



ILLUMINATING PARACHUTE ROCKET

Drew Marine Signal and Safety Germany GmbH

Chemwatch: 65-6271

Version No: 2.1.1.1

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: 06/09/2016

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S.GHS.U.S.A.EN

SECTION 1 IDENTIFICATION

Product Identifier

| | |
|-------------------------------|---|
| Product name | ILLUMINATING PARACHUTE ROCKET |
| Synonyms | Comet Parachute Rocket, White Art.-No.: 9123700,9123706, 9123709, 9123710, Pains Wessex Para Illum Rocket MK8 – Art.-No.: 9507550 |
| Proper shipping name | Signals, distress, ship |
| Other means of identification | Not Available |

Recommended use of the chemical and restrictions on use

| | |
|--------------------------|--|
| Relevant identified uses | Use according to manufacturer's directions. Signal for illuminating areas at sea. used in Search and Rescue operations at night or for collision warning. Designed to withstand exceptional environmental exposure and to perform reliably even after immersion in water, the pull wire ignitor and improved grip provides easy handling. |
|--------------------------|--|

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

| | |
|-------------------------|---|
| Registered company name | Drew Marine Signal and Safety Germany GmbH |
| Address | Vieländer Weg 147 Bremerhaven 27574 Germany |
| Telephone | +49 471 3930 |
| Fax | +49 471 3932 10 |
| Website | www.signalandsafety.com |
| Email | info@signalandsafety.com |

Emergency phone number


| | |
|-----------------------------------|--|
| Association / Organisation | Consultant Lutz Harder GmbH |
| Emergency telephone numbers | +49 178 433 7434 |
| Other emergency telephone numbers | CHEMWATCH: From within the US and CANADA: 1 877 715 9305 OR call +613 9573 3112. From outside the US and Canada: +800 2436 2255 (+800 CHEMCALL) or +61 3 9573 3112 |

SECTION 2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

| | |
|----------------|--|
| Classification | Explosive Division 1.4, Eye Irritation Category 2B |
|----------------|--|

Label elements

| | |
|--------------------|---|
| GHS label elements |  |
|--------------------|---|

| | |
|-------------|----------------|
| SIGNAL WORD | WARNING |
|-------------|----------------|

Hazard statement(s)

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

Hazard(s) not otherwise specified

Not Applicable

Precautionary statement(s) Prevention

| | |
|------|--|
| P210 | Keep away from heat/sparks/open flames/hot surfaces. - No smoking. |
| P250 | Do not subject to grinding/shock/sources of friction. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P240 | Ground/bond container and receiving equipment. |

Continued...

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Precautionary statement(s) Response

| | |
|----------------|--|
| P370+P380 | In case of fire: Evacuate area. |
| P372 | Explosion risk in case of fire. |
| P374 | Fight fire with normal precautions from a reasonable distance. |
| P373 | DO NOT fight fire when fire reaches explosives. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |

Precautionary statement(s) Storage

| | |
|------|--|
| P401 | Store according to local regulations for explosives. |
|------|--|

Precautionary statement(s) Disposal

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

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

| CAS No | %[weight] | Name |
|------------|-----------|---|
| | | device contains |
| | | lighter composition, delay composition and ignition composition |
| | | polytechnic materials of; |
| 7757-79-1 | 30-60 | <u>potassium nitrate</u> |
| 7439-95-4 | 30-60 | <u>magnesium</u> |
| 7631-99-4 | 30-60 | <u>sodium nitrate</u> |
| 10042-76-9 | 10-30 | <u>strontium nitrate</u> |
| 8050-09-7 | 1-5 | <u>rosin-colophony</u> |
| 7429-90-5 | 10-30 | <u>aluminium</u> |
| 7778-74-7 | 10-30 | <u>potassium perchlorate</u> |
| | | rocket propellant; |
| 10294-40-3 | 10-30 | <u>barium chromate</u> |

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

SECTION 4 FIRST-AID MEASURES

Description of first aid measures

| | |
|--------------|---|
| Eye Contact | <p>If this product comes in contact with eyes:</p> <ul style="list-style-type: none"> ▶ 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 | <p>If skin contact occurs:</p> <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ 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 | <p>Not considered a normal route of entry.</p> <ul style="list-style-type: none"> ▶ 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 casualty 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

DANGER: Deliver media remotely.

