SAFETY DATA SHEET

Effective Date: JULY 2019

ITEM: Coastal Alert / Locate with Accessories

PART # 574       UPC 077403105748

CONTENTS
12 Ga HP Red Aerial Signal SDS
Marine Hand Held Red Flare (HHRF) SDS
Marine Hand Held Orange Smoke Signal (HHOS) SDS

SHIPPING INFORMATION
UN0353, Articles, explosive, n.o.s., 1.4G (ERG 114)
(contains strontium nitrate and magnesium)
EX2004110274
SAFETY DATA SHEET

1. Product and Company Identification

12 Ga HP (High Performance) Red Aerial Signal

Identified Use: Emergency signal
Use Advised Against: Do not use indoors or inside of a vehicle.

Manufacturer’s Information: Orion Safety Products
3157 N 500 W
Peru, Indiana 46970
US 1-800-851-5260
Int’l (11) 1-765-472-4375

2. Hazards Identification

GHS Classifications
Explosive Category 1.4
Skin Irritation Category 2
Eye Irritation Category 1
Carcinogenicity Category 2
STOT-Single Exposure Category 3

GHS Label Elements
Hazard Statements
H204 Fire or projection hazard
H315 Causes skin irritation
H318 Causes serious eye damage
H331 Suspected of causing cancer
H335 May cause respiratory irritation

Precautionary Statements
P102 Keep out of reach of children.
P103 Read carefully and follow all instructions.
P210 Keep away from heat/sparks/open flames/hot surfaces.
P221 Protect from moisture.
P261 Avoid breathing dust/fumes.
P280 Wear protective eye protection.

Danger
IF SWALLOWED: Get immediate medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
In case of fire: use water deluge

3. Composition / Information on Ingredients

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<td>Strontium Nitrate</td>
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<td>Magnesium</td>
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<td>Strontium Peroxide</td>
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<td>Aluminum</td>
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<td>Polyvinyl Chloride</td>
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<td>Dextrin</td>
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<td>Potassium Nitrate</td>
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<td>Charcoal</td>
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<td>Copper</td>
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Note: Due to Confidential Business Information, “Trade Secrets”, the exact percentage of each ingredient has not been disclosed.
CBI information will be shared with appropriate authorities if circumstances warrant.

12 Ga HP July 2019
4. First Aid Measures

**Description of first aid measures**

**Inhalation** If contents are inhaled, remove to fresh air. Watch for signs of allergic reaction. If other symptoms develop, get medical aid immediately.

**Skin** If contents are contacted, wash with soap and water for 15 minutes. Remove contaminated clothing and wash before reuse. Get medical aid if irritation occurs.

**Eyes** If contents get into eyes, flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Remove contact lenses if easily possible. Get medical aid immediately.

**Ingestion** Get medical aid immediately.

**Most important symptoms and effects both acute and delayed** See section 2 labeling and section 11

**Indication of any immediate medical attention and special treatment needed** No data available

5. Firefighting Measures

**Extinguishing Media** Water deluge

**Unsuitable Extinguishing Media** Foam and dry chemical extinguishers and suffocation are ineffective.

**Protective Equipment and Precautions for Firefighters** Wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Prevent further propagation of fire by spraying unburnt nearby product with water. Combat fire from a sheltered position.

**Specific Hazards Arising from the Chemical** Only use outdoors. Use copious amounts of water to extinguish fire. Using small quantity of water on contents / broken shells can cause auto / re-ignition as contents contain magnesium. Use of water on a magnesium fire will generate hydrogen gas that may cause an explosion. Imitating fumes. Flaming projectiles may be ejected during a fire. Trace amounts of lead vapor may be produced (from ignition primer) in a fire situation.

**Further Information** No data available

6. Accidental Release Measures

**Personal Precautions / Protective Equipment / Emergency Procedures** Do not breathe smoke or contents. Avoid contact with skin and eyes. Wear flame retardant clothing with long sleeves, dust mask, rubber or nitrile gloves, safety goggles, safety shoes when cleaning up contents. Avoid friction on the released product. Keep away from ignition sources.

**Environmental Precautions** Prevent dispersion of contents on soil and in water. Prevent contents from spreading or entering into drains, ditches, groundwater or rivers by using appropriate barriers.

**Methods for Containment and Clean-up** Use caution when cleaning up spilled contents. Remove heat, flames, sparks and other sources of ignition. Use non-sparking tools and equipment. Prevent buildup of electrostatic charges by grounding. Clean spills in a manner that does not disperse dust into the air. Do not absorb in sawdust or other combustible absorbents. Pick up spill for recovery of disposal and place in an approved container. Wash away remainder with plenty of water. Collect wash water for approved disposal. Be very careful – magnesium powder may spontaneously ignite in presence of moisture. Magnesium powder reacts with water, producing flammable hydrogen gas.

7. Handling and Storage

**Precautions for Safe Handling** Use product only in designated launcher – do not attempt to use in 12 gauge shotgun. Point launcher away from body, other people, animals or combustible products when firing. Wear appropriate eye protection during use. Turn face from launcher when firing. Follow instructions on package. Avoid contact with clothing and other combustible materials. Use outdoors only! Do not ignite or launch product inside a vehicle or building. Avoid ingestion of smoke and inhalation of contents. Wash thoroughly after handling. Avoid contact with heat sparks, and flame. Do no disassemble signals.

