise
- Heavy-duty chemically resistant gloves capable of providing short-term protection against spontaneous ignition.
- Safety footwear
- Hard hat
- Ear Protection.

Thermal hazards
Not Available

Respiratory protection
Respiratory protection not normally required due to the physical form of the product.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Hermetically sealed steel tube pressed with black/grey polytechnical ingredients.</td>
</tr>
<tr>
<td>Physical state</td>
<td>Manufactured</td>
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<tr>
<td>Odour</td>
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<tr>
<td>Odour threshold</td>
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<tr>
<td>pH (as supplied)</td>
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<tr>
<td>Melting point/freezing point (°C)</td>
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<tr>
<td>Initial boiling point and boiling range (°C)</td>
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<tr>
<td>Flash point (°C)</td>
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<tr>
<td>Evaporation rate</td>
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<tr>
<td>Flammability</td>
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<tr>
<td>Upper Explosive Limit (%)</td>
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</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
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<tr>
<td>Vapour pressure (kPa)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Solubility in water (g/L)</td>
<td>Immiscible</td>
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<tr>
<td>Vapour density (Air = 1)</td>
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<tr>
<td>Molecular weight (g/mol)</td>
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<tr>
<td>Surface Tension (dyn/cm or mN/m)</td>
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</tr>
<tr>
<td>Taste</td>
<td>Not Available</td>
</tr>
<tr>
<td>Explosive properties</td>
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<tr>
<td>Oxidising properties</td>
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<tr>
<td>Gas group</td>
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<tr>
<td>Volatile Component (%vol)</td>
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<tr>
<td>pH as a solution (1%)</td>
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<tr>
<td>VOC g/L</td>
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</table>

SECTION 10 STABILITY AND REACTIVITY

Reactivity
See section 7

Chemical stability
- Presence of shock and friction
- Presence of heat source and ignition source
- Product is considered stable under normal handling conditions.
- Stable under normal storage conditions.
- Hazardous polymerisation will not occur.

Avoid contact with other chemicals.

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
Not normally a hazard due to physical form of product.
Inhalation of vapour is more likely at higher than normal temperatures.
The vapour is discomforting

Ingestion
Not normally a hazard due to physical form of product.
## Skin Contact

Not normally a hazard due to physical form of product. The vapour is discomforting.

## Eye

Not normally a hazard due to physical form of product. The vapour is discomforting.

### Chronic

- Generally not applicable. Principal hazards are related to the explosive/ decomposition by products of the cartridge, if inadvertently discharged or launched without adequate control and safety measures in place. Normal exposure to the article by all route is considered to be practically non-harmful. Over exposure to fumes from firing is harmful.

## PERSONAL AND COMPACT MINIFLARES

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
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### magnesium

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral (rat) LD50: &gt;2000 mg/kg&lt;sup&gt;[1]&lt;/sup&gt;</td>
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### strontium nitrate

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
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</thead>
<tbody>
<tr>
<td>Oral (rat) LD50: 1892 mg/kg&lt;sup&gt;[2]&lt;/sup&gt;</td>
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### potassium nitrate

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>dermal (rat) LD50: &gt;5000 mg/kg&lt;sup&gt;[1]&lt;/sup&gt;</td>
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</tr>
<tr>
<td>Oral (rat) LD50: &gt;2000 mg/kg&lt;sup&gt;[1]&lt;/sup&gt;</td>
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### sulfur

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>dermal (rat) LD50: &gt;2000 mg/kg&lt;sup&gt;[1]&lt;/sup&gt;</td>
<td>Not Available</td>
</tr>
<tr>
<td>Inhalation (rat) LC50: &gt;5.43 mg/l&lt;sub&gt;4 h&lt;/sub&gt;&lt;sup&gt;[1]&lt;/sup&gt;</td>
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<tr>
<td>Oral (rat) LD50: &gt;2000 mg/kg&lt;sup&gt;[1]&lt;/sup&gt;</td>
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### aluminium

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral (rat) LD50: &gt;2000 mg/kg&lt;sup&gt;[1]&lt;/sup&gt;</td>
<td>Not Available</td>
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</tbody>
</table>

## STRONTIUM NITRATE

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. 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. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

### ALUMINIUM

No significant acute toxicological data identified in literature search.