- ▶ For minor fires: Flooding quantities only.
- ▶ For large fires: **Do not attempt to extinguish.**

Apply by mechanical means only. Fight all fires from a remote and explosion resistant site.

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 | <p>WARNING: EXPLOSIVE MATERIALS / ARTICLES PRESENT!</p> <ul style="list-style-type: none"> ▶ 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. <p>Slight hazard when exposed to heat, flame and oxidisers.</p> |
| Fire/Explosion Hazard | <p>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.</p> <p>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 hypergolic liquids).</p> <p>Combustible. Will burn if ignited.</p> <p>Combustion products include:</p> <ul style="list-style-type: none"> · 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 | <p>WARNING: EXPLOSIVE.</p> <p>BLAST and/or PROJECTION and/or FIRE HAZARD</p> <ul style="list-style-type: none"> ▶ 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 | <p>WARNING: EXPLOSIVE.</p> <ul style="list-style-type: none"> ▶ 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

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| | |
|--------------------------|--|
| Safe handling | <ul style="list-style-type: none"> ▶ 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. |
| Other information | <ul style="list-style-type: none"> ▶ 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 <p>NOTE: If explosives need to be destroyed contact the Competent Authority.</p> <ul style="list-style-type: none"> ▶ Store away from incompatible materials. <p>Keep out of reach of children.</p> |

Conditions for safe storage, including any incompatibilities

| | |
|--------------------------------|---|
| Suitable container | <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ 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****OCCUPATIONAL EXPOSURE LIMITS (OEL)****INGREDIENT DATA**

| Source | Ingredient | Material name | TWA | STEL | Peak | Notes |
|---|-----------------|--|---|---------------|---------------|--|
| US OSHA Permissible Exposure Levels (PELs) - Table Z3 | magnesium | Inert or Nuisance Dust | 5 mg/m3 / 15 mg/m3 / 15 mppcf / 50 mppcf | Not Available | Not Available | Respirable fraction; All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Table Z-1. / Total dust; All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Table Z-1. |
| US ACGIH Threshold Limit Values (TLV) | rosin-colophony | Rosin core solder thermal decomposition products (colophony) | Not Available | Not Available | Not Available | TLV® Basis: Skin sens; dermatitis; asthma |
| US OSHA Permissible Exposure Levels (PELs) - Table Z1 | aluminium | Aluminum, metal / Aluminum, metal-Respirable fraction | 15 mg/m3 / 5 mg/m3 | Not Available | Not Available | Total dust; (as Al) / (as Al) |
| US ACGIH Threshold Limit Values (TLV) | aluminium | Aluminum metal and insoluble compounds | 1 mg/m3 | Not Available | Not Available | TLV® Basis: Pneumoconiosis; LRT irr; neurotoxicity |
| US NIOSH Recommended Exposure Limits (RELs) | aluminium | Aluminium, Aluminum metal, Aluminum powder, Elemental aluminum | 10 (total), 5 (resp) mg/m3 | Not Available | Not Available | Not Available |
| US OSHA Permissible Exposure Levels (PELs) - Table Z1 | barium chromate | Chromium (VI) compounds | 0.005 mg/m3 | Not Available | Not Available | See 1910.1026; See Table Z-2 for the exposure limit for any operations or sectors where the exposure limit in §1910.1026 is stayed or is otherwise not in effect. |
| US OSHA Permissible Exposure Levels (PELs) - Table Z1 | barium chromate | Chromium metal and insol. salts | 1 mg/m3 | Not Available | Not Available | (as Cr) |
| US ACGIH Threshold Limit Values (TLV) | barium chromate | Chromium, and inorganic compounds, as Cr - Insoluble Cr VI compounds | 0.01 mg/m3 | Not Available | Not Available | TLV® Basis: Lung cancer |

EMERGENCY LIMITS


| Ingredient | Material name | TEEL-1 | TEEL-2 | TEEL-3 |
|-------------------|-------------------|---------|-----------|-----------|
| potassium nitrate | Potassium nitrate | 9 mg/m3 | 100 mg/m3 | 600 mg/m3 |

