

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product name : Flash Tube

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Pyrotechnic Article

#### 1.3. Details of the supplier of the safety data sheet

RES Specialty Pyrotechnics, Inc.  
21595 286th Street  
Belle Plaine, MN 56011

#### 1.4. Emergency telephone number

Emergency number : 952-873-3113

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification (GHS-US)

Expl. 1.4 H204  
Flam. Sol. 2 H228  
Ox. Sol. 3 H272  
Acute Tox. 4 (Oral) H302  
Skin Sens. 1 H317

Full text of H-phrases: see section 16

#### 2.2. Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Warning

Hazard statements (GHS-US) :

H204 - Fire or projection hazard  
H228 - Flammable solid  
H272 - May intensify fire; oxidizer  
H302 - Harmful if swallowed  
H317 - May cause an allergic skin reaction

Precautionary statements (GHS-US) :

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
P220 - Keep/Store away from clothing/combustible materials  
P221 - Take any precaution to avoid mixing with combustibles  
P240 - Ground/bond container and receiving equipment  
P241 - Use explosion-proof electrical/ventilating/lighting equipment  
P250 - Do not subject to grinding/shock/friction  
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray  
P264 - Wash thoroughly after handling  
P270 - Do not eat, drink or smoke when using this product  
P272 - Contaminated work clothing must not be allowed out of the workplace  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P301 + P312 - If swallowed: Call a poison center/doctor if you feel unwell  
P302 + P352 - If on skin: Wash with plenty of water  
P330 - Rinse mouth  
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention  
P362+P364 - Take off contaminated clothing and wash it before reuse  
P370+P378 - In case of fire: Use water to extinguish  
P370+P380 - In case of fire: Evacuate area  
P372 - Explosion risk in case of fire  
P373 - DO NOT fight fire when fire reaches explosives  
P374 - Fight fire with normal precautions from a reasonable distance  
P401 - Store locked up  
P501 - Dispose of contents/container in accordance with local/regional/national/international

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regulations.

### 2.3. Other hazards

No additional information available

### 2.4. Unknown acute toxicity (GHS-US)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Not applicable

### 3.2. Mixture

Pyrotechnic mixtures in solid form containing fuels and oxidizers, pyrotechnic substances or a mixture of substances designed to produce an effect by heat, light, sound, gas, or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reactions. These items are classified as explosives 1.4G by the U.S. DOT. No chemical composition is exposed during normal handling, transportation and storage. The following components are present in these products as a pyrotechnic composition:

Name	Product identifier	%	Classification (GHS-US)
Magnesium	(CAS No) 7439-95-4	0 - 84.8	Not classified
Aluminum	(CAS No) 7429-90-5	0 - 84.8	Not classified
Strontium nitrate	(CAS No) 10042-76-9	0 - 40	Not classified
Barium nitrate	(CAS No) 10022-31-8	0 - 40	Acute Tox. 4 (Oral), H302
Potassium nitrate	(CAS No) 7757-79-1	0 - 20	Ox. Sol. 3, H272 Aquatic Acute 3, H402
Titanium	(CAS No) 7440-32-6	0 - 20	Not classified
1,3,5,7-Tetraazatricyclo[3.3.1.1.3,7]decane	(CAS No) 100-97-0	0 - 10	Not classified
Vinyl chloride-vinylidene chloride copolymer	(CAS No) 9011-06-7	0 - 10	Not classified
Ethanedioic acid, disodium salt	(CAS No) 62-76-0	0 - 10	Not classified
Carbon black	(CAS No) 1333-86-4	0 - 4	Not classified
Sulfur	(CAS No) 7704-34-9	0 - 3	Skin Irrit. 2, H315

Full text of H-phrases: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures after inhalation	: Medical attention is required. Remove to fresh air. Professional assistance by a doctor is needed if irritation develops or persists.
First-aid measures after skin contact	: No immediate medical attention is required. Remove contaminated clothing as needed and launder before reuse. Wash skin thoroughly with mild soap/water. Professional assistance by a doctor is needed if irritation develops or persists.
First-aid measures after eye contact	: Medical attention is required. Immediately flush eyes with plenty of water for 15 minutes. An eye wash kit is required at the workplace. Professional assistance by a doctor is needed if irritation persists.
First-aid measures after ingestion	: Medical attention is required. Professional assistance by a doctor is needed. Induce vomiting immediately (as directed by medical personnel). Never give anything by mouth to an unconscious person.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	: Not anticipated under normal use conditions. If casing is broken, dusts may cause irritation.
Symptoms/injuries after skin contact	: Not anticipated under normal use conditions. If casing is broken, dusts may cause irritation.
Symptoms/injuries after eye contact	: Not anticipated under normal use conditions. If casing is broken, dusts may cause irritation.
Symptoms/injuries after ingestion	: Not anticipated under normal use conditions. If casing is broken, ingested dusts may cause irritation.