**Conditions for Safe Storage, Including Any Incompatibilities** Store in a dry place away from direct sunlight, heat and incompatible materials. See section 10. Store away from food and beverages. Store away from flammable materials, sources of heat, flame and sparks. Store at ambient temperature.

8. Exposure Controls / Personal Protection

**Control Parameters**

**Exposure Limits**
- High Density Polyethylene: 5mg/ml for respirable portion and 15mg/ml for total dust
- Talc: 2.0 mg/m³
- Strontium Nitrate: Not Established
- Magnesium: Not Established
- Strontium Peroxide: Nuisance dust 15mg/m³
- Aluminum: TWA: 15 mg/m³
- Polyvinyl Chloride: 5mg/ml for respirable portion and 15mg/ml for total dust
- Dextrin: 15 mg/m³
- Charcoal: 3.5 mg/m³
- Sulfur: 20 ppm
- Potassium Nitrate: 15 mg/m³
- Iron: TWA: 10 mg/m³
- Copper: 0.1 mg/m³(fume) 1 mg/m³(dusts and mists)
- 0.2 mg/m³(fume), 1 mg/m³(dusts and mists)

**OSHA PEL**
- OSHA PEL: 3mg/ml for respirable portion and 10mg/ml for total dust

**ACGIH TLV**
- ACGIH TLV: 2.0 mg/m³
- ACGIH TLV: Not Established
- ACGIH TLV: Not Established
- ACGIH TLV: Nuisance dust 15mg/m³
- ACGIH TLV: TWA: 1 mg/m³
- ACGIH TLV: 5 and 10 mg/ml, respectively
- ACGIH TLV: 15 mg/m³
- ACGIH TLV: 3 mg/m³
- ACGIH TLV: Not Established
- ACGIH TLV: 10 mg/m³
- ACGIH TLV: Not Established
Exposure Controls
Use product outdoors only! When cleaning up contents, use local and/or general exhaust.

Engineering Controls

Personal Protective Equipment

Eye / Face Protection
Turn face from launcher when firing. Wear safety glasses or goggles during use and when cleaning up spilled contents.

Skin Protection
None under normal conditions when using product unless prolonged handling is anticipated. When cleaning up spilled contents, wear impervious protective clothing, including gloves, boots, and a lab coat, apron or coveralls as appropriate. Wash hands and face before eating, drinking, or using tobacco products.

Respiratory Protection
None under normal conditions when using product. A particulate respirator (NIOSH # N195 or better filters) may be worn during the cleanup of spilled contents.

General Hygiene
Use product outdoors away from combustible products. For cleanup of spilled contents, emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of hazardous materials. Maintain good housekeeping and safety practices. Do not let contents accumulate in storage or work areas. Clean spills up promptly.

9. Physical and Chemical Properties

Appearance (color, physical form, shape): Grey powder

pH: No data available
Boiling Point / Range: Not applicable
Vapor Pressure: Not applicable
Odor: Not applicable
Flammability: No data available
Partition Coefficient: No data available
Auto Ignition Temperature: No data available

Melting Point: No data available
Freezing Point: Not applicable
Specific Gravity: Not applicable
Odor Threshold: No data available
Flammability Limits: No data available
Viscosity: No data available
Decomposition Temperature: No data available

Solubility: No data available
Evaporation Rate: Not applicable
Vapor Density: Not applicable
Flash Point: Not applicable
Relative Density: No data available

10. Stability and Reactivity

Chemical Stability: Stable
Reactivity: No information available

Incompatible Materials

Possibility of Hazardous Reactions
Hazardous polymerization will not occur.

Hazardous Decomposition Products
Strontium Oxides, Carbon Monoxide and Dioxide, Nitrous Oxides, Magnesium Hydrides and Oxides.

11. Toxicology Information

Ingredient acute toxicity information

<table>
<thead>
<tr>
<th>Toxicology</th>
<th>Oral LD50</th>
<th>Skin LD50</th>
<th>LC50</th>
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<td>Magnesium</td>
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<tr>
<td>Strontium Peroxide</td>
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<td>Aluminum</td>
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<td>Polyvinyl Chloride</td>
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<td>Dextrin</td>
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<td>Sulfur</td>
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<td>Iron</td>
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<td>Copper</td>
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</table>

Product toxicological information

Acute Toxicity
Not classified – Acute Toxicity Estimate yields oral LD50 over 5000 mg/kg bw 17% unknown

Skin Irritation / Corrosion
Category 2 – over 0.1% of ingredients classified as a Category 2 skin irritant

Serious Eye Damage / Irritation
Category 1 – over 0.1% of ingredients classified as a Category 1 eye irritant

Respiratory / Skin Sensitization
No information found

Germ Cell Mutagen
No information found

Carcinogen
Category 2 – over 0.1% of ingredients classified as a Category 2 carcinogens

Reproductive Toxicity
No information found

STOT – single exposure
Category 3 – respiratory over 20% of ingredients classified as a Category 3 respiratory STOT hazard

STOT – repeated exposure
No information found

Aspiration Hazard
No information found

Likely routes of exposure
Skin, ingestion, inhalation

Symptoms related to the physical, chemical and toxicological characteristics
Irritation to the eyes will cause watering and redness. Reddening, scaling, and itching are characteristics of skin inflammation. Ingestion of contents may cause gastrointestinal irritation with nausea, vomiting and diarrhea. Inhalation will cause irritation to the lungs and mucus membrane. Absorption of strontium peroxide into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

Delayed and immediate effects and chronic effects from short and long term exposure
Prolonged or repeated skin contact with contents may cause dermatitis.

