

# Superior® Smoke Generator – 1.4G

## Safety Data Sheet

Revision date: 05/08/2018

Supersedes: All Previous Versions

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

#### 1.1. Product identifier

Product form : Mixture  
Trade name : Superior® Smoke Generator  
CAS No : NA  
Product code : NA

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

Use of the substance/mixture : Restricted to Professional users

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

SUPERIOR SIGNAL COMPANY LLC  
P.O. Box 96  
Spotswood, NJ 08884 USA  
Phone: 732-251-0800  
Fax: 732-251-9442  
Email: info@superiorsignal.com

#### 1.4. Emergency telephone number

Emergency number : 732-251-0800

### SECTION 2: Hazards identification

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

##### Classification (GHS-US)

Carc. 1B H350

Full text of H-phrases: see section 16

NOTE: Exposure is highly unlikely when product is used as directed. Product is sealed in heavy cardboard tube or metal canister. After ignition, product slowly combusts and hexachloroethane is consumed. Direct contact with product does not occur.

#### 2.2. Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US) :



GHS08

Signal word (GHS-US) : Danger  
Hazard statements (GHS-US) : H350 - May cause cancer (Dermal, oral)  
Precautionary statements (GHS-US) : P201 - Obtain special instructions before use  
P202 - Do not handle until all safety precautions have been read and understood  
P280 - Wear protective clothing  
P308+P313 - If exposed or concerned: Get medical advice/attention  
P405 - Store locked up  
P501 - Dispose of contents/container to in accordance with local regulations

#### 2.3. Other hazards

Other hazards not contributing to the classification : After ignition, Smoke Generator emits smoke (mild Zinc Chloride solution) that can be irritating to the eyes, respiratory tract, and mucous membranes. When used as directed exposure should be limited, and normally poses no hazard. Persons with known respiratory sensitivity should not be exposed to smoke. Moderate exposure may temporarily result in irritation, inflammation, and difficulty breathing – moving to fresh air will reverse these effects. Heavy exposure may result in coughs, chills, fever, and pulmonary edema, requiring medical treatment. Overwhelming exposure can be dangerous and is to be avoided. Persons who will be exposed to sustained heavy smoke should wear Self Contained Breathing Apparatus (SCBA).

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

Not applicable

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### SECTION 3: Composition/information on ingredients

#### 3.1. Substance

Not applicable

#### 3.2. Mixture

Name	Product identifier	%	Classification (GHS-US)
Hexachloroethane	(CAS No) 67-72-1	30 - 55	Carc. 1B, H350

Full text of H-phrases: see section 16

Remaining product components are not considered hazardous.

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

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

- Symptoms/injuries : May cause cancer.

#### 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 : Carbon dioxide. Dry powder. Sand. Foam.
- Unsuitable extinguishing media : Do not use a heavy water stream. Do not use extinguishing media containing water.

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

- Reactivity : May react with water, producing smoke.

#### 5.3. Advice for firefighters

- Firefighting instructions : Fight fire with normal precautions from a reasonable distance. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Self-contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection.

### SECTION 6: Accidental release measures

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

##### 6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

##### 6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : Ventilate area.

#### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

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

- Methods for cleaning up : On land, sweep or shovel into suitable containers. Minimize generation of dust. Store away from other materials.

#### 6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

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### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

- Additional hazards when processed : After ignition, Smoke Generator emits smoke that can be irritating to the eyes, respiratory tract, and mucous membranes (mild Zinc Chloride solution). When used as directed exposure should be limited, and normally poses no hazard.
- Precautions for safe handling : Persons with known respiratory sensitivity should not be exposed to smoke. Moderate exposure may temporarily result in irritation, inflammation, and difficulty breathing – moving to fresh air will reverse these effects. Heavy exposure may result in coughs, chills, fever, and pulmonary edema, requiring medical treatment. Overwhelming exposure can be dangerous and is to be avoided. Persons who will be exposed to sustained heavy smoke should wear Self Contained Breathing Apparatus (SCBA). Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
- Safe use of the product : Generate smoke to obscure, signal, trace airflow, or for other visual effects.
- Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Wash contaminated clothing before reuse.

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

- Storage conditions : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from ignition sources. Keep only in original container. Store in a dry place. Store in original container. Prevent moisture contact. Keep only in the original container in a cool, well ventilated place away from ignition sources. Keep container closed when not in use.
- Incompatible products : Strong bases. Strong acids.
- Incompatible materials : Mixture may be water reactive, releasing smoke (mild zinc chloride solution). Sources of ignition.