### 4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media	: Pyrotechnics are self oxidizing. Flood with water. Fire extinguisher (Class A) may be used. Do not use suffocation methods.
Unsuitable extinguishing media	: None.

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### 5.2. Special hazards arising from the substance or mixture

- Fire hazard : May cause fire or explosion; strong oxidizer.
- Explosion hazard : These products will burn rapidly in the event of a fire. Fiery debris may be projected. Large quantities may explode in a fire.

### 5.3. Advice for firefighters

- Protection during firefighting : Firefighters should wear full protective gear.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

No additional information available

#### 6.1.2. For emergency responders

No additional information available

### 6.2. Environmental precautions

Avoid release to the environment.

### 6.3. Methods and material for containment and cleaning up

- For containment : Spilled composition is highly combustible. In case a device is broken open and pyrotechnic composition is spilled: Keep away any possible ignition source such as open flames, sparks and lit cigarettes. Prevent possible electrostatic discharges (for example: do not use a synthetic dustpan and brush).
- Methods for cleaning up : Carefully pick up the material and place in a cardboard container. For dusts which may be released from a broken device, use dustless methods and place into a closed container for disposal. Take up wet and do not dry sweep or blow with compressed air. Care must be taken when using or disposing of chemical materials and/or their containers to prevent environmental contamination.

### 6.4. Reference to other sections

No additional information available

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Precautions for safe handling : All pyrotechnic devices should be handled with caution. Avoid open flames, smoking, friction, impact, excessive heat, electrostatic discharges, radio frequent interference and moisture.

### 7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store in dry, cool, well-ventilated area.

### 7.3. Specific end use(s)

Pyrotechnics

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Strontium nitrate (10042-76-9)		
ACGIH	Not applicable	
OSHA	Not applicable	
Potassium nitrate (7757-79-1)		
ACGIH	Not applicable	
OSHA	Not applicable	
Magnesium (7439-95-4)		
ACGIH	Not applicable	
OSHA	Not applicable	
Aluminum (7429-90-5)		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (respirable fraction)
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction)

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Vinyl chloride-vinylidene chloride copolymer (9011-06-7)		
ACGIH	Not applicable	
OSHA	Not applicable	
1,3,5,7-Tetraazatricyclo[3.3.1.1.3,7]decane (100-97-0)		
ACGIH	Not applicable	
OSHA	Not applicable	
Sulfur (7704-34-9)		
ACGIH	Not applicable	
OSHA	Not applicable	
Carbon black (1333-86-4)		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (inhalable fraction)
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	3.5 mg/m <sup>3</sup>
Barium nitrate (10022-31-8)		
ACGIH	Not applicable	
OSHA	Not applicable	
Titanium (7440-32-6)		
ACGIH	Not applicable	
OSHA	Not applicable	
Ethanedioic acid, disodium salt (62-76-0)		
ACGIH	Not applicable	
OSHA	Not applicable	

### 8.2. Exposure controls

Appropriate engineering controls	: None required under normal product handling conditions.
Hand protection	: None required under normal product handling conditions.
Eye protection	: None required under normal product handling conditions.
Skin and body protection	: Wear suitable working clothes.
Respiratory protection	: None required under normal product handling conditions.

### Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Contained in cardboard casing.
Odor	: None
Odor threshold	: Not Applicable
pH	: Not Applicable
Relative evaporation rate (butyl acetate=1)	: Not Applicable
Melting point	: Not Applicable
Freezing point	: Not Applicable
Boiling point	: Not Applicable
Flash point	: Not Applicable
Auto-ignition temperature	: >150°C
Decomposition temperature	: Not Applicable
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Not Applicable

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Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

The product is stable at normal handling and storage conditions.

### 10.3. Possibility of hazardous reactions

Will not occur.

### 10.4. Conditions to avoid

Open flames, sparks, high temperatures, friction or impact, electrostatic discharges and radio frequent radiation.

### 10.5. Incompatible materials

None known.

### 10.6. Hazardous decomposition products

Decomposition does not occur under normal circumstances during storage, transport and handling.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed.