## SECTION 12 ECOLOGICAL INFORMATION

### Toxicity

<table>
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<tr>
<th>ENDPOINT</th>
<th>TEST DURATION (HR)</th>
<th>SPECIES</th>
<th>VALUE</th>
<th>SOURCE</th>
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<table>
<thead>
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<th>ENDPOINT</th>
<th>TEST DURATION (HR)</th>
<th>SPECIES</th>
<th>VALUE</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50</td>
<td>96</td>
<td>Fish</td>
<td>541mg/L</td>
<td>2</td>
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<tr>
<td>EC50</td>
<td>72</td>
<td>Algae or other aquatic plants</td>
<td>&gt;20mg/L</td>
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<tr>
<td>NOEC</td>
<td>72</td>
<td>Algae or other aquatic plants</td>
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<td>ENDPOINT</td>
<td>TEST DURATION (HR)</td>
<td>SPECIES</td>
<td>VALUE</td>
<td>SOURCE</td>
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<tr>
<td>----------</td>
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</tr>
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<td>Fish</td>
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<tr>
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<td>Algae or other aquatic plants</td>
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<td>96</td>
<td>Fish</td>
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<td>Fish</td>
<td>22.5mg/L</td>
<td>4</td>
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<td>Crustacea</td>
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<td>NOEC</td>
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<td>BCF</td>
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<td>&gt;0.004mg/L</td>
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</table>

**Legend:** Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

### Persistence and degradability

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
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<tr>
<td>potassium nitrate</td>
<td>LOW</td>
<td>LOW</td>
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<tr>
<td>sulfur</td>
<td>LOW</td>
<td>LOW</td>
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### Bioaccumulative potential

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>potassium nitrate</td>
<td>LOW (LogKOW = 0.209)</td>
</tr>
<tr>
<td>sulfur</td>
<td>LOW (LogKOW = 0.229)</td>
</tr>
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</table>

### Mobility in soil

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>potassium nitrate</td>
<td>LOW (KOC = 14.3)</td>
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<tr>
<td>sulfur</td>
<td>LOW (KOC = 14.3)</td>
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### SECTION 13 DISPOSAL CONSIDERATIONS

**Waste treatment methods**

- Explosives must not be thrown away, buried, discarded or placed with garbage.
- Explosives which are surplus, deteriorated or considered unsafe for transport, storage or use shall be destroyed and the statutory authorities shall be notified.
- This material may be disposed of by burning or detonation but the operation may only be performed under the control of a person trained in the safe destruction of explosives.

Refer to local Waste Disposal Authority and supplier for suitable disposal procedure.

### SECTION 14 TRANSPORT INFORMATION

#### Labels Required

- Marine Pollutant: NO

#### Land transport (DOT)

- **UN number:** 0312
- **UN proper shipping name:** Cartridges, signal
<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
<th>Class</th>
<th>1.4G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subrisk</td>
<td>Not Applicable</td>
<td></td>
</tr>
</tbody>
</table>

Packing group: Not Applicable

Environmental hazard: Not Applicable

Special precautions for user:

<table>
<thead>
<tr>
<th>Hazard Label</th>
<th>1.4G</th>
</tr>
</thead>
</table>

| Special provisions | Not Applicable |

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

<table>
<thead>
<tr>
<th>UN number</th>
<th>0312</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>UN proper shipping name</th>
<th>Cartridges, signal</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
<th>ICAO/IATA Class</th>
<th>1.4G</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICAO / IATA Subrisk</td>
<td>Not Applicable</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ERG Code</th>
<th>1L</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Packing group</th>
<th>Not Applicable</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Environmental hazard</th>
<th>Not Applicable</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Special precautions for user</th>
<th>Special provisions</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cargo Only Packing Instructions</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Cargo Only Maximum Qty / Pack</td>
<td>75 kg</td>
<td></td>
</tr>
<tr>
<td>Passenger and Cargo Packing Instructions</td>
<td>Forbidden</td>
<td></td>
</tr>
<tr>
<td>Passenger and Cargo Maximum Qty / Pack</td>
<td>Forbidden</td>
<td></td>
</tr>
<tr>
<td>Passenger and Cargo Limited Quantity Packing Instructions</td>
<td>Forbidden</td>
<td></td>
</tr>
<tr>
<td>Passenger and Cargo Limited Maximum Qty / Pack</td>
<td>Forbidden</td>
<td></td>
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</tbody>
</table>