Interactive effects
No information found
12. Ecological Information

Ingredient toxicity / persistence / degradability / bioaccumulation / mobility in soil and water

Aquatic Toxicity
- Strontium Nitrate: Acute toxicity - Fishes, Carassius auratus, LC100, 9,615 mg/l; Chronic toxicity - Fishes, Gasterosteus aculeatus, LC100, 2,912 mg/l
- Magnesium: LC50 1355 mg/l fish

Persistence / Degradability
No information found

Bioaccumulation / Accumulation
No information found

Mobility in Environmental Media
- Strontium Nitrate: Water: considerable solubility and mobility; Soil/sediments non-significant adsorption

Other adverse effects
No information found

13. Disposal Considerations (for spills and leakage)
Dispose of contaminated product and materials used in cleaning up spills or leaks in the manner approved for pyrotechnic material. Consult appropriate federal, state, and local regulatory agencies to ascertain proper disposal procedures. Open burning is preferred method of disposal for pyrotechnic materials.

14. Transportation Information

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<th>Domestic &amp; International</th>
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15. Regulatory Information

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<th>US Regulations</th>
<th>TSCA</th>
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<td>B4 Flammable solid</td>
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16. Other Information

Revision Information: July 2019

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<th>NFPA Rating</th>
<th>HMIS Rating</th>
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<tr>
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<tr>
<td>Health</td>
<td>2 Health 3</td>
</tr>
<tr>
<td>Reactivity</td>
<td>1 Physical Hazard 1</td>
</tr>
</tbody>
</table>

Key / Legend

HMIS: hazardous material identification system
NFPA: national fire protection association
CAS: Chemical Abstracts Service number
EINECS: European inventory of existing chemical substances
OSHA PEL: occupational safety and health administration permissible exposure limit
NIOSH TLV: national institute of occupational safety and health Threshold Limit Value
NTP: National Toxicology Program
IARC: International Agency for Research on Cancer
CWA: clean water act - US

Legal Statement

This information is accurate to the best knowledge of Orion Safety Products. Orion Safety Products makes no representations or warranties, either express or implied, including without limitation any warranties of merchantability or fitness for a particular purpose, with respect to the information set forth herein or the product to which the information refers. Accordingly, Orion Safety Products will not be responsible for damages resulting from use of or reliance upon this information. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.
SAFETY DATA SHEET

1. Product and Company Identification

Marine Handheld Red Flare (HHRF)

Identified Use: Emergency signal
Use Advised Against: Do not use indoors or inside of a vehicle.

Manufacturer's Information: Orion Safety Products
3157 N 500 W
Peru, Indiana 46970
US 1-800-851-5260
Int'l (11) 1-765-472-4375

2. Hazards Identification

GHS Classifications
- Explosive: Category 1.4
- Skin Irritation: Category 2
- Eye Irritation: Category 2A
- STOT-Single Exposure: Category 3

GHS Label Elements
- Hazard Statements:
  - H204: Fire or projection hazard
  - H315: Causes skin irritation
  - H319: Causes serious eye irritation
  - H335: May cause respiratory irritation

Precautionary Statements
- P102: Keep out of reach of children.
- P103: Keep away from heat/sparks/open flames/hot surfaces.
- P210: No smoking.
- P232: Protect from moisture.
- P261: Avoid breathing dust/fumes.
- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P271: Use only outdoors.
- P280: Wear protective eye protection.

Hazard Statements
- In case of fire; use water deluge.
- IF SWALLOWED: Get immediate medical advice/attention.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Dispose of contents/container in accordance with local and national Regulations.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>EINCS #</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strontium Nitrate</td>
<td>10042-76-9</td>
<td>233-131-6</td>
<td>&lt;50%</td>
</tr>
<tr>
<td>Sulfur</td>
<td>7704-34-9</td>
<td>231-722-6</td>
<td>&lt;25%</td>
</tr>
<tr>
<td>Potassium Perchlorate</td>
<td>7778-74-7</td>
<td>231-912-9</td>
<td>&lt;20%</td>
</tr>
<tr>
<td>Polystyrene</td>
<td>9002-88-4</td>
<td>none</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Potassium Chlorate</td>
<td>3811-04-9</td>
<td>231-100-4</td>
<td>&lt;5%</td>
</tr>
</tbody>
</table>

Note: Due to Confidential Business Information, “Trade Secrets”, the exact percentage of each ingredient has not been disclosed. CBI information will be shared with appropriate authorities if circumstances warrant.

4. First Aid Measures

Description of first aid measures

- Inhalation: If contents are inhaled, remove to fresh air. Watch for signs of allergic reaction. If other symptoms develop, get medical aid immediately.
- Skin: If contents are contacted, wash with soap and water for 15 minutes. Remove contaminated clothing and wash before reuse. Get medical aid if irritation occurs.
- Eyes: If contents get into eyes, flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Remove contact lenses if easily possible. Get medical aid immediately.
- Ingestion: Get medical aid immediately.

