SAFETY DATA SHEET

EFFECTIVE DATE: 8/25/2017

ITEM: Coastal Alert/Locate with Acessories

PART #	**UPC**
546	77403105465

CONTENTS:

Marine Hand Held Red Flare (HHRF) SDS
Hand Held Orange Smoke Signal (HHOS) SDS
12 Ga HP (High Performance) Red Aerial Signal SDS
Air Horn CAS 811-97-2 / CAS 75-37-6 SDS

SHIPPING INFORMATION

UN0353, Articles, Explosive, n.o.s., 1.4G (ERG 114)
(contains strontium nitrate and magnesium)
EX2013090848

SAFETY DATA SHEET

1. Product and Company Identification

Marine Hand Held Red Flare (HHRF)

Identified Use: Emergency signal

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

Manufacturers Information

Orion Safety Products
3157 North 500 West
Peru, IN 46970
US 1-800-851-5260
Intl (11) 1-765-472-4375

EMERGENCY

CHEMTREC
1-800-424-9300

2. Hazards Identification

GHS Classifications

Explosive	Category 1.4	H204
Skin Irritation	Category 2	H315
Eye Irritation	Category 2A	H319
STOT - Repeated Exposure	Category 3	H335

Perchlorate Material – special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate.

GHS Label Elements

Pictograms

Signal Word Warning

Hazard Statements

- H204 Fire or projection hazard
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H335 May cause respiratory irritation

Precautionary Statements

- P103 Keep out of reach of children
- P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- P232 Protect from moisture
- P261 Avoid breathing dust/fume
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective eye protection
- P370 In case of fire: use water deluge
- P301/315 IF SWALLOWED: Get immediate medical advice /attention.
- P302/352 IF ON SKIN: Wash with plenty of soap and water.
- P304/340/342 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.
- P305/338/351 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P333/313 If skin irritation or rash occurs, get medical advice/attention.
- P501 Dispose of contents / container in accordance with local and national regulations

Hazards Not Otherwise Classified (HNOC): produces hot flame

3. Composition / Information on Ingredients

Component	CAS #	EINCS #	%age
Strontium Nitrate	10042-76-9	233-131-9	>50%
Sulfur	7704-34-9	231-722-6	<25%
Potassium Perchlorate	7778-74-7	231-912-9	<20%
Polyethylene	9002-88-4	none	<5%
Potassium Chlorate	3811-04-9	231-100-4	<5%

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 eye, 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	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.		
Further information	No data available		

6. Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures

Do not breathe smoke or contents and 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

Control parameters

Exposure Limits	OSHA PEL	ACGIH TLV
Strontium Nitrate	Not established	Not established
Sulfur	Not established	Not established
Potassium Perchlorate	Nuisance dust 15 mg/m³	Nuisance dust 15 mg/m³
Polyethylene	15 mg/m3 TWA	10 mg/m3 TWA
Potassium Chlorate	Not established	Not established

Exposure controls

Engineering Controls	Use product outdoors only! When cleaning up contents, use local and/or general exhaust.
Personal Protective Equipment	
Eye / Face Protection	Safety glasses or goggles
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 t 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.

9. Physical and Chemical Properties

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

pH:	No data available	Melting Point:	No data available	Solubility:	No data available
Boiling Point / Range:	Not applicable	Freezing Point:	Not applicable	Evaporation Rate:	Not applicable
Vapor Pressure:	Not applicable	Specific Gravity	Not applicable	Vapor Density:	Not applicable
Odor:	No data available	Odor Threshold:	No data available	Flash Point:	Not available
Flammability:	No data available	Flammability Limits:	No data available	Relative Density:	No data available
Partition Coefficient:	No data available	Viscosity:	No data available		
Auto Ignition Temperature:	No data available			Decomposition Temperature:	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