#### 7.3. Specific end use(s)

No additional information available

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

Superior® Smoke Generator (NA)		
ACGIH	Not applicable	
OSHA	Not applicable	
Hexachloroethane (67-72-1)		
ACGIH	ACGIH TWA (ppm)	1 ppm
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) (ppm)	1 ppm

#### 8.2. Exposure controls

- Personal protective equipment : Avoid all unnecessary exposure.
- Hand protection : Wear protective gloves.
- Eye protection : Chemical goggles or safety glasses.
- Respiratory protection : Wear appropriate mask.
- Other information : Do not eat, drink or smoke during use. NOTE: Exposure is highly unlikely when product is used as directed. Product is sealed in heavy cardboard tube or metal canister. After ignition, product slowly combusts and hexachloroethane is consumed. Direct contact with product does not occur.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

- Physical state : Solid
- Appearance : Powder contained in sealed tube or canister.
- Color : Gray
- Odor : Mothballs
- Odor threshold : No data available
- pH : No data available

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Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Vapor pressure	: No data available
Relative density	: No data available
Relative vapor density at 20 °C	: No data available
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

### 9.2. Other information

Minimum ignition energy : ≈

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

May react with water, producing smoke.

### 10.2. Chemical stability

Product is stable. Not established.

### 10.3. Possibility of hazardous reactions

Not established.

### 10.4. Conditions to avoid

Moisture. High temperature. High humidity.

### 10.5. Incompatible materials

Strong acids. Strong bases.

### 10.6. Hazardous decomposition products

zinc chloride. Smokes. Carbon monoxide. Carbon dioxide.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

<b>Hexachloroethane (67-72-1)</b>	
LD50 oral rat	4460 mg/kg
LD50 dermal rabbit	32000 mg/kg
ATE US (oral)	4460.000 mg/kg body weight
ATE US (dermal)	32000.000 mg/kg body weight

Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: May cause cancer (Dermal, oral).

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### Hexachloroethane (67-72-1)

IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity, 3 - Reasonably anticipated to be Human Carcinogen
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
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.

## SECTION 12: Ecological information

### 12.1. Toxicity

#### Hexachloroethane (67-72-1)

LC50 fish 1	967 - 1250 µg/l (Exposure time: 96 h - Species: Pimephales promelas)
LC50 fish 2	712 - 1030 µg/l (Exposure time: 96 h - Species: Lepomis macrochirus)

### 12.2. Persistence and degradability

#### Superior® Smoke Generator (NA)

Persistence and degradability	Not established.
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### 12.3. Bioaccumulative potential

#### Superior® Smoke Generator (NA)

Bioaccumulative potential	Not established.
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#### Hexachloroethane (67-72-1)

Log Pow	4.14
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### 12.4. Mobility in soil

#### Superior® Smoke Generator (NA)

Ecology - soil	None.
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### 12.5. Other adverse effects

Effect on the global warming	: No known ecological damage caused by this product.
Other information	: Avoid release to the environment.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations.
Ecology - waste materials	: Avoid release to the environment.

## SECTION 14: Transport information

### Department of Transportation (DOT)

In accordance with DOT  
Not regulated for transport unless specified as 1.4G

### Additional information

Other information	: No supplementary information available.
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### TDG – Only for Products/Shipments Specified as 1.4G

UN-No. (TDG)	: UN0197
Packing group	: III - Minor Danger

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TDG Primary Hazard Classes	: 1.4G - Class 1.4G - A substance or article which presents no significant hazard; explosion effects are largely confined to the package and no projection or fragments of appreciable size or range are to be expected
Transport document description	: UN0197 SIGNALS, SMOKE, 1.4G, III
Proper Shipping Name (TDG)	: SIGNALS, SMOKE
Hazard labels (TDG)	: 1.4G - Explosive substances and articles



TDG Special Provisions	: 76 - Despite section 5.7 of Part 5, Means of Containment, any combination of these dangerous goods included in Class 1, Explosives, may be handled, offered for transport or transported in a road vehicle if (a)the total quantity of all the dangerous goods included in Class 1, expressed in net explosives quantity, is less than or equal to 5 kg; (b)the total number of articles of dangerous goods subject to special provision 86 is less than or equal to 100 articles; and (c)the operator of the road vehicle has a valid Pyrotechnic Card that has been issued to the operator by the Explosives Regulatory Division of Natural Resources Canada. SOR/2008-34
Net Explosive Equivalent per Article	: 0.1 gram net explosive equivalent
Explosive Limit and Limited Quantity Index	: 25 kg net explosive equivalent
Passenger Carrying Ship Index	: 10 kg net explosive equivalent
Excepted quantities (TDG)	: E0
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	: 20 kg net explosive equivalent