Most important symptoms and effects both acute and delayed

Indication of any immediate medical attention and special treatment needed

See section 2 labeling and section 11

No data available
5. Firefighting Measures

<table>
<thead>
<tr>
<th>Extinguishing Media</th>
<th>Water deluge</th>
<th>Unsuitable Extinguishing Media</th>
<th>Foam and dry chemical extinguishers and suffocation are ineffective.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective Equipment and Precautions for Firefighters</td>
<td>Wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Prevent further propagation of fire by spraying unburnt nearby product with water. Combat fire from a sheltered position.</td>
<td>Only use outdoors. Flame and sparks are ejected out the open end of the flare when it functions. Do not point flare at any part of the body or flammable material.</td>
<td></td>
</tr>
<tr>
<td>Specific Hazards Arising from the Chemical Further Information</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures
Do not breathe smoke or contents. Avoid contact with skin and eyes. Wear flame retardant clothing with long sleeves, dust mask, rubber or nitrile gloves, safety goggles, safety shoes when cleaning up contents. Avoid friction on the released product. Keep away from ignition sources.

Environmental Precautions
Prevent dispersion of contents on soil and in water. Prevent contents from spreading or entering into drains, ditches, groundwater or rivers by using appropriate barriers.

Methods for Containment and Clean-up
Use caution when cleaning up spilled contents. Remove heat, flames, sparks and other sources of ignition. Use non-sparking tools and equipment. Prevent buildup of electrostatic charges by grounding. Clean spills in a manner that does not disperse dust into the air. When cleaning up contents, use local and/or general exhaust. Clean up avoiding dust generation and place in a well identified container. Do not absorb in sawdust or other combustible absorbents. Wash away remainder with plenty of water. Collect wash water for approved disposal.

7. Handling and Storage

Precautions for Safe Handling
Hold and point signal away from body when igniting. Hold signal downwind when burning. Avoid breathing smoke. Avoid contact with clothing and other combustible materials. Use outdoors only! Do not ignite or burn product inside a vehicle, boat cabin or building. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with skin and eyes. Avoid contact with heat, sparks, and flame. Signals should be allowed to burn to completion. Unburned and partially burned signals contain potassium perchlorate which should not be allowed to come into contact with surface and ground water. Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate.

Conditions for Safe Storage, Including Any Incompatibilities
Store in a dry place away from direct sunlight, heat and incompatible materials. Store away from food and beverages. Store away from flammable materials, sources of heat, flame and sparks. Store at ambient temperature. Do not store partially burned signals in a vehicle, boat, closed container, warehouse, or any other building.

8. Exposure Controls / Personal Protection

<table>
<thead>
<tr>
<th>Control Parameters</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strontium Nitrate</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Sulfur</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Potassium Perchlorate</td>
<td>Nuisance dust, 15 mg/m³</td>
<td>Nuisance dust, 15 mg/m³</td>
</tr>
<tr>
<td>Polyethylene</td>
<td>15 mg/m³ TWA</td>
<td>10 mg/m³ TWA</td>
</tr>
<tr>
<td>Potassium Chlorate</td>
<td>Not established</td>
<td>Not established</td>
</tr>
</tbody>
</table>

Exposure Controls
Use product outdoors only! When cleaning up contents, use local and/or general exhaust.

Engineering Controls
Safety glasses or goggles

Eye / Face Protection
Skin Protection
None under normal conditions when using product unless prolonged handling is anticipated. Impervious protective clothing, including gloves, boots, and a lab coat, apron or coveralls, as appropriate, when cleaning up spilled product. Wash hands and face before eating, drinking or using tobacco products

Respiratory Protection
None under normal conditions when using product. A particulate respirator (NIOSH 1 N95 or better filters) may be worn during the cleanup of spilled contents.

General Hygiene
Use product outdoors away from combustible products. For cleanup of spilled contents, emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of hazardous materials. Maintain good housekeeping and safety practices. Do not let contents accumulate in storage or work areas. Clean spills up promptly.

9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Appearance (color, physical form, shape):</th>
<th>Grey powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH:</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling Point / Range:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Pressure:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability:</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition Coefficient:</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto Ignition Temperature:</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting Point:</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing Point:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability Limits:</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition Temperature:</td>
<td>No data available</td>
</tr>
</tbody>
</table>

No data available
10. Stability and Reactivity

**Chemical Stability:** Stable  
**Reactivity:** No information available  
**Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.

**Conditions to Avoid**
Combustible materials, heat, flames, sparks and other sources of ignition. Moisture.

**Incompatible Materials**
Strong acids, strong fuels, ammonia salts and strong bases.

**Hazardous Decomposition Products**
Carbon monoxide, carbon dioxide, sulfur oxides and nitrogen oxides.

11. Toxicology Information

**Ingredient acute toxicity information**

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Oral LD50</th>
<th>Skin LD50</th>
<th>LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strontium Nitrate</td>
<td>Rat: 1892 mg/kg</td>
<td>Not stated</td>
<td>Not stated</td>
</tr>
<tr>
<td>Sulfur</td>
<td>Rat: 5050 mg/kg</td>
<td>Rat &gt; 2020 mg/kg</td>
<td>Rat &gt; 5.49 mg/l air concentration</td>
</tr>
<tr>
<td>Potassium Perchlorate</td>
<td>Rat: 2100 mg/kg</td>
<td>Not stated</td>
<td>Not stated</td>
</tr>
<tr>
<td>Polyethylene</td>
<td>Rat: 4000 mg/kg</td>
<td>Not stated</td>
<td>Not stated</td>
</tr>
<tr>
<td>Potassium Chlorate</td>
<td>Rat: 4000 mg/kg</td>
<td>2000 mg/kg (Rabbit)</td>
<td>No information found</td>
</tr>
</tbody>
</table>