Toxicology	Oral LD50	skin LD50	LC50
Strontium Nitrate	Rat: 1892 mg/kg	not stated	not stated
Sulfur	Rat: 5050 mg/kg	Rat:>2020 mg/kg	Rat:>5.49 mg/L air concentration
Potassium Perchlorate	Rat: 2100 mg/kg	not stated	not stated
Polyethylene	Rat: 4000 mg/kg	not stated	not stated
Potassium Chlorate	Rat: 1870 mg/kg	2000 mg/kg (Rabbit)	No information found

Product toxicological information

Acute Toxicity	Not classified – *Acute Toxicity Estimate yields oral LD_{50} 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 data, 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.
Delayed and immediate effects and chronic effects from short and long term exposure	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.
Interactive effects	No information found

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 preferred method of disposal for pyrotechnic materials. 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

	ID Number	shipping name	hazard class	packing group	EX Number	Reportable Quantities
Domestic & International	UN0373	Signal Devices, Hand	1.4S	n/a	EX1986040106	none

Marine Pollutant: no

Special precautions for user: No information available

15. Regulatory Information

US Regulations	TSCA	CERCLA	CWA	CAA	SARA 313	SARA 302	Acute	Chronic	Fire	Reactivity	Pressure
Strontium Nitrate	yes	no	no	no	yes	no	yes	no	no	yes	no
Sulfur	yes	no	no	no	no	no	yes	no	yes	no	no
Potassium Perchlorate	yes	no	no	no	no	no	yes	no	no	yes	no
Polyethylene	yes	no	no	no	no	no	no	no	no	no	no
Potassium Chlorate	yes	no	no	no	no	no	yes	no	no	yes	no

US States	Prop 65	NJ	PA	Canada	WHMIS	DSL	Europe	wgk
Strontium Nitrate	no	1743	no		C Oxidizing materials D1B Toxic materials D2B Toxic materials	yes		2
Sulfur	no	1757	yes		B4 Flammable solid D2B Toxic materials	yes		1 / nwg
Potassium Perchlorate	no	1577	yes		C Oxidizing materials D1B Toxic materials	yes		1
Polyethylene	no	no	no		Not controlled	yes		not listed
Potassium Chlorate	no	1560	yes		C Oxidizing materials D1B Toxic materials	yes		2

16. Other Information

Revision Information: May 2015

NFPA Rating		HMIS Rating	
Flammability	2	Flammability	1
Health	2	Health	3
Reactivity	1	Physical Hazard	1

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
TSCA: toxic substance control act - US
CERCLA: comprehensive environmental response, compensation and liability act – US
CWA: clean water 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

Legal Statement

SAFETY DATA SHEET

1. Product and Company Identification

Marine Hand Held Orange Smoke Signal (HHOS)

Synonyms: SAR Orange Smoke Signal

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

Manufacturers Information

Orion Safety Products
3157 North 500 West
Peru, IN 46970
US 1-800-851-5260
Intl (11) 1-765-472-4375

EMERGENCY

CHEMTREC
1-800-424-9300

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

Perchlorate Material – special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate.

GHS Label Elements

Pictograms

Signal Word Danger

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

Precautionary Statements

- P103 Keep out of reach of children
- P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- P232 Protect from moisture
- P261 Avoid breathing dust/fume
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective eye protection
- P370 In case of fire: use water deluge
- P301/315 IF SWALLOWED: Get immediate medical advice /attention.
- P302/352 IF ON SKIN: Wash with plenty of soap and water.
- P304/340/342 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.
- P305/338/351 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P333/313 If skin irritation or rash occurs, get medical advice/attention.
- P501 Dispose of contents / container in accordance with local and national regulations

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

3. Composition / Information on Ingredients

Component	CAS #	EINCS #	%age
Solvent Yellow Dye	842- 07- 9	212-668-2	<40%
Lactose	63-42-3	none	<40%
Potassium Chlorate	3811-04-9	231-100-4	<25%
Solvent Orange 7 Dye	3118-97-6	221-490-4	<20%
Potassium Perchlorate	7778-74-7	231-912-9	<0.5%

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 eye, 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 and 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 bleach 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. 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

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

Exposure Limits	OSHA PEL	ACGIH TLV
Solvent Yellow Dye	No information found	None
Lactose	Nuisance particulate, 15 mg/m3 of total dust	Nuisance particulate 10 mg/m3 of total dust
Potassium Chlorate	No Airborne Exposure Limits established	No Airborne Exposure Limits established
Solvent Orange 7 Dye	No information found	No information found
Shellac	1000 ppm	1000 ppm
Potassium Perchlorate	Nuisance dust 15 mg/m³.	Nuisance dust 15 mg/m³.