### ADR

No additional information available

### Transport by sea

No additional information available

### Air transport

No additional information available

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

<b>Hexachloroethane (67-72-1)</b>	
SARA Section 313 - Emission Reporting	0.1 %
<b>Zinc (7440-66-6)</b>	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	1000 lb
SARA Section 313 - Emission Reporting	1.0 % (dust or fume only)

### 15.2. International regulations

#### CANADA

All components listed on the Canadian DSL (Domestic Substances List)

#### EU-Regulations

All components listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

No additional information available

#### Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Not classified

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### National regulations

All components listed on the AICS (Australian Inventory of Chemical Substances)  
 All components listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
 All components listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
 All components listed on the Korean ECL (Existing Chemicals List)  
 All components listed on NZIoC (New Zealand Inventory of Chemicals)  
 All components listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
 All components listed on INSQ (Mexican national Inventory of Chemical Substances)

### 15.3. US State regulations

Hexachloroethane (67-72-1)				
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	20 µg/day

Hexachloroethane (67-72-1)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

Zinc (7440-66-6)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

Zinc oxide (1314-13-2)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

### SECTION 16: Other information

Full text of H-phrases:

Carc. 1B	Carcinogenicity Category 1B
H350	May cause cancer

Revision date : 04/10/2018

Other information : **DISCLAIMER OF LIABILITY** The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

*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*

## Superior Smoke Generators – Not Explosive / Non-Pyrotechnic

Superior Signal Company has developed and manufactured a number of smoke generators over the past 50 years, and we sell them into a number of industries for a wide variety of uses. Our smoke generators are specifically designed for use in civilian applications, and as such are more benign and less hazardous than other smoke products, such as Military-type smokes, orange distress signals, and any colored smokes – all of which are pyrotechnic in nature, pose a greater safety hazard, and typically produce smoke that poses a significant health hazard. As all colored smoke is made from colored dye, these products also typically stain anything they come in contact with. Superior Smoke contains no dye, and the white airborne smoke will not stain or leave any residue when used as directed.

Superior smoke generators are not pyrotechnic devices. The internal process is hot, and can be a source of ignition – so precautions should be taken to prevent the possibility of starting a fire – but under normal conditions there is no external flame, sparks, or other hazard. The process is contained in a plain cardboard cylinder, which does not catch fire. The smoke generated is not toxic, although it is an irritant to mucous membranes, and therefore breathing protection is necessary if there will be exposure to dense smoke, or prolonged exposure to moderate smoke. Persons with respiratory sensitivity should avoid exposure to any smoke, including Superior Smoke. There is absolutely no possibility of the product being explosive in any way, nor does it generate a large volume of gas that would create a pressure hazard in a contained environment. Simply placing an inverted trash can over an active generator will effectively contain the smoke. You can hammer the product (this is actually part of our assembly process), put a lit match to it, zap it with a spark, burn it in a fire – and it cannot explode.

All of Superior Signal's fuse lit products are shipped in the USA as Non-hazardous / Non-explosive items. These products are officially classified by USDOT as per CFR 49 as "Not Regulated, UN 0000". These products also have the following PHMSA approvals: EX1987100104, EX1987100105, EX1987100106 all of which confirm U.N. Classification Code Number "UN 0000" – not regulated as a hazardous substance, not regulated as an explosive, and not regulated by DOT. Some countries (such as Canada) classify all smoke generating devices of any kind as "explosive", so shipments within those countries may be marked as 1.4G, and the SDS may reflect this classification.

Superior Signal's smoke generators that are initiated by a Pull-Ring igniter or Electric Squib igniter are regulated in the USA as an explosive for shipping purposes. As per CFR 49 these items are officially classified by USDOT as "Signals, smoke, UN 0197" and must be shipped as a Class C, 1.4G explosive (the lowest hazard level a regulated explosive can be). These products have the following PHMSA approval: EX1987120106.

These HazMat items are classified as such due to the igniter they contain, which itself is regulated as a 1.4G explosive. It is important to note that the total explosive load of each Superior smoke generator is **only 0.1 gram of black powder** – which is truly just a trace amount per item. This "explosive" portion is much like a common match, sealed deep inside the Non-explosive smoke generator, which has a thick cardboard or metal casing.

It would take the "explosive" component of nearly 5,000 of our 1.4G smoke generators to add up to the equivalent of just one pound of black powder. Depending on which item you are talking about, this would be a minimum of 1,000 LB up to 25,000 LB of smoke generators per 1 LB black powder equivalent. Although we are required by USDOT to ship these products as 1.4G HazMat, by any reasonable standard one would not consider these products to be "explosive" at all.

We hope this information has been helpful to you. Please call us if you need further assistance.