<b>Flash Tube</b>	
ATE US (oral)	887.500 mg/kg body weight
<b>Strontium nitrate (10042-76-9)</b>	
LD50 oral rat	2750 mg/kg
<b>Potassium nitrate (7757-79-1)</b>	
LD50 oral rat	3015 mg/kg
ATE US (oral)	3015.000 mg/kg body weight
<b>Magnesium (7439-95-4)</b>	
LD50 oral rat	230 mg/kg
<b>1,3,5,7-Tetraazatricyclo[3.3.1.1<sup>3,7</sup>]decane (100-97-0)</b>	
LD50 oral rat	9200 mg/kg
ATE US (oral)	9200.000 mg/kg body weight
<b>Sulfur (7704-34-9)</b>	
LD50 oral rat	> 3000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat (mg/l)	> 9.23 mg/l/4h
<b>Carbon black (1333-86-4)</b>	
LD50 oral rat	> 15400 mg/kg
<b>Barium nitrate (10022-31-8)</b>	
LD50 oral rat	355 mg/kg
ATE US (oral)	355.000 mg/kg body weight
<b>Ethanedioic acid, disodium salt (62-76-0)</b>	
LD50 oral rat	11160 mg/kg

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Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified

### Vinyl chloride-vinylidene chloride copolymer (9011-06-7)

IARC group	3 - Not classifiable
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### Carbon black (1333-86-4)

IARC group	2B - Possibly carcinogenic to humans
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In OSHA Hazard Communication Carcinogen list	Yes
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Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified

Specific target organ toxicity (repeated exposure)	: Not classified
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Aspiration hazard	: Not classified
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## SECTION 12: Ecological information

### 12.1. Toxicity

#### 1,3,5,7-Tetraazatricyclo[3.3.1.1.3,7]decane (100-97-0)

LC50 fish 1	44600 - 55600 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
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EC50 Daphnia 1	29868 - 43390 mg/l (Exposure time: 48 h - Species: Daphnia magna)
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#### Sulfur (7704-34-9)

LC50 fish 1	866 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
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LC50 fish 2	< 14 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
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### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

No additional information available

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

Effect on the global warming	: No known ecological damage caused by this product.
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### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations.

### SECTION 14: Transport information

#### Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN0431 Articles, pyrotechnic (for technical purposes), 1.4, II

UN-No.(DOT) : UN0431

DOT Proper Shipping Name : Articles, pyrotechnic  
for technical purposes

Department of Transportation (DOT) Hazard Classes : 1.4 - Class 1.4 - Explosives (with no significant blast hazard) 49 CFR 173.50

Hazard labels (DOT) : 1.4G - Explosive



Packing group (DOT) : II - Medium Danger

DOT Packaging Non Bulk (49 CFR 173.xxx) : 62

DOT Packaging Bulk (49 CFR 173.xxx) : None

DOT Packaging Exceptions (49 CFR 173.xxx) : None

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : Forbidden

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 75 kg

DOT Vessel Stowage Location : 02 - The material may be stowed "on deck" or "under deck" on a cargo vessel (up to 12 passengers) and "on deck" in closed cargo transport units or "under deck" in closed cargo transport units on a passenger vessel.

DOT Vessel Stowage Other : 25 - Shade from radiant heat

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

##### Strontium nitrate (10042-76-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

##### Potassium nitrate (7757-79-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

##### Magnesium (7439-95-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

##### Aluminum (7429-90-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Listed on SARA Section 313 (Specific toxic chemical listings)

SARA Section 313 - Emission Reporting	1.0 % (dust or fume only)
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##### Vinyl chloride-vinylidene chloride copolymer (9011-06-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

##### 1,3,5,7-Tetraazatricyclo[3.3.1.1.3,7]decane (100-97-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

##### Sulfur (7704-34-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

##### Carbon black (1333-86-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

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### Barium nitrate (10022-31-8)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

### Titanium (7440-32-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

### Ethanedioic acid, disodium salt (62-76-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

## 15.2. US State regulations

### Carbon black (1333-86-4)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
Yes	No	No	No	

### Strontium nitrate (10042-76-9)

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

### Potassium nitrate (7757-79-1)

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

### Magnesium (7439-95-4)

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

### Aluminum (7429-90-5)

U.S. - Massachusetts - Right To Know List  
 U.S. - Minnesota - Hazardous Substance List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

### 1,3,5,7-Tetraazatricyclo[3.3.1.1<sup>3,7</sup>]decane (100-97-0)

U.S. - New Jersey - Right to Know Hazardous Substance List

### Sulfur (7704-34-9)

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

### Carbon black (1333-86-4)

U.S. - Massachusetts - Right To Know List  
 U.S. - Minnesota - Hazardous Substance List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

### Barium nitrate (10022-31-8)

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

### Titanium (7440-32-6)

U.S. - New Jersey - Right to Know Hazardous Substance List



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### SECTION 16: Other information

Full text of H-phrases::

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Expl. 1.4	Explosive Category 1.4
Flam. Sol. 2	Flammable solids Category 2
Ox. Sol. 3	Oxidizing solids Category 3
Skin Irrit. 2	Skin corrosion/irritation Category 2
Skin Sens. 1	Skin sensitization Category 1
H204	Fire or projection hazard
H228	Flammable solid
H272	May intensify fire; oxidizer
H302	Harmful if swallowed
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H402	Harmful to aquatic life

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product*