Exposure controls

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

Personal Protective Equipment

Eye / Face Protection: Safety glasses or goggles

Skin Protection: None under normal conditions when using product unless prolonged handling is anticipated. Contains strong dyes which will color all exposed areas. When cleaning up spilled contents, wear full length 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 t 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

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

pH:	No data available	Melting Point:	No data available	Solubility:	No data available
Boiling Point / Range:	Not applicable	Freezing Point:	Not applicable	Evaporation Rate:	Not applicable
Vapor Pressure:	Not applicable	Specific Gravity	Not applicable	Vapor Density:	Not applicable
Odor:	No data available	Odor Threshold:	No data available	Flash Point:	Not available
Flammability:	No data available	Flammability Limits:	No data available	Relative Density:	No data available
Partition Coefficient:	No data available	Viscosity:	No data available		
Auto Ignition Temperature:	>167°F			Decomposition Temperature:	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	Incompatible Materials	Hazardous Decomposition Products
Excessive temperatures, moisture, water, acids, and ignition sources	Strong oxidizers, strong acids, oxidizing or reducing agents. Liquid acids of any kind. Hydrogen Fluoride, Ammonia Salts.	Carbon monoxide, carbon dioxide, nitrogen oxides,

11. Toxicology Information

Ingredient acute toxicity information

Toxicology	Oral LD50	skin LD50	LC50
Solvent Yellow Dye	Rat: 5000 mg/kg	No information found	No information found
Lactose	Rat: 10000 mg/kg	No information found	No information found
Potassium Chlorate	Rat: 1870 mg/kg	2000 mg/kg (Rabbit)	No information found
Solvent Orange 7 Dye	Rat: 5000 mg/kg	No information found	No information found
Shellac	Rat: 5000 mg/kg	No information found	No information found
Potassium Perchlorate	Rat: 2100 mg/kg	No information found	No information found

Product toxicological information

Acute Toxicity	Not classified – *Acute Toxicity Estimate yields oral LD_{50} 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	Potassium Chlorate: *fish: LC50 oncorhynchus mykiss (rainbow trout) 1750 mg/l – 96 hr, EC50 daphnia magna (water flea) 1093 mg/l 24 hr*
Persistence / Degradability	No information found
Bioaccumulation / Accumulation	No information found
Mobility in Environmental Media	No information found
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. 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

	ID Number	shipping name	hazard class	packing group	EX Number	Reportable Quantities
Domestic & International	UN0373	Signal Devices, Hand	1.4S	n/a	EX1997080126	none

Marine Pollutant: no

Special precautions for user: No information available

15. Regulatory Information

US Regulations	TSCA	CERCLA	CWA	CAA	SARA 313	SARA 302	Acute	Chronic	Fire	Reactivity	Pressure
Solvent Yellow Dye	yes	no	no	no	yes	no	yes	yes	no	no	no
Lactose	yes	no	no	no	no	no	no	no	no	no	no
Potassium Chlorate	yes	no	no	no	no	no	yes	no	no	yes	no
Solvent Orange 7 Dye	yes	no	no	no	yes	no	no	yes	no	no	no
Shellac	yes	no	no	no	no	no	no	no	no	no	no
Potassium Perchlorate	yes	no	no	no	no	no	yes	no	no	yes	no

US States	Prop 65	NJ	PA	Canada	WHMIS	DSL	Europe	wgk
Solvent Yellow Dye	yes	0509	yes		D2A Very toxic materials D2B Toxic materials	yes		not listed
Lactose	no	no	no		Non controlled	yes		not listed
Potassium Chlorate	no	1560	yes		C Oxidizing materials D1B Toxic materials	yes		2
Solvent Orange 7 Dye	no	0506	yes		D2B Toxic materials	yes		3
Shellac	no	0844	yes		B2 - D2B Toxic materials	yes		0
Potassium Perchlorate	no	1577	yes		C Oxidizing materials D1B Toxic materials	yes		1

