

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

#### 1.1. Product identifier

Product name : Binary Bottle B

#### 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

The following classification is applicable for shipping purposes only when packaged with Binary Bottle A.

##### Classification (GHS-US)

Expl. 1.4 H204  
Acute Tox. 3 (Oral) H301

Full text of H-phrases: see section 16

#### 2.2. Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H204 - Fire or projection hazard  
H301 - Toxic if swallowed

Precautionary statements (GHS-US) :

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
P240 - Ground/bond container and receiving equipment  
P250 - Do not subject to grinding/shock/friction  
P264 - Wash thoroughly after handling  
P270 - Do not eat, drink or smoke when using this product  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P301 + P310 - If swallowed: Immediately call a poison center/doctor  
P330 - Rinse mouth  
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  
P405 - Store locked up  
P501 - Dispose of contents/container in accordance with local/regional/national/international 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

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### 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. The following components are present in these products as a pyrotechnic composition:

Name	Product identifier	%	Classification (GHS-US)
Aluminum	(CAS No) 7429-90-5	0 - 100	Not classified
Magnesium	(CAS No) 7439-95-4	0 - 100	Not classified
Titanium	(CAS No) 7440-32-6	0 - 87.5	Not classified
Iron	(CAS No) 7439-89-6	0 - 31	Acute Tox. 4 (Oral), H302
Silicon	(CAS No) 7440-21-3	0 - 7	Not classified
Carbon	(CAS No) 7440-44-0	0 - 1	Not classified

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.

### 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.
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## 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.

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### 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

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)
Carbon (7440-44-0)		
ACGIH	Not applicable	
OSHA	Not applicable	
Iron (7439-89-6)		
ACGIH	Not applicable	
OSHA	Not applicable	
Silicon (7440-21-3)		
ACGIH	Not applicable	
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)
Titanium (7440-32-6)		
ACGIH	Not applicable	
OSHA	Not applicable	
Magnesium (7439-95-4)		
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.

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### SECTION 9: Physical and chemical properties

#### 9.1. 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
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: Toxic if swallowed.

<b>Binary Bottle B</b>	
ATE US (oral)	100.000 mg/kg body weight
<b>Carbon (7440-44-0)</b>	
LD50 oral rat	> 10000 mg/kg

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<b>Iron (7439-89-6)</b>	
LD50 oral rat	984 mg/kg
ATE US (oral)	984.000 mg/kg
<b>Silicon (7440-21-3)</b>	
LD50 oral rat	3160 mg/kg

<b>Magnesium (7439-95-4)</b>	
LD50 oral rat	230 mg/kg

Skin corrosion/irritation : Not classified  
Serious eye damage/irritation : Not classified  
Respiratory or skin sensitization : Not classified  
Germ cell mutagenicity : Not classified  
Carcinogenicity : Not classified

Reproductive toxicity : Not classified  
Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

## SECTION 12: Ecological information

### 12.1. Toxicity

No additional information available

### 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.

## 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

The following transport information is applicable when this product is combined with Binary Bottle A because the combination forms an explosive mixture.

### Department of Transportation (DOT)

In accordance with DOT

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

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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

<b>Aluminum (7429-90-5)</b>	
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)
<b>Carbon (7440-44-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Iron (7439-89-6)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Silicon (7440-21-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Titanium (7440-32-6)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Magnesium (7439-95-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

#### 15.2. US State regulations

<b>Aluminum (7429-90-5)</b>
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
<b>Silicon (7440-21-3)</b>
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
<b>Titanium (7440-32-6)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List

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### 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

### SECTION 16: Other information

Full text of H-phrases::

Acute Tox. 3 (Oral)	Acute toxicity (oral) Category 3
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Expl. 1.4	Explosive Category 1.4
H204	Fire or projection hazard
H301	Toxic if swallowed
H302	Harmful if swallowed

*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*