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| | | | | |
|-----------------------|---|------------|-----------|-------------|
| magnesium | Magnesium | 18 mg/m3 | 200 mg/m3 | 1,200 mg/m3 |
| sodium nitrate | Sodium nitrate | 4.1 mg/m3 | 45 mg/m3 | 270 mg/m3 |
| strontium nitrate | Strontium nitrate | 5.7 mg/m3 | 62 mg/m3 | 370 mg/m3 |
| rosin-colophony | Rosin core solder decomposition products; (Colophony Gum) | 72 mg/m3 | 790 mg/m3 | 1,500 mg/m3 |
| potassium perchlorate | Potassium perchlorate | 6.3 mg/m3 | 69 mg/m3 | 420 mg/m3 |
| barium chromate | Barium chromate | 0.15 mg/m3 | 13 mg/m3 | 77 mg/m3 |

| Ingredient | Original IDLH | Revised IDLH |
|-----------------------|---------------|---------------|
| potassium nitrate | Not Available | Not Available |
| magnesium | Not Available | Not Available |
| sodium nitrate | Not Available | Not Available |
| strontium nitrate | Not Available | Not Available |
| rosin-colophony | Not Available | Not Available |
| aluminium | Not Available | Not Available |
| potassium perchlorate | Not Available | Not Available |
| barium chromate | Not Available | Not Available |

Exposure controls

| | |
|---|--|
| Appropriate engineering controls | <p>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.</p> <p>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.</p> <p>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.</p> |
| Personal protection |  |
| Eye and face protection | <ul style="list-style-type: none"> ▶ Safety glasses with side shields ▶ Chemical goggles |
| Skin protection | See Hand protection below |
| Hands/feet protection | <ul style="list-style-type: none"> ▶ Wear chemical protective gloves, e.g. PVC. ▶ Wear safety footwear or safety gumboots, e.g. Rubber |
| Body protection | See Other protection below |
| Other protection | <ul style="list-style-type: none"> ▶ Fire resistant/ heat resistant gloves where practical, otherwise ▶ Heavy-duty chemically resistant gloves capable of providing short-term protection against spontaneous ignition. ▶ Safety footwear <p>Hard hat Ear Protection.</p> |
| 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

| | | | |
|---|--|--|----------------|
| Appearance | Aluminium tube with orange plastic outer casing pressed with black/grey polytechnical ingredients. | | |
| Physical state | Manufactured | Relative density (Water = 1) | Not Applicable |
| Odour | Not Available | Partition coefficient n-octanol / water | Not Available |
| Odour threshold | Not Available | Auto-ignition temperature (°C) | >71 |
| pH (as supplied) | Not Applicable | Decomposition temperature | Not Applicable |
| Melting point / freezing point (°C) | Not Applicable | Viscosity (cSt) | Not Applicable |
| Initial boiling point and boiling range (°C) | Not Applicable | Molecular weight (g/mol) | Not Applicable |
| Flash point (°C) | 160 | Taste | Not Available |
| Evaporation rate | Not Applicable | Explosive properties | Not Available |
| Flammability | Not Applicable | Oxidising properties | Not Available |

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| | | | |
|---------------------------|----------------|----------------------------------|----------------|
| Upper Explosive Limit (%) | Not Applicable | Surface Tension (dyn/cm or mN/m) | Not Applicable |
| Lower Explosive Limit (%) | Not Applicable | Volatile Component (%vol) | Not Applicable |
| Vapour pressure (kPa) | Not Applicable | Gas group | Not Available |
| Solubility in water (g/L) | Immiscible | pH as a solution (1%) | Not Applicable |
| Vapour density (Air = 1) | Not Applicable | VOC g/L | Not Available |

SECTION 10 STABILITY AND REACTIVITY

| | |
|------------------------------------|--|
| Reactivity | See section 7 |
| Chemical stability | <ul style="list-style-type: none"> ▶ 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 polymerization 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. |

| ILLUMINATING PARACHUTE ROCKET | TOXICITY | IRRITATION |
|-------------------------------|--|---------------|
| | Not Available | Not Available |
| potassium nitrate | dermal (rat) LD50: >5000 mg/kg ^[1] Oral (rat) LD50: >2000 mg/kg ^[1] | Not Available |
| magnesium | Oral (rat) LD50: >2000 mg/kg ^[1] | Not Available |
| sodium nitrate | dermal (rat) LD50: >5000 mg/kg ^[1] Oral (rat) LD50: 1267 mg/kg ^[2] | Not Available |
| strontium nitrate | Oral (rat) LD50: 1892 mg/kg ^[2] | Not Available |
| rosin-colophony | dermal (rat) LD50: >2000 mg/kg ^[1] Oral (rat) LD50: 3.0 mg/kg ^[2] | Not Available |
| aluminium | Oral (rat) LD50: >2000 mg/kg ^[1] | Not Available |
| potassium perchlorate | Not Available | Not Available |
| barium chromate | Oral (rat) LD50: >2000 mg/kg ^[2] | Not Available |