16. Other Information

Revision Information: May 2015

NFPA Rating		HMIS Rating	
Flammability	2	Flammability	1
Health	2	Health	3
Reactivity	1	Physical Hazard	1

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

TSCA: toxic substance control act - US
CERCLA: comprehensive environmental response, compensation and liability act – US
CWA: clean water 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

Legal Statement

SAFETY DATA SHEET

1. Product and Company Identification

12 Ga HP (High Performance) Red Aerial Signal

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

Manufacturers Information

Orion Safety Products
3157 North 500 West
Peru, IN 46970
US 1-800-851-5260
Intl (11) 1-765-472-4375

EMERGENCY

CHEMTREC
1-800-424-9300

2. Hazards Identification

GHS Classifications

Explosive	Category 1.4	H204
Skin Irritation	Category 2	H315
Eye Damage / Irritation	Category 1	H318
Carcinogenicity	Category 2	H351
STOT - Single Exposure	Category 3	H335

GHS Label Elements

Pictograms

Hazard Statements

H204	Fire or projection hazard
H315	Causes skin irritation
H318	Causes serious eye damage
H351	Suspected of causing cancer
H335	May cause respiratory irritation

Signal Word Danger

Precautionary Statements

P103	Keep out of reach of children
P210	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P232	Protect from moisture
P261	Avoid breathing dust/fume
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective eye protection
P301/315	IF SWALLOWED: Get immediate medical advice /attention.
P302/352	IF ON SKIN: Wash with plenty of soap and water.
P304/340/342	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.
P305/338/351	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333/313	If skin irritation or rash occurs, get medical advice/attention.
P370	In case of fire: use water deluge

Hazards Not Otherwise Classified (HNOC): none

3. Composition / Information on Ingredients

Component	CAS #	EINCS #	%age
Polypropylene	9003-07-0	polymer	<60%
Glass Fibers	65997-17-3	266-046-0	<20%
Strontium Nitrate	10042-76-9	233-131-9	<10%
Magnesium	7439-95-4	231-104-6	<10%
Olefinic Thermoplastic Rubber	mixture	mixture	<10%
Strontium Peroxide	1314-18-7	215-224-6	<10%
Aluminum	7429-90-5	231-072-3	<5%
PVC	9002-86-2	none	<5%
Black Powder	mixture	none	<5%
Iron	1309-37-1	231-096-4	<5%
Copper	7440-50-8	231-159-6	<3%

Note: Due to Confidential Business Information i.e "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 eye, 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 quantities 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. Irritating 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 contents and avoid contact with skin and eyes. Wear flame retardant clothing with long sleeves, dust mask, rubber or nitrile gloves, safety goggles, safety shoes. 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 product 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 or 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 contents and inhalation of smoke. Wash thoroughly after handling. Avoid contact with heat sparks, and flame. Do not disassemble signal.
Conditions for Safe Storage, Including Any Incompatibilities	Store away from moisture, 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	OSHA PEL	ACGIH TLV
Polypropylene	Not Established	Not Established
Glass Fibers	15 mg/m3 (as total nuisance dust); 5 mg/m3 (as respirable nuisance dust)	1 f/cc TWA (respirable fibers, length >5 µm, aspect ratio >=3:1
Strontium Nitrate	Not Established	Not Established
Magnesium	Not Established	Not Established
Olefinic Thermoplastic Rubber	Not Established	Not Established
Strontium Peroxide	Nuisance dust 15 mg/m³.	Nuisance dust 15 mg/m³.
Aluminum	TWA: 15 mg/m3	TWA: 1 mg/m3
Polyvinyl Chloride	5mg/ml for the respirable portion and 15mg/ml' for total dust.	5 and 10mg/ml, respectively
Black Powder	Not Established	Not Established
Iron	TWA 10 mg/m³	Not Established
Copper	0.1 mg/m3 (fume) 1 mg/m3 (dusts and mists)	0.2 mg/m3 (fume), 1 mg/m3 (dusts and mists)