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

<table>
<thead>
<tr>
<th>UN number</th>
<th>0312</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>UN proper shipping name</th>
<th>CARTRIDGES, SIGNAL</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
<th>IMDG Class</th>
<th>1.4G</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMDG Subrisk</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Packing group</th>
<th>Not Applicable</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Environmental hazard</th>
<th>Not Applicable</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Special precautions for user</th>
<th>EMS Number</th>
<th>F-B , S-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special provisions</td>
<td>Not Applicable</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Limited Quantities</th>
<th>0</th>
</tr>
</thead>
</table>

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>MAGNESIUM(7439-95-4) IS FOUND ON THE FOLLOWING REGULATORY LISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)</td>
</tr>
<tr>
<td>US - California Permissible Exposure Limits for Chemical Contaminants</td>
</tr>
<tr>
<td>US - Hawaii Air Contaminant Limits</td>
</tr>
<tr>
<td>US - Massachusetts - Right To Know Listed Chemicals</td>
</tr>
<tr>
<td>US - Michigan Exposure Limits for Air Contaminants</td>
</tr>
<tr>
<td>US - Oregon Permissible Exposure Limits (Z-1)</td>
</tr>
<tr>
<td>US - Pennsylvania - Hazardous Substance List</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STRONTIUM NITRATE(10042-76-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>US - Massachusetts - Right To Know Listed Chemicals</td>
</tr>
<tr>
<td>US - Pennsylvania - Hazardous Substance List</td>
</tr>
<tr>
<td>US - Rhode Island Hazardous Substance List</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POTASSIUM NITRATE(7757-79-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>US - Massachusetts - Right To Know Listed Chemicals</td>
</tr>
<tr>
<td>US - Pennsylvania - Hazardous Substance List</td>
</tr>
</tbody>
</table>

Continued...
SULFUR (7704-34-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)
US - California Permissible Exposure Limits for Chemical Contaminants
US - Hawaii Air Contaminant Limits
US - Massachusetts - Right To Know Listed Chemicals
US - Michigan Exposure Limits for Air Contaminants
US - Oregon Permissible Exposure Limits (Z-1)
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants
US - Wyoming Toxic and Hazardous Substances Table Z2 Limits for Air Contaminants

US List of Active Substances Exempt from the TSCA Inventory Notifications (Active-Inactive)
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
US TSCA Chemical Substance Inventory - Interim List of Active Substances

ALUMINIUM (7429-90-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US - Alaska Limits for Air Contaminants
US - California Permissible Exposure Limits for Chemical Contaminants
US - Hawaii Air Contaminant Limits
US - Massachusetts - Right To Know Listed Chemicals
US - Michigan Permissible Exposure Limits (PELs)
US - Oregon Permissible Exposure Limits (Z-1)
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants

US List of Active Substances Exempt from the TSCA Inventory Notifications (Active-Inactive)
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
US TSCA Chemical Substance Inventory - Interim List of Active Substances

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SECTION 311/312 HAZARD CATEGORIES

Immediate (acute) health hazard Yes
Delayed (chronic) health hazard No
Fire hazard No
Pressure hazard Yes
Reactivity hazard No

US. EPA CERCLA HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES (40 CFR 302.4)

None Reported

State Regulations

US. CALIFORNIA PROPOSITION 65

None Reported

National Inventory  Status
Australia - AICS  Y
Canada - DSL  Y
Canada - NDSS  N (strontium nitrate; sulfur; magnesium; aluminium; potassium nitrate)
China - IECSC  Y
Europe - EINEC / ELINCS / NLP  Y
Japan - ENCS  N (sulfur; magnesium; aluminium)
Korea - KECS  Y
New Zealand - NZIoC  Y
Philippines - PICCS  Y
USA - TSCA  Y

Legend:
Y = All ingredients are on the inventory
N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing (see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple cas numbers

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS No</th>
</tr>
</thead>
<tbody>
<tr>
<td>strontium nitrate</td>
<td>10042-76-9, 13470-05-8</td>
</tr>
<tr>
<td>aluminium</td>
<td>7429-90-5, 91728-14-2</td>
</tr>
</tbody>
</table>

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 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