**Product toxicological information**

- **Acute Toxicity:** Not classified – Acute Toxicity Estimate yields oral LD50 over 5000 mg/kg bw  
- **Skin Irritation / Corrosion:** Category 2 – over 10% of ingredients classified as a Category 2 skin irritant  
- **Serious Eye Damage / Irritation:** Category 2A – over 10% of ingredients classified as a Category 2A eye irritant  
- **Respiratory / Skin Sensitization:** Not classified (Based on available ingredients, the classification criteria are not met)  
- **Germ Cell Mutagen:** Not classified (Based on available data, the classification criteria are not met)  
- **Carcinogen:** Not classified (Based on available data, the classification criteria are not met)  
- **Reproductive Toxicity:** Not classified (Based on available data, the classification criteria are not met)  
- **STOT – single exposure:** Not classified (Based on available data, the classification criteria are not met)  
- **STOT – repeated exposure:** Category 3 – respiratory-over 10% of ingredients classified as a Category 3 respiratory STOT hazard  
- **Aspiration Hazard:** Not classified (Based on available data, the classification criteria are not met)  
- **Likely routes of exposure:** Skin, ingestion, inhalation  
- **Symptoms related to the physical, chemical and toxicological characteristics:** Contents irritating to eyes due to chemical and physical properties of the mixture. Ingestion of contents may cause gastrointestinal irritation with nausea, vomiting and diarrhea. Individuals with known allergies to sulfide drugs may also have allergic reactions to elemental sulfur.

**Interactive effects**
Inhalation of contents or smoke from burning flare will cause irritation to the lungs and mucus membrane. Prolonged or repeated skin contact with contents may cause dermatitis.

12. Ecological Information

**Ingredient toxicity / persistence / degradability / bioaccumulation / mobility in soil and water**

**Aquatic Toxicity**
- Potassium Chlorate: fish: LC50 Oncorhynchus mykiss (rainbow trout) 1750 mg/l – 96 hr, EC50 Daphnia magna (water flea) 1093 mg/l 24 hr  
- Strontium Nitrate: Acute toxicity - Fishes, Carassius auratus, LC100, 9,615 mg/l; Chronic toxicity - Fishes, Gasterosteus aculeatus, LC100, 2.912 mg/l  
- Sulfur: Toxicity to fish LC50 – Oncorhynchus mykiss (rainbow trout) - > 180 mg/l – 96 h Toxicity to daphnia and other aquatic invertebrates: EC50 – Daphnia magna (Water Flea) - > 5,000 mg/l – 48 h

**Persistence / Degradability**
No information found

**Bioaccumulation / Accumulation**
No information found

**Mobility in Environmental Media**
Strontium Nitrate: Water: considerable solubility and mobility; Soil/sediments non-significant adsorption

**Other adverse effects**
No information found

13. Disposal Considerations (for spills and leakage)
Dispose of contaminated product and materials used in cleaning up spills or leaks in the manner approved for pyrotechnic material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures. Open burning is the preferred method of disposal for pyrotechnic materials. Allow flames to burn to completion. Refer to California Code of Regulations, Title 33, Sections 67384.1-67384.10 for additional information on handling and disposal of potassium perchlorate containing materials.

14. Transportation Information

<table>
<thead>
<tr>
<th>ID Number</th>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
<th>Packing Group</th>
<th>EX Number</th>
<th>Reportable Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic &amp; International</td>
<td>UN0373</td>
<td>Signal devices, hand</td>
<td>1.4S</td>
<td>n/a</td>
<td>EX1986040106 none</td>
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</tbody>
</table>

**Special precautions for user:** no information available
15. Regulatory Information

<table>
<thead>
<tr>
<th>US Regulations</th>
<th>TS</th>
<th>CERCLA</th>
<th>CWA</th>
<th>CAA</th>
<th>SARA 313</th>
<th>SARA 302</th>
<th>Acute</th>
<th>Chronic</th>
<th>Fire</th>
<th>Reactivity</th>
<th>Pressure</th>
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<tr>
<td>Strontium Nitrate</td>
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<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Sulfur</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Potassium Perchlorate</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Polyethylene</td>
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<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Potassium Chlorate</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
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<table>
<thead>
<tr>
<th>US States</th>
<th>Prop 65</th>
<th>NJ</th>
<th>PA</th>
<th>Canada</th>
<th>WHMIS</th>
<th>DLS</th>
<th>Europe</th>
<th>Wgk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strontium Nitrate</td>
<td>no</td>
<td>1743</td>
<td>no</td>
<td>C Oxidizing materials</td>
<td>yes</td>
<td>2</td>
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<td></td>
</tr>
<tr>
<td>Sulfur</td>
<td>no</td>
<td>1757</td>
<td>yes</td>
<td>B4 Flammable solid</td>
<td>yes</td>
<td>1 / nwg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potassium Perchlorate</td>
<td>no</td>
<td>1577</td>
<td>yes</td>
<td>C Oxidizing materials</td>
<td>yes</td>
<td>1</td>
<td></td>
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<td>Polyethylene</td>
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<td>yes</td>
<td>Not listed</td>
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<td></td>
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<tr>
<td>Potassium Chlorate</td>
<td>no</td>
<td>1560</td>
<td>yes</td>
<td>C Oxidizing materials</td>
<td>yes</td>
<td>2</td>
<td></td>
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</tbody>
</table>