Exposure controls

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

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

pH:	Not available	Melting Point:	Not available	Solubility:	Not available
Boiling Point / Range:	Not applicable	Freezing Point:	Not applicable	Evaporation Rate:	Not applicable
Vapor Pressure:	Not applicable	Specific Gravity	Not applicable	Vapor Density:	Not applicable
Odor:	No data available	Odor Threshold:	No data available	Flash Point:	Not available
Flammability:	No data available	Flammability Limits:	No data available	Relative Density:	No data available
Partition Coefficient:	No data available	Viscosity:	No data available		
Auto Ignition Temperature:	No data available			Decomposition Temperature:	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	Incompatible Materials	Hazardous Decomposition Products
Excessive temperatures, moisture, acids, and ignition sources.	Reducing Agents, Organic Materials, Finely Powdered Metals, Acids, Water, Halogens.	Strontium oxides .Carbon monoxide and dioxide. Nitrous oxides, Magnesium hydroxides and oxides.

11. Toxicology Information

Ingredient acute toxicity information

Toxicology	Oral LD50	skin LD50	LC50
Polypropylene	Rat: >5000 mg/kg	not available	not available
Glass Fibers	not available	not available	not available
Strontium Nitrate	Rat 2750 mg/kg	Not available	Not available
Magnesium	Rat: 230 mg/kg	Not available	Not available
Olefinic Thermoplastic Rubber	non toxic	non toxic	non toxic
Strontium Peroxide	Rat: 980 mg/kg	Not available	Not available
Aluminum	Rat : > 2,000 mg/kg	Rat - 4 h - > 888 mg/l	not available
Polyvinyl Chloride	Rat: >5000 mg/kg	Not available	Not available
Black Powder	Rat: 5000 mg/kg	Not available	Not available
Iron	Rat: 30000 mg/kg	Not available	Not available
Copper	Rat: 5800 mg/kg	Not available	Not available

Product toxicological information

Acute Toxicity	Not classified – *Acute Toxicity Estimate yields oral LD_{50} over 5000 mg/kg bw 17% unknown*
Skin Irritation / Corrosion	Category 2 – *over 0.1% of ingredients classified as a Category 2*
Serious Eye Damage / Irritation	Category 1 – *over 0.1% of ingredients classified as a Category 1*
Respiratory / Skin Sensitization	No information found
Germ Cell Mutagen	No information found
Carcinogen	Category 2 – *over 0.1% of ingredients classified as 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.
Delayed and immediate effects and chronic effects from short and long term exposure	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. 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

	ID Number	shipping name	hazard class	packing group	EX Number	Reportable Quantities
Domestic & International	UN0403	Flares, Aerial	1.4G	n/a	EX2004110275	none

Marine Pollutant: no

Special precautions for user: No information available

15. Regulatory Information

US Regulations	TSCA	CERCLA	CWA	CAA	SARA 313	SARA 302	Acute	Chronic	Fire	Reactivity	Pressure
Polypropylene	yes	no	no	no	no	no	no	no	no	no	no
Glass Fibers	yes	no	no	no	no	no	yes	yes	no	no	no
Strontium Nitrate	yes	no	no	no	yes	no	yes	no	no	yes	no
Magnesium	yes	no	no	no	no	no	no	no	yes	yes	no
Olefinic Thermoplastic Rubber	yes	no	no	no	no	no	no	no	no	no	no
Strontium Peroxide	yes	no	no	no	no	no	yes	no	yes	yes	no
Aluminum	yes	no	no	no	yes	no	no	no	no	no	no
Polyvinyl Chloride	yes	no	no	no	no	no	yes	no	no	no	no
Black Powder	yes	no	no	no	no	no	yes	yes	yes	yes	yes
Iron	yes	no	no	no	no	no	no	no	yes	no	no
Copper	yes	yes	yes	no	yes	no	yes	no	yes	no	no