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Legend: 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

| | |
|---|--|
| BARIUM CHROMATE | WARNING: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS. |
| SODIUM NITRATE & 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-allergenic 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. |
| ROSIN-COLOPHONY & BARIUM CHROMATE | The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested. |
| ALUMINIUM & POTASSIUM PERCHLORATE | No significant acute toxicological data identified in literature search. |

| | | | |
|--|---|---------------------------------|---|
| 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 available but does not fill the criteria for classification
 ✔ – Data available to make classification
 ☐ – Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

| Ingredient | Endpoint | Test Duration (hr) | Species | Value | Source |
|-----------------------|----------|--------------------|-------------------------------|-----------------|--------|
| potassium nitrate | LC50 | 96 | Fish | 22.5mg/L | 4 |
| potassium nitrate | EC50 | 96 | Algae or other aquatic plants | 1181.887mg/L | 3 |
| potassium nitrate | EC50 | 384 | Crustacea | 49.116mg/L | 3 |
| magnesium | LC50 | 96 | Fish | 541mg/L | 2 |
| magnesium | EC50 | 72 | Algae or other aquatic plants | >20mg/L | 2 |
| magnesium | EC50 | 72 | Algae or other aquatic plants | >20mg/L | 2 |
| magnesium | NOEC | 72 | Algae or other aquatic plants | >25.5mg/L | 2 |
| sodium nitrate | LC50 | 96 | Fish | 213.366mg/L | 3 |
| sodium nitrate | EC50 | 96 | Algae or other aquatic plants | 1181.887mg/L | 3 |
| sodium nitrate | EC50 | 384 | Crustacea | 49.116mg/L | 3 |
| sodium nitrate | NOEC | 2880 | Fish | 1.6mg/L | 4 |
| strontium nitrate | LC50 | 96 | Fish | >40.3mg/L | 2 |
| strontium nitrate | EC50 | 72 | Algae or other aquatic plants | >43.3mg/L | 2 |
| strontium nitrate | EC50 | 72 | Algae or other aquatic plants | >43.3mg/L | 2 |
| strontium nitrate | NOEC | 96 | Fish | >=40.3mg/L | 2 |
| rosin-colophony | LC50 | 96 | Fish | 0.144mg/L | 3 |
| rosin-colophony | EC50 | 48 | Crustacea | =4.5mg/L | 1 |
| rosin-colophony | EC50 | 96 | Algae or other aquatic plants | 0.170mg/L | 3 |
| rosin-colophony | EC50 | 384 | Crustacea | 0.076mg/L | 3 |
| aluminium | LC50 | 96 | Fish | 0.078-0.108mg/L | 2 |
| aluminium | EC50 | 48 | Crustacea | 0.7364mg/L | 2 |
| aluminium | EC50 | 96 | Algae or other aquatic plants | 0.0054mg/L | 2 |
| aluminium | BCF | 360 | Algae or other aquatic plants | 9mg/L | 4 |
| aluminium | EC50 | 120 | Fish | 0.000051mg/L | 5 |
| aluminium | NOEC | 72 | Algae or other aquatic plants | >=0.004mg/L | 2 |
| potassium perchlorate | EC10 | 24 | Algae or other aquatic plants | >1000mg/L | 4 |

Continued...

Legend:

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - 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

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|-------------------|-------------------------|------------------|
| potassium nitrate | LOW | LOW |
| sodium nitrate | LOW | LOW |
| rosin-colophony | HIGH | HIGH |

Bioaccumulative potential

| Ingredient | Bioaccumulation |
|-------------------|------------------------|
| potassium nitrate | LOW (LogKOW = 0.209) |
| sodium nitrate | LOW (LogKOW = 0.209) |
| rosin-colophony | HIGH (LogKOW = 6.4607) |


Mobility in soil

| Ingredient | Mobility |
|-------------------|-------------------|
| potassium nitrate | LOW (KOC = 14.3) |
| sodium nitrate | LOW (KOC = 14.3) |
| rosin-colophony | LOW (KOC = 21990) |

