



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 smoke and inhalation of contents. 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
Strontium Peroxide	Nuisance dust 15 mg/m³.	Nuisance dust 15 mg/m³.
Aluminum	TWA: 15 mg/m3	TWA: 1 mg/m3
Olefinic Thermoplastic Rubber	Not Established	Not Established
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

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:	No data available	Melting Point:	No data available
Boiling Point / Range:	Not applicable	Freezing Point:	Not applicable
Vapor Pressure:	Not applicable	Specific Gravity:	Not applicable
Odor:	No data available	Odor Threshold:	No data available
Flammability:	No data available	Flammability Limits:	No data available
Partition Coefficient:	No data available	Viscosity:	No data available
Auto Ignition Temperature:	No data available	Decomposition Temperature:	No data available
		Solubility:	No data available
		Evaporation Rate:	Not applicable
		Vapor Density:	Not applicable
		Flash Point:	Not available
		Relative Density:	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	Excessive temperatures, moisture, acids, and ignition sources.	Incompatible Materials	Reducing Agents, Organic Materials, Finely Powdered Metals, Acids, Water, Halogens	Hazardous Decomposition Products	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	No data available	Not available	Not available
Strontium Nitrate	Rat: 2750 mg/kg	Not available	Not available
Magnesium	Rat: 230 mg/kg	Not available	Not available
Strontium Peroxide	Not available	Not available	Not available
Aluminum	Rat - > 2,000 mg/kg	Rat - 4 h - > 888 mg/l	No data available
Olefinic Thermoplastic Rubber	non toxic	non toxic	non toxic
Polyvinyl Chloride	Rat: >5000 mg/kg	Not available	Not available
Black Powder	Not available	Not available	Not available
Iron	Rat: 30000 mg/kg	Not available	Not available

Product toxicological information

Acute Toxicity	Not classified – <i>Acute Toxicity Estimate yields oral LD₅₀ over 5000mg/kg bw 18% of mixture consists of ingredients of unknown acute oral toxicity</i>
Skin Irritation / Corrosion	Category 2 – <i>over 10% of ingredients classified as a Category 2</i>
Serious Eye Damage / Irritation	Category 1 – <i>over 10% of ingredients classified as a Category 1</i>
Respiratory / Skin Sensitization	No information found
Germ Cell Mutagen	No information found
Carcinogen	Category 2 – <i>over 0.1% of ingredients are classified as an IARC Category 2 carcinogen</i>
Reproductive Toxicity	No information found
STOT – single exposure	Category 3 – <i>respiratory over 10% of ingredients classified as a Category 3 respiratory STOT hazard</i>
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	<u>Strontium Nitrate</u> : <i>Acute toxicity - Fishes, Carassius auratus, LC100, 9,615 mg/l; Chronic toxicity - Fishes, Gasterosteus aculeatus, LC100, 2.912 mg/l</i> <u>Magnesium</u> : <i>LC50 1355 mg/l fish</i>
Persistence / Degradability	No information found
Bioaccumulation / Accumulation	No information found
Mobility in Environmental Media	<u>Strontium Nitrate</u> : <i>Water.: considerable solubility and mobility; Soil/sediments non-significant adsorption</i>
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						
Domestic & International	ID Number	shipping name	hazard class	packing group	EX Number	Reportable Quantities
	UN0312	Cartridges, Signal	1.4G	n/a	EX2009040048	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
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
Olefinic Thermoplastic Rubber	yes	no	no	no	no	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
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	yes		not listed			
Strontium Nitrate	no	yes	no		C Oxidizing materials	yes		2			
Magnesium	no	yes	yes		D1B Toxic materials						
Strontium Peroxide	no	yes	no		D2B Toxic materials						
Aluminum	no	yes	yes		B6 Reactive flammable material;	yes		nwg			
Olefinic Thermoplastic Rubber	no	no	no		B4 Flammable solid; F Dangerously reactive material	yes					
Polyvinyl Chloride	no	yes	no		C oxidizing material	yes		not listed			
Black Powder	yes	yes	no		Not controlled	yes		nwg			
Iron	no	yes	yes		No information found	unknown		unknown			
					Not controlled	yes		not listed			
					D-2B: Material causing other toxic effects	yes		nwg			
					B4 flammable solid	yes		nwg			

16. Other Information				
Revision Information: May 2015				
NFPA Rating		HMIS Rating		Key / Legend:
Flammability	2	Flammability	1	HMIS: hazardous material identification system
Health	2	Health	3	NFPA: national fire protection association
Reactivity	1	Physical Hazard	1	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

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