

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

#### 1.1. Product identifier

Product name : Comet: All Types

#### 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)

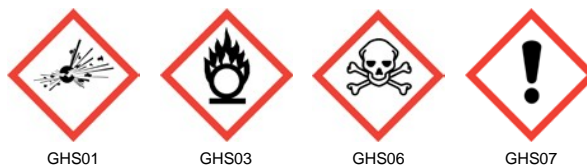
Expl. 1.4 H204  
Ox. Sol. 3 H272  
Acute Tox. 3 (Oral) H301  
Skin Irrit. 2 H315

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  
H272 - May intensify fire; oxidizer  
H301 - Toxic if swallowed  
H315 - Causes skin irritation

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  
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  
P302 + P352 - If on skin: Wash with plenty of water  
P330 - Rinse mouth  
P332+P313 - If skin irritation occurs: Get medical advice/attention  
P362 - Take off contaminated clothing and wash 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  
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

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### 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)
Bismuth oxide (Bi <sub>2</sub> O <sub>3</sub> )	(CAS No) 1304-76-3	0 - 72	Not classified
Potassium nitrate	(CAS No) 7757-79-1	0 - 71	Ox. Sol. 3, H272 Aquatic Acute 3, H402
Barium nitrate	(CAS No) 10022-31-8	0 - 50	Acute Tox. 4 (Oral), H302
Potassium perchlorate	(CAS No) 7778-74-7	0 - 50	Not classified
Strontium nitrate	(CAS No) 10042-76-9	0 - 50	Not classified
Aluminum	(CAS No) 7429-90-5	0 - 41	Not classified
Nitrocellulose	(CAS No) 9004-70-0	0 - 25	Not classified
Magnesium	(CAS No) 7439-95-4	0 - 24	Not classified
Sulfur	(CAS No) 7704-34-9	0 - 22	Skin Irrit. 2, H315
Carbon black	(CAS No) 1333-86-4	0 - 15	Not classified
Vinyl chloride-vinylidene chloride copolymer	(CAS No) 9011-06-7	0 - 12	Not classified
Copper oxide (CuO)	(CAS No) 1317-38-0	0 - 10	Not classified
Red Gum	None	0 - 10	Not classified
Dextrin	None	0 - 8	Not classified
Sodium benzoate	(CAS No) 532-32-1	0 - 6	Not classified
Carbonic acid, magnesium salt (1:1)	(CAS No) 546-93-0	0 - 3	Not classified
Ethanedioic acid, disodium salt	(CAS No) 62-76-0	0 - 3	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.

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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

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)
Magnesium (7439-95-4)		
ACGIH	Not applicable	
OSHA	Not applicable	
Potassium perchlorate (7778-74-7)		
ACGIH	Not applicable	
OSHA	Not applicable	
Strontium nitrate (10042-76-9)		
ACGIH	Not applicable	
OSHA	Not applicable	

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<b>Bismuth oxide (Bi<sub>2</sub>O<sub>3</sub>) (1304-76-3)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Barium nitrate (10022-31-8)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Carbonic acid, magnesium salt (1:1) (546-93-0)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Sulfur (7704-34-9)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Vinyl chloride-vinylidene chloride copolymer (9011-06-7)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Sodium benzoate (532-32-1)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Ethanedioic acid, disodium salt (62-76-0)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Nitrocellulose (9004-70-0)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Potassium nitrate (7757-79-1)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Copper oxide (CuO) (1317-38-0)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	
<b>Carbon black (1333-86-4)</b>		
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>

### 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.

Physical state	: Solid
Appearance	: Contained in cardboard casing.

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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.

Comet	
ATE US (oral)	100.000 mg/kg body weight
Magnesium (7439-95-4)	
LD50 oral rat	230 mg/kg
Strontium nitrate (10042-76-9)	
LD50 oral rat	2750 mg/kg
Bismuth oxide (Bi2O3) (1304-76-3)	
LD50 oral rat	5 g/kg

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<b>Barium nitrate (10022-31-8)</b>	
LD50 oral rat	355 mg/kg
ATE US (oral)	355.000 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>Sodium benzoate (532-32-1)</b>	
LD50 oral rat	4070 mg/kg
ATE US (oral)	2100.000 mg/kg body weight

<b>Ethanedioic acid, disodium salt (62-76-0)</b>	
LD50 oral rat	11160 mg/kg

<b>Nitrocellulose (9004-70-0)</b>	
LD50 oral rat	> 5 g/kg

<b>Potassium nitrate (7757-79-1)</b>	
LD50 oral rat	3015 mg/kg
ATE US (oral)	3015.000 mg/kg body weight

<b>Carbon black (1333-86-4)</b>	
LD50 oral rat	> 15400 mg/kg

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

<b>Vinyl chloride-vinylidene chloride copolymer (9011-06-7)</b>	
IARC group	3 - Not classifiable

<b>Carbon black (1333-86-4)</b>	
IARC group	2B - Possibly carcinogenic to humans
In OSHA Hazard Communication Carcinogen list	Yes

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

<b>Sulfur (7704-34-9)</b>	
LC50 fish 1	866 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
LC50 fish 2	< 14 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])

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Sodium benzoate (532-32-1)	
LC50 fish 1	420 - 558 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	< 650 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	> 100 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])

### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

Sodium benzoate (532-32-1)	
BCF fish 1	(no bioaccumulation)
Log Pow	-2.13

### 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

### 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

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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>Magnesium (7439-95-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Potassium perchlorate (7778-74-7)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Strontium nitrate (10042-76-9)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Bismuth oxide (Bi<sub>2</sub>O<sub>3</sub>) (1304-76-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Barium nitrate (10022-31-8)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Carbonic acid, magnesium salt (1:1) (546-93-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Sulfur (7704-34-9)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Vinyl chloride-vinylidene chloride copolymer (9011-06-7)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Sodium benzoate (532-32-1)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Ethanedioic acid, disodium salt (62-76-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Nitrocellulose (9004-70-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Potassium nitrate (7757-79-1)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Copper oxide (CuO) (1317-38-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Carbon black (1333-86-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

#### 15.2. US State regulations

<b>Carbon black (1333-86-4)</b>				
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	

<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	



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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

### Potassium perchlorate (7778-74-7)

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

### 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

### 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

### Carbonic acid, magnesium salt (1:1) (546-93-0)

U.S. - Massachusetts - Right To Know List  
U.S. - Minnesota - 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

### Nitrocellulose (9004-70-0)

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

### 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

## 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
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Expl. 1.4	Explosive Category 1.4
Ox. Sol. 3	Oxidizing solids Category 3
Skin Irrit. 2	Skin corrosion/irritation Category 2
H204	Fire or projection hazard
H272	May intensify fire; oxidizer
H301	Toxic if swallowed
H302	Harmful if swallowed
H315	Causes skin irritation
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*