SECTION 13 DISPOSAL CONSIDERATIONS**Waste treatment methods**

| Product / Packaging disposal | |
|------------------------------|---|
| | <ul style="list-style-type: none"> ▶ 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. <p>Refer to local Waste Disposal Authority and supplier for suitable disposal procedure.</p> |

SECTION 14 TRANSPORT INFORMATION**Labels Required**

| | |
|---|----|
|  | |
| Marine Pollutant | NO |

Land transport (DOT)

| | | | | | |
|-------------------------------------|---|--------------|------|--------------------|----------------|
| UN number | 0505 | | | | |
| UN proper shipping name | Signals, distress, ship | | | | |
| Transport hazard class(es) | <table border="0"> <tr> <td>Class</td> <td>1.4G</td> </tr> <tr> <td>Subrisk</td> <td>Not Applicable</td> </tr> </table> | Class | 1.4G | Subrisk | Not Applicable |
| Class | 1.4G | | | | |
| Subrisk | Not Applicable | | | | |
| Packing group | Not Applicable | | | | |
| Environmental hazard | Not Applicable | | | | |
| Special precautions for user | <table border="0"> <tr> <td>Hazard Label</td> <td>1.4G</td> </tr> <tr> <td>Special provisions</td> <td>Not Applicable</td> </tr> </table> | Hazard Label | 1.4G | Special provisions | Not Applicable |
| Hazard Label | 1.4G | | | | |
| Special provisions | Not Applicable | | | | |

Air transport (ICAO-IATA / DGR)

| | | | | | | | |
|-----------------------------------|--|-----------------|------|---------------------|----------------|----------|----|
| UN number | 0505 | | | | | | |
| UN proper shipping name | Signals, distress ship | | | | | | |
| Transport hazard class(es) | <table border="0"> <tr> <td>ICAO/IATA Class</td> <td>1.4G</td> </tr> <tr> <td>ICAO / IATA Subrisk</td> <td>Not Applicable</td> </tr> <tr> <td>ERG Code</td> <td>1L</td> </tr> </table> | ICAO/IATA Class | 1.4G | ICAO / IATA Subrisk | Not Applicable | ERG Code | 1L |
| ICAO/IATA Class | 1.4G | | | | | | |
| ICAO / IATA Subrisk | Not Applicable | | | | | | |
| ERG Code | 1L | | | | | | |
| Packing group | Not Applicable | | | | | | |
| Environmental hazard | Not Applicable | | | | | | |

ILLUMINATING PARACHUTE ROCKET

| | | |
|-------------------------------------|---|----------------|
| Special precautions for user | Special provisions | Not Applicable |
| | Cargo Only Packing Instructions | 135 |
| | Cargo Only Maximum Qty / Pack | 75 kg |
| | Passenger and Cargo Packing Instructions | Forbidden |
| | Passenger and Cargo Maximum Qty / Pack | Forbidden |
| | Passenger and Cargo Limited Quantity Packing Instructions | Forbidden |
| | Passenger and Cargo Limited Maximum Qty / Pack | Forbidden |

Sea transport (IMDG-Code / GGVSee)

| | | |
|-------------------------------------|------------------------|----------------|
| UN number | 0505 | |
| UN proper shipping name | SIGNALS, DISTRESS ship | |
| Transport hazard class(es) | IMDG Class | 1.4G |
| | IMDG Subrisk | Not Applicable |
| Packing group | Not Applicable | |
| Environmental hazard | Not Applicable | |
| Special precautions for user | EMS Number | F-B, S-X |
| | Special provisions | Not Applicable |
| | Limited Quantities | 0 |

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****POTASSIUM NITRATE(7757-79-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

US - Massachusetts - Right To Know Listed Chemicals

US - Pennsylvania - Hazardous Substance List

US - Rhode Island Hazardous Substance List

US EPCRA Section 313 Chemical List

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

MAGNESIUM(7439-95-4) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

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 - Washington Permissible exposure limits of air contaminants

US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants

US OSHA Permissible Exposure Levels (PELs) - Table Z3

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

SODIUM NITRATE(7631-99-4) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US - Massachusetts - Right To Know Listed Chemicals

US - Pennsylvania - Hazardous Substance List

US - Rhode Island Hazardous Substance List

US EPCRA Section 313 Chemical List

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

STRONTIUM NITRATE(10042-76-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US - Massachusetts - Right To Know Listed Chemicals