16. Other Information

**Revision Information:** March 2019

<table>
<thead>
<tr>
<th>NFPA Rating</th>
<th>HMIS Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>2</td>
</tr>
<tr>
<td>Health</td>
<td>2</td>
</tr>
<tr>
<td>Reactivity</td>
<td>1</td>
</tr>
</tbody>
</table>

**Key / Legend**

- NFPA: national fire protection association
- HMIS: hazardous material identification system
- CAS: Chemical Abstracts Service number
- EINECS: European inventory of existing chemical substances
- OSHA PEL: occupational safety and health administration permissible exposure limit
- NIOSH TLV: national institute of occupational safety and health Threshold Limit Value
- NTP: National Toxicology Program
- IARC: International Agency for Research on Cancer
- CWA: clean water act - US
- WHMIS: workplace hazardous materials information system - Canada
- PROP 65: California’s Proposition 65 list
- TSCA: toxic substance control act - US
- CERCLA: comprehensive environmental response compensation and liability act – US
- SARA: superfund amendments and reauthorization act – US
- DLS: Domestic Substances List - Canada
- WGK: water hazard classes - Germany

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1. Product and Company Identification

Marine Hand Held Orange Smoke Signal (HHOS)

Identified Use: Emergency signal

Use Advised Against: Do not use indoors or inside of a vehicle.

Manufacturers Information: Orion Safety Products
3157 N 500 W
Peru, Indiana 46970
US 1-800-851-5260
Int'l (11) 1-765-472-4375

2. Hazards Identification

GHS Classifications
Explosive Category 1,4 H204
Skin Irritation Category 2 H315
Eye Irritation Category 2A H319
Skin Sensitization Category 1 H317
STOT-Repeated Exposure Category 1 H372

GHS Label Elements
Pictograms

Precautionary Statements
P102 Keep out of reach of children.
P103 Read carefully and follow all instructions.
P210 Keep away from heat/sparks/open flames/hot surfaces.
P232 Protect from moisture
P261 Avoid breathing dust/fumes.
P284 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors.
P280 Wear protective eye protection.

Hazard Statements
H204 Fire or projection hazard
H315 Causes skin irritation
H319 Causes serious eye irritation
H317 May cause an allergic skin reaction
H372 Causes damage to lungs through prolonged or repeated exposure

In case of fire: use water deluge.
IF SWALLOWED: Get immediate medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation or rash occurs, get medical advice/attention.
Dispose of contents/container in accordance with local and national Regulations.

Hazard Statements Not Otherwise Classified (HNOC): produces hot flame and copious amount of smoke

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>EINCS #</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent Yellow Dye</td>
<td>842-07-9</td>
<td>212-666-2</td>
<td>&lt;40%</td>
</tr>
<tr>
<td>Lactose</td>
<td>63-42-3</td>
<td>200-559-2</td>
<td>&lt;40%</td>
</tr>
<tr>
<td>Potassium Chlorate</td>
<td>3811-04-9</td>
<td>231-100-4</td>
<td>&lt;25%</td>
</tr>
<tr>
<td>Solvent Orange 7 Dye</td>
<td>3118-97-6</td>
<td>221-490-4</td>
<td>&lt;20%</td>
</tr>
<tr>
<td>Strontium Carbonate</td>
<td>1633-05-2</td>
<td>216-643-7</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Calcium Carbonate</td>
<td>1317-65-3</td>
<td>215-279-6</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Charcoal</td>
<td>7440-44-0</td>
<td>231-153-3</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Umber</td>
<td>12713-03-0</td>
<td>235-784-5</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Strontium Nitrate</td>
<td>10042-76-9</td>
<td>233-131-9</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Shellac</td>
<td>9000-59-3</td>
<td>232-549-9</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Potassium Nitrate</td>
<td>7757-79-1</td>
<td>231-818-8</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Sawdust (cellulose)</td>
<td>9004-34-6</td>
<td>232-674-0</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Note: Due to Confidential Business Information, “Trade Secrets”, the exact percentage of each ingredient has not been disclosed. CBI information will be shared with appropriate authorities if circumstances warrant.
4. First Aid Measures

Description of first aid measures

Inhalation
If contents are inhaled, remove to fresh air. Watch for signs of allergic reaction. If other symptoms develop, get medical aid immediately.

Skin
If contents are contacted, wash with area with soap and water for 15 minutes. Remove contaminated clothing and wash before reuse. Get medical aid if irritation occurs.

Eyes
If contents get into eyes, flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Remove contact lenses if easily possible. Get medical aid immediately.

Ingestion
Get medical aid immediately.

Most important symptoms and effects both acute and delayed
See section 2 labeling and section 11

Indication of any immediate medical attention and special treatment needed
No data available

5. Firefighting Measures

Extinguishing Media
Water deluge

Unsuitable Extinguishing Media
Foam and dry chemical extinguishers and suffocation are ineffective.