US States	Prop 65	NJ	PA	Canada	WHMIS	DSL	Europe	wgk
Polypropylene	no	yes	yes		Not controlled	yes		not listed
Glass Fibers	yes	yes	yes		Class D2A – Very toxic material C Oxidizing materials	yes		not listed
Strontium Nitrate	no	yes	no		D1B Toxic materials D2B Toxic materials	yes		2
Magnesium	no	yes	yes		B6 Reactive flammable material; B4 Flammable solid; F Dangerously reactive material	yes		nwg
Olefinic Thermoplastic Rubber	no	no	no		No information found	unknown		not listed
Strontium Peroxide	no	yes	no		C oxidizing material	yes		not listed
Aluminum	no	yes	yes		Not controlled	yes		nwg
Polyvinyl Chloride	no	yes	no		Not controlled	yes		not listed
Black Powder	yes	yes	no		D-2B: Material causing other toxic effects	yes		nwg
Iron	no	yes	yes		B4 flammable solid	yes		nwg
Copper	no	yes	yes		B4 Flammable solid D2B Toxic materials	yes		nwg

16. Other Information

Revision Information: June 2015

NFPA Rating		HMIS Rating	
Flammability	2	Flammability	1
Health	2	Health	3
Reactivity	1	Physical Hazard	1

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

TSCA: toxic substance control act - US
CERCLA: comprehensive environmental response, compensation and liability act – US
CWA: clean water 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

Safety Data Sheet

Orion Safety Signal Horn

Section 1. Identification

Product Identifier	Orion Safety Signal Horn
Synonyms	507, 507R, 508, 508R, 509, 509R, 510, 510R
Manufacturer Stock Numbers	N/A
Recommended use	Personal Safety - Hand held signaling device. Prior to use, read all label instuctions and warnings.
Uses advised against	Use Only as Directed - Read label instructions carefully. Keep out of reach of children. Intentional misuse by deliberately concentrating and/or inhaling contents may be fatal.
Manufacturer Contact	
Address	Falcon Safety Products, Inc. 25 ImClone Drive Branchburg, NJ, 08876 USA

Phone	Emergency Phone	Fax
(908) 707-4900	(800) 498-7192	N/A

Section 2. Hazards Identification

Classification	FLAMMABLE AEROSOLS - Category 2 GASES UNDER PRESSURE - Compressed gas
Signal Word	Warning
Pictogram	
Hazard Statements	N/A
Precautionary Statements	
Response	N/A
Prevention	Do not spray on an open flame or other ignition source.

	Keep away from heat. Pressurized container: Do not pierce or burn, even after use.
Storage	Do not store in enclosed vehicle. Protect from sunlight. Store in a well-ventilated place. Store at temperatures not exceeding 120 degrees F/49 degrees C
Disposal	N/A
General	Keep out of reach of children
Ingredients of unknown toxicity	0%
Hazards not Otherwise Classified	N/A
	No Data Available

Section 3. Ingredients

CAS	Ingredient Name	Weight %
75-37-6	Ethane, 1,1-difluoro-	100 %

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-Aid Measures

General Advice	Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt, seek medical advice.
Inhalation	Remove from exposure, lie down. Move to fresh air. Keep patient warm and at rest. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.
Skin	Take off all contaminated clothing immediately. Flush area with lukewarm water. Do not use hot water. If frostbite has occurred, call a physician.
Eye	Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Ingestion	Is not considered a potential route of exposure.
Most important symptoms/effects, acute and delayed	Anaesthetic effects: light-headedness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness orweakness.
Protection of First-aiders	If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to Physician	Because of possible disturbances of cardiac rhythm catecholamine drugs, such as epinephrine, which may be used in situations of emergency life support, should be used with special caution.