US - Pennsylvania - Hazardous Substance List

US - Rhode Island Hazardous Substance List

US EPCRA Section 313 Chemical List

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

ROSIN-COLOPHONY(8050-09-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US - Michigan Exposure Limits for Air Contaminants

US - Pennsylvania - Hazardous Substance List

US - Washington Permissible exposure limits of air contaminants

US ACGIH Threshold Limit Values (TLV)

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

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

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| | |
|---|---|
| US - Alaska Limits for Air Contaminants | US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants |
| US - California Permissible Exposure Limits for Chemical Contaminants | US - Washington Permissible exposure limits of air contaminants |
| US - Hawaii Air Contaminant Limits | US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants |
| US - Massachusetts - Right To Know Listed Chemicals | US ACGIH Threshold Limit Values (TLV) |
| US - Michigan Exposure Limits for Air Contaminants | US ACGIH Threshold Limit Values (TLV) - Carcinogens |
| US - Minnesota Permissible Exposure Limits (PELs) | US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs) |
| US - Oregon Permissible Exposure Limits (Z-1) | US EPCRA Section 313 Chemical List |
| US - Pennsylvania - Hazardous Substance List | US NIOSH Recommended Exposure Limits (RELs) |
| US - Rhode Island Hazardous Substance List | US OSHA Permissible Exposure Levels (PELs) - Table Z1 |
| US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants | US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory |
| US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants | |

POTASSIUM PERCHLORATE(7778-74-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS

| | |
|---|---|
| US - Massachusetts - Right To Know Listed Chemicals | US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs) |
| US - Pennsylvania - Hazardous Substance List | US EPA Carcinogens Listing |
| US - Rhode Island Hazardous Substance List | US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory |

BARIUM CHROMATE(10294-40-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

| | |
|---|---|
| International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs | US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants |
| US - Alaska Limits for Air Contaminants | US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants |
| US - California - Proposition 65 - Priority List for the Development of MADLs for Chemicals Causing Reproductive Toxicity | US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants |
| US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs) | US - Washington Permissible exposure limits of air contaminants |
| US - California Permissible Exposure Limits for Chemical Contaminants | US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values |
| US - California Proposition 65 - Carcinogens | US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants |
| US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens | US ACGIH Threshold Limit Values (TLV) |
| US - California Proposition 65 - Reproductive Toxicity | US ACGIH Threshold Limit Values (TLV) - Carcinogens |
| US - Hawaii Air Contaminant Limits | US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs) |
| US - Idaho - Limits for Air Contaminants | US Clean Air Act - Hazardous Air Pollutants |
| US - Massachusetts - Right To Know Listed Chemicals | US CWA (Clean Water Act) - Priority Pollutants |
| US - Michigan Exposure Limits for Air Contaminants | US CWA (Clean Water Act) - Toxic Pollutants |
| US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Carcinogens | US EPA Carcinogens Listing |
| US - Oregon Permissible Exposure Limits (Z-1) | US EPCRA Section 313 Chemical List |
| US - Oregon Permissible Exposure Limits (Z-2) | US National Toxicology Program (NTP) 14th Report Part A Known to be Human Carcinogens |
| US - Pennsylvania - Hazardous Substance List | US OSHA Permissible Exposure Levels (PELs) - Table Z1 |
| US - Rhode Island Hazardous Substance List | US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory |

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

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm

US - CALIFORNIA PREPOSITION 65 - CARCINOGENS & REPRODUCTIVE TOXICITY (CRT): LISTED SUBSTANCE

Chromium (hexavalent compounds) Listed

| National Inventory | Status |
|-------------------------------|---|
| Australia - AICS | Y |
| Canada - DSL | Y |
| Canada - NDSL | N (barium chromate; strontium nitrate; rosin-colophony; magnesium; aluminium; sodium nitrate; potassium perchlorate; potassium nitrate) |
| China - IECSC | Y |
| Europe - EINEC / ELINCS / NLP | Y |
| Japan - ENCS | N (rosin-colophony; magnesium; aluminium) |
| Korea - KECI | Y |
| New Zealand - NZIoC | Y |
| Philippines - PICCS | Y |
| USA - TSCA | Y |

ILLUMINATING PARACHUTE ROCKET

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**

| Name | CAS No |
|-------------------|------------------------|
| strontium nitrate | 10042-76-9, 13470-05-8 |
| aluminium | 7429-90-5, 91728-14-2 |

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.