Protective Equipment and Precautions for Firefighters
Wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Prevent further propagation of fire by spraying unburnt nearby product with water. Combat fire from a sheltered position.

Specific Hazards Arising from the Chemical
Only use outdoors. Contents / dust may form explosive mixtures. Flame and copious amounts of smoke are ejected out the open end of the signal when it functions. Do not point signal at any part of the body or flammable material.

Further Information
No data available

6. Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures
Do not breathe smoke or contents. Avoid contact with skin and eyes. Wear flame retardant clothing with long sleeves, dust mask, rubber or nitrile gloves, safety goggles, safety shoes when cleaning up contents. Avoid friction on the released product. Keep away from ignition sources. Contains strong dyes which will color all exposed areas.

Environmental Precautions
Prevent dispersion of contents on soil and in water. Prevent contents from spreading or entering into drains, ditches, groundwater or rivers by using appropriate barriers.

Methods for Containment and Clean-up
Use caution when cleaning up spilled contents. Remove heat, flames, sparks and other sources of ignition. Use non-sparking tools and equipment. Prevent buildup of electrostatic charges by grounding. Clean spills in a manner that does not disperse dust into the air. When cleaning up contents, use local and/or general exhaust. Clean up avoiding dust generation and place in a well identified container. Do not absorb in sawdust or other combustible absorbents. Mop up exposed area with bleed to destroy color. Wash away remainder with plenty of water. Collect wash water for approved disposal.

7. Handling and Storage

Precautions for Safe Handling
Hold and point signal away from body when igniting. Hold signal downwind when burning. Avoid breathing smoke. Avoid contact with clothing and other combustible materials. Use outdoors only! Do not ignite or burn product inside a vehicle, boat cabin or building. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with skin and eyes. Avoid contact with heat, sparks, and flame. Contains strong dyes which will color all exposed areas. Signals should be allowed to burn to completion. Unburned and partially burned signals should not be allowed to come into contact with surface and ground water.

Conditions for Safe Storage, Including Any Incompatibilities
Store in a dry place away from direct sunlight, heat and incompatible materials. Store away from food and beverages. Store away from flammable materials, sources of heat, flame and sparks. Store at ambient temperature. Do not store partially burned signals in a vehicle, boat, closed container, warehouse, or any other building.

8. Exposure Controls / Personal Protection

Control Parameters

<table>
<thead>
<tr>
<th>Control Parameters</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure Limits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solvent Yellow Dye</td>
<td>Nuisance particulate, 15 mg/m³ of total dust</td>
<td>Nuisance particulate 10 mg/m³ of total dust</td>
</tr>
<tr>
<td>Lactose</td>
<td>No Airborne Exposure Limits established</td>
<td>No Airborne Exposure Limits established</td>
</tr>
<tr>
<td>Potassium Chlorate</td>
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<tr>
<td>Solvent Orange 7 Dye</td>
<td>15 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Strontium Carbonate</td>
<td>15 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Calcium Carbonate</td>
<td>Nuisance dust 15 mg/m³.</td>
<td>Nuisance dust 15 mg/m³.</td>
</tr>
<tr>
<td>Charcoal</td>
<td>30 mg/m³</td>
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<tr>
<td>Timber</td>
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<tr>
<td>Strontium Nitrate</td>
<td>1000 ppm</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Shellac</td>
<td>Nuisance dust 15 mg/m³.</td>
<td>Nuisance dust 15 mg/m³.</td>
</tr>
<tr>
<td>Sodium</td>
<td>5 mg/m³</td>
<td>10 mg/m³</td>
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<tr>
<td>Potassium Nitrate</td>
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<td></td>
</tr>
<tr>
<td>Sawdust (cellulose)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HHOS March 2019
### Physical and Chemical Properties

**Appearance** (color, physical form, shape): orange powder

**pH:** No data available  
**Solubility:** No data available  
**Melting Point:** No data available  
**Evaporation Rate:** No data available  
**Boiling Point / Range:** No data available  
**Flash Point:** No data available  
**Freezing Point:** No data available  
**Odor:** No data available  
**Vapor Density:** No data available  
**Odor Threshold:** No data available  
**Flammability Limits:** No data available  
**Partition Coefficient:** No data available  
**Viscosity:** No data available  
**Auto Ignition Temperature:** >167°F  
**Decomposition Temperature:** No data available

### Stability and Reactivity

**Chemical Stability:** Stable  
**Reactivity:** No information available  
**Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.

**Incompatible Materials:** Strong oxidizers, strong acids, oxidizing or reducing agents. Liquid acids of any kind. Hydrogen Fluoride, Ammonia Salts.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, nitrogen oxides.