Section 5. Fire Fighting Measures

Suitable Extinguishing Media	Water spray, water fog, dry chemical, alcohol resistant foam, carbon dioxide (CO2)
Unsuitable Extinguishing Media	No applicable data available.
Specific Hazards	Flammable. This substance's fire decomposition by-products will include hydrofluoric acid and possibly carbonyl flouride. Avoid contact with these materials, which are toxic and irritating. Evacuate personnel immediately in the event of a fire involving this substance. Vapors may form explosive mixtures with air. Vapors are heavier than air and may spread along floors. Vapors or gases may travel considerable distances to ignition source and flash back.
Special protective equipment for firefighters	Use personal protective equipment. Wear neoprene gloves during cleaning up work after a fire. Exposure to decompositon products may be a hazard to health.
Further Information	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers/tanks with water spray.

Section 6. Accidental Release Measures

NOTE:	Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.
Safeguards (Personnel)	Evacuate personnel to safe areas. Ventilate the area. Refer to protective measures listed in sections 7 and 8.
Spill Clean-up	If this product is spilled and not recovered, or is recovered as a waste for treatment and disposal, the CERCLA Reportable Quantity is 100 lbs. (release of an Unlisted Hazardous Waste with the Characteristic of Ignitability). Evaporates. Ventilate area using forced ventilation, especially low or enclosed places where heavy vapors might collect.
Accidental Release Measures	Wear self-contained breathing apparatus (SCBA).

Section 7. Handling and Storage

Handling (Personnel)	Avoid breathing vapors or mist. Avoid contact with skin, eyes and clothing. Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8. Handle in accordance with good industrial hygiene and safety practice.
Handling (Physical Aspects)	Vapors are heavier than air and may spread along floors. Vapors may form flammable mixture with air. The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Electrical equipment should be protected to the appropirate standard. No sparking tools should be used. Take measures to prevent the build up of electrostatic charge. Keep away from open flames, hot surfaces and sources of ignition. When using DO NOT SMOKE. Do not use in areas where vapors may accumulate such as paper shredders.
Dust Explosion class	Not applicable
Storage	Keep container tightly closed and in a dry, well-ventilated location. Store in original container. The product has an indefinite shelf life when stored properly.
Storage Period	Recommended shelf life - 10 years provided product is stored in a dry location as directed.
Storage Temperature	Do not expose to temperatures above 120 degrees F (49 degrees C) as overheating could cause can to burst. DO NOT leave in direct sunlight or enclosed vehicle.

Section 8. Exposure Controls/Personal Protection

Occupational Exposure Limits

Ingredient Name	ACGIH TLV	OSHA PEL	STEL
Ethane, 1,1-difluoro-	N/A	N/A	N/A

Personal Protective Equipment	N/A
Engineering controls	Ensure adequate ventilation, especially in confined areas. Use respiratory protection if needed.
Eye/Face Protection	Wear safety glasses with side shields. Direct contact with liquid may cause frostbite.
Respiratory Protection	For rescue use self-contained breathing apparatus. Vapors are heavier than air and can cause suffication by reducing oxygen available for breathing.
Skin and body protection	As required by employer code. If there is risk of skin contact, wear protective clothing, gloves, etc. Direct contact with liquid can cause frostbite.
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practices.

Section 9. Physical and Chemical Properties

Physical State	Gas
Color	Clear
Odor	slight, ether-like
Odor Threshold	No applicable data available
Solubility	Water - Slightly
Partition coefficient Water/n-octanol	N/A
VOC%	N/A
Viscosity	No applicable data available
Specific Gravity	0.91
Density lbs/Gal	0.9
Pounds per Cubic Foot	N/A
Flash Point	<-58°F (<-50° C)
FP Method	N/A
Ph	Neutral
Melting Point	No applicable data available
Boiling Point	-13 °F (-25 ° C)
Boiling Range	N/A
LEL	3.9
UEL	16.9
Evaporation Rate	No applicable data available
Flammability	Flammable
Decomposition Temperature	N/A
Auto-ignition Temperature	No applicable data available
Vapor Pressure	5,960 KPa at 77F (25C)
Vapor Density	2.4 at 77F (25C) (Air=1)

Section 10. Stability and Reactivity

Reactivity	Stable under recommended storage conditions.
Chemical Stability	The product is chemically stable under recommended storage conditions.
Conditions to Avoid	Aerosol containers are unstable at temperatures above 120 degrees F/49 degrees C
Incompatible Materials	Incompatible products include Alkali metals, Alkaline earth metals, powdered metals, powdered metal salts.
Hazardous Decomposition Products	Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and possibly carbonyl fluoride.