### Toxicology Information

**Ingredient acute toxicity information**

<table>
<thead>
<tr>
<th>Toxicology</th>
<th>Oral LD50</th>
<th>Skin LD50</th>
<th>LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent Yellow Dye</td>
<td>Rat: 5000 mg/kg</td>
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<tr>
<td>Lactose</td>
<td>Rat: 10000 mg/kg</td>
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<tr>
<td>Potassium Chlorate</td>
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</tr>
<tr>
<td>Solvent Orange 7 Dye</td>
<td>Rat: 5000 mg/kg</td>
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<td>No information found</td>
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<td>Strontium Carbonate</td>
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<td>No information found</td>
<td>No information found</td>
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<td>Calcium Carbonate</td>
<td>Rat: 6450 mg/kg</td>
<td>Rabbit 500 mg/kg</td>
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<tr>
<td>Charcoal</td>
<td>Rat: &gt;15400 mg/kg</td>
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<tr>
<td>Amber</td>
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<tr>
<td>Shellac</td>
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<td>Rat: &gt;5000 mg/kg</td>
<td>Rabbit: &gt;2000 mg/kg</td>
<td>Rat 758 mg/m³</td>
</tr>
</tbody>
</table>

**Product toxicological information**

**Acute Toxicity**
- Not classified – Acute Toxicity Estimate yields oral LD₅₀ over 5000 mg/kg bw

**Skin Irritation / Corrosion**
- Category 2 – over 10% of ingredients classified as a Category 2 skin irritant

**Serious Eye Damage / Irritation**
- Category 2A – over 10% of ingredients classified as a Category 2A eye irritant

**Respiratory / Skin Sensitization**
- Category 1 Skin – over 0.1% of ingredients are classified as a Category 1 skin sensitizer

**Germ Cell Mutagen**
- Not classified (Based on available data, the classification criteria are not met)

**Carcinogen**
- Not classified (Based on available data, the classification criteria are not met)

**Reproductive Toxicity**
- Not classified (Based on available data, the classification criteria are not met)

**STOT – single exposure**
- Not classified (Based on available data, the classification criteria are not met)

**STOT – repeated exposure**
- Category 1 – lungs over 1% of ingredients classified as a Category 1 STOT hazard

**Aspiration Hazard**
- Not classified (Based on available data, the classification criteria are not met)

**Likely routes of exposure**
- Skin, ingestion, inhalation

**Symptoms related to the physical, chemical and toxicological characteristics**
- Irritation to the eyes will cause watering and redness. Reddening, scaling, and itching are characteristics of skin inflammation. Ingestion of contents may cause gastrointestinal irritation with nausea, vomiting and diarrhea. Inhalation will cause irritation to the lungs and mucus membrane.

**Delayed and immediate effects and chronic effects from short and long term exposure**
- Both the solvent yellow and orange dyes may cause dermatitis in sensitive individuals.

**Interactive effects**
- No information found
12. Ecological Information

**Ingredient toxicity / persistence / degradability / bioaccumulation / mobility in soil and water**

- **Aquatic Toxicity**
  - Strontium Nitrate: Acute toxicity - *Fishes, Carassius auratus, LC100, 9,615 mg/l; Chronic toxicity - *Fish*.
  - Gasterosteus aculeatus, LC100, 2,912 mg/l
  - Potassium Chlorate: fish; LC50 oncorhynchus mykiss (rainbow trout) 1750 mg/l – 96 hr, EC50 daphnia magna (water flea) 1093 mg/l 24 hr
  - Potassium Nitrate: fish; Guppy (Poecilia Reticulata) LC50 180 mg/l (96 hr), zooplankton; Daphnia magna LC50 490 mg/l – 48hr

- **Persistence / Degradability**
  - Potassium Nitrate: Soluble in water Persistence is unlikely based on information available.

- **Bioaccumulation / Accumulation**
  - No information found

- **Mobility in Environmental Media**
  - Strontium Nitrate: Water: considerable solubility and mobility; Soil/sediments non-significant adsorption
  - Potassium Nitrate: Will likely be mobile in the environment due to its water solubility.

- **Other adverse effects**
  - No information found

13. Disposal Considerations (for spills and leakage)

Flares should be allowed to burn to completion. Dispose of partially burned flares, ash, spilled contents, contaminated product and materials used in cleaning up spills or leaks in the manner approved for pyrotechnic material in accordance with federal, state and local requirements. Open burning is preferred method of disposal for pyrotechnic materials.

14. Transportation Information

<table>
<thead>
<tr>
<th>ID Number</th>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
<th>Packing Group</th>
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<th>Reportable Quantities</th>
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15. Regulatory Information

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<td>C Oxidizing materials</td>
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</table>

**HHOS March 2019**
16. Other Information

Revision Information: March 2019

<table>
<thead>
<tr>
<th>NFPA Rating</th>
<th>HMIS Rating</th>
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<tbody>
<tr>
<td>Flammability</td>
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<tr>
<td>Health</td>
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</tr>
<tr>
<td>Reactivity</td>
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</tbody>
</table>

Key / Legend
- HMIS: hazardous material identification system
- NFPA: National Fire Protection Association
- CAS: Chemical Abstracts Service number
- EINECS: European Inventory of Existing Chemical Substances
- OSHA PEL: Occupational Safety and Health Administration permissible exposure limit
- NIOSH TLV: National Institute of Occupational Safety and Health Threshold Limit Value
- NTP: National Toxicology Program
- IARC: International Agency for Research on Cancer
- CWA: Clean Water Act - US
- TSCA: Toxic Substances Control Act - US
- CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act - US
- CAA: Clean Air Act - US
- SARA: Superfund Amendments and Reauthorization Act - US
- PROP 65: California’s Proposition 65 List
- WHMIS: Workplace Hazardous Materials Information System - Canada
- DSL: Domestic Substances List - Canada
- WGK: Water Hazard Classes - Germany

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