Section 11. Toxicological Information

Component Analysis - LC50	1,1-Difluoroethane - > 64000 ppm rat
Component analysis - Oral LD50	1,1-Difluoroethane - 1500 mg/kg rat
Effects of Acute Exposure - Eye	Contact with liquid may cause frostbite
Effects of Acute Exposure - Skin	Contact with liquid may cause frostbite
Effects of Acute Exposure - Inhalation	Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effect (headaches, dizziness). Vapors may cause dizziness or suffocation.
Effects of Acute Exposure - Ingestion	Not a normal route of exposure
Sensitization	Non-hazardous by WHMIS/OSHA criteria.
Carcinogenicity	Not classifiable as a human carcinogen. Animal testing did not show carcinogenic effects. None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA as a carcinogen.
Mutagenicity	Animal testing did not show any mutagenic effects. Did not cause genetic damage in cultured bacterial cells. Tests on mammalian cell cultures showed mutagenic effects.
Reproductive Toxicity	No toxcicity to reproduction. Animal testing showed no reproductive toxicity.
Teratogenicity	Animal testing showed no developmental toxicity.
Further Information	Cardiac sensitization threshold limit: 405000 mg/m3

Section 12. Ecological Information

Aquatic Toxicity	1,1-Difluoroethane 96 h LC50 : Fish 295.78 mg/l 96 h EC50 : Algae 47.76 mg/l 48 h EC50 : Daphnia (water flea) 146.7 mg/l

Section 13. Disposal

Waste Disposal Methods	Comply with applicable Federal, State/Provincial and Local Regulations. May be a RCRA Hazardous waste due to the ignitability characteristic. Do not puncture or incinerate container.
Contaminated Packaging	Not Available

Section 14. Transport Information

UN Number	1030
UN Proper Shipping Name	1,1-Difluoroethane
DOT Classification	2.1
Packing Group	N/A
Packaging Exceptions	Note: Falcon Safety Products has been granted a DOT special permit. A copy of DOT Special Permit SP-11516 can be obtained by calling Falcon Safety Products, Inc. at 908-707-4900.
Transportation of Dangerous Goods (TDG - Canada)	Proper Shipping name: 1,1-Difluoroethane Hazard Class: 2.1 UN number: 1030 Packaging Exceptions: Limited quantity (containers up to 125mL)
IATA/ICAO (Air)	Proper Shipping Name: 1,1-Difuoroethane. Hazard Class: 2.1. UN Number: 1030. Maximum Net Quantity Packaging: Cargo Aircraft only - 150 kg maximum (forbidden on passenger aircraft). Maximum Net Quantity packaging cargo only: 150 kg.
IMDG (Marine Transport)	Proper Shipping Name: 1,1-DIFLUOROETHANE. Hazard Class: 2.1. UN Number: 1030.
Additional Information	TDG Canada: Falcon Safety Products has been granted Equivalency Certificate SU 9211 (ren. 1) by the TCSS, TDGD to offer for transport by road, rail and marine.

Section 15. Regulatory Information

Canadian Federal Regulations	This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.
WHMIS Status	Controlled
WHMIS Classification	Class A - Compressed Gas, Class B - Division 1 - Flammable Gas
TSCA	On the inventory, or in compliance with the inventory.
SARA 313 Regulated Chemical(s)	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
US Federal Regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
NJ Right to Know Regulated Chemical(s)	Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): 1,1-Difluoroethane.
California Prop. 65	This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.
Canada Domestic Substances List (DSL)	This product is listed on the DSL inventory list and complies with the inventory requirements administered by the governing country.

Section 16. Other Information

Revision Date	2/17/2017
Disclaimer	Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.
Prepared By	Falcon Safety Products, Inc. 908-707-4900