

# Material Safety Data Sheet

Material Name: Actuating Cartridge, Power Device

ID: KA002

## \*\*\* Section 1 - Chemical Product and Company Identification \*\*\*

**Chemical Name:** Hermetically sealed cartridge containing gas generating explosives

**Product Use:** Fire extinguisher actuator

**Synonyms:** Hermetically sealed, small cup designs, PN's 262299-1, 262299-2, 446090-2, 446090-3, 446138, 446139, 446161, 446161-1, 446189-1, 446384, 446384-1, 446384-2, 446479, 446518-1, 446582-1, 446582-2, 446582-3, 446596, 446616, 446617, 446665, 446705, 446736, 446738, 446754, 446842, 446842-1, 446850, 446924, 446963, 474351, 475031, 876296-3, 876561-3, 878492, 878492-1, 878492-2, 878493, 878493-1, 878493-2, 878562-2, 878563-2, A805300-1 2

### Manufacturer Information

Kidde Aerospace  
4200 Airport Drive, NW  
Wilson, NC 27896

Phone: 252-246-7004

Emergency # 1-800-451-8346, 760-602-8700 (3E Company)

## \*\*\* Section 2 - Composition / Information on Ingredients \*\*\*

CAS #	Component	Percent
13424-46-9	Lead azide	65-75
20062-22-0	Hexanitrostilbene (HNS)	10-20
7440-67-7	Zirconium	5-15
7778-74-7	Potassium perchlorate	1-10
9011-17-0	Fluoropolymer binder	0.1-1
7782-42-5	Graphite	0.1-1

### Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Explosives, Lead compounds, organic, Lead (7439-92-1).

### Component Information/Information on Non-Hazardous Components

Note: these ingredients are present at less than 0.72 grams in a hermetically sealed capsule.

This product is considered to be hazardous under 29 CFR 191 0.1200 (Hazard Communication). This is a controlled product under the criteria specified in the Canadian Workplace Hazardous Materials Information System (WHMIS).

## \*\*\* Section 3 - Hazards Identification \*\*\*

### Emergency Overview

Product is a metal case with various electrical connectors. When activated, this product ejects small metal fragments propelled by rapidly expanding gas. Under normal conditions of operation and storage, no adverse health effects are expected. When activated, a small quantity of irritating and toxic fumes and gases are released, including lead oxide or other lead compounds. However, in normal operation, these fumes are diluted by a large volume of extinguishing agent (such as Halon) and pose minimal risk.

### Potential Health Effects: Eyes

No adverse effects expected under normal conditions of operation. While exposure is unlikely, detonation fumes may irritate the eyes. If uninstalled product is activated, small metal fragments are ejected that could damage the eyes.

### Potential Health Effects: Skin

No adverse effects expected under normal conditions of operation. While exposure is unlikely, detonation fumes may irritate the skin. If uninstalled product is activated, small metal fragments are ejected that could damage the skin.

### Potential Health Effects: Ingestion

Ingestion is not an expected exposure route under normal conditions of operation.

### Potential Health Effects: Inhalation

Inhalation is not an expected exposure route under normal conditions of operation. While exposure is unlikely, detonation fumes may irritate the respiratory tract.

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## \*\*\* Section 4 - First Aid Measures \*\*\*

### First Aid: Eyes

For any eye exposure, flush eyes with plenty of cool water for at least 15 minutes. Seek medical attention if irritation develops or persists. If an eye is struck by a shrapnel fragment, seek immediate medical attention. **First**

### Aid: Skin

Wash skin immediately with soap and water. Seek medical attention if irritation develops or persists. If skin is injured by a shrapnel fragment, seek immediate medical attention.

### First Aid: Ingestion

Ingestion is highly unlikely. If gastrointestinal irritation develops after exposure to detonation fumes, seek medical advice.

### First Aid: Inhalation

Remove affected person to fresh air. If irritation or difficult breathing develops or persists, seek medical attention.

## \*\*\* Section 5 - Fire Fighting Measures \*\*\*

Flash Point: NA

Upper Flammable Limit (UFL): NA

Auto Ignition: 480 °F

Rate of Burning: NA

General Fire Hazards

Actuator devices can be detonated by fire or high heat, electricity, and high radiofrequency energy.

Hazardous Combustion Products

Lead, potassium, and zirconium oxides and chlorides, carbon dioxide and monoxide.

Extinguishing Media

DO NOT FIGHT FIRES INVOLVING EXPLOSIVES! Try to keep fire from reaching explosives. Move product away from fire area if it has not yet been exposed to heat. Isolate area. Guard against intruders. Consult the 2000 Emergency Response Guidebook, Guide 114 for further details.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective gear, including self-contained breathing apparatus.

## \*\*\* Section 6 - Accidental Release Measures \*\*\*

Containment Procedures

Not applicable under normal conditions of operation.

Clean-Up Procedures

Carefully pick up devices. Repack undamaged devices for storage and separate visibly damaged devices for proper disposal.

Evacuation Procedures

Keep unnecessary personnel away.

Special Procedures

Damaged actuators should be electrically detonated under controlled conditions by properly trained personnel.

## \*\*\* Section 7 - Handling and Storage \*\*\*

Handling Procedures

Uninstalled actuators should only be handled by personnel trained to handle explosive devices. Static grounding is recommended when handling unshunted devices.

Storage Procedures

Store in accordance with the specification of Subpart K, ATF. Explosives Law and Regulations (27 CFR 55.201-55.219) regarding safe handling and storage of explosive devices. At the minimum, store in a dry area at temperature range of 50 to 85 °F (10 to 30 °C). Keep away from flammable materials and sources of heat and flame. Prevent static discharges.

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## \*\*\* Section 8 - Exposure Controls / Personal Protection \*\*\*

### A: Component Exposure Limits

#### Lead azide (13424-46-9)

ACGIH: 0.05 mg/m<sup>3</sup> TWA (related to Lead)

OSHA: 50 µg/m<sup>3</sup> PEL (as Pb); 30 µg/m<sup>3</sup> Action Level (as Pb. Poison - see 29 CFR 1910.1025) (related to Lead)

NIOSH: 0.050 mg/m<sup>3</sup> TWA (related to Lead)

#### Zirconium (7440-67-7)

ACGIH: 5mg/m<sup>3</sup>TWA

10 mg/m<sup>3</sup> STEL

OSHA: 5mg/m<sup>3</sup>TWA

10 mg/m<sup>3</sup> STEL

NIOSH: 5mg/m<sup>3</sup>TWA

10 mg/m<sup>3</sup> STEL

#### Graphite (7782-42-5)

ACGIH: 2 mg/m<sup>3</sup> TWA (respirable fraction, all forms except graphite fibers)

OSHA: 2.5 mg/m<sup>3</sup> TWA (respirable dust)

NIOSH: 2.5 mg/m<sup>3</sup> TWA (respirable dust)

### Engineering Controls

Not ordinarily required.

### PERSONAL PROTECTIVE EQUIPMENT

#### Personal Protective Equipment: Eyes/Face

Safety glasses with side shields.

#### Personal Protective Equipment: Skin

Gloves are not ordinarily required.

#### Personal Protective Equipment: Respiratory

Respiratory protection is not ordinarily required.

#### Personal Protective Equipment: General

Use good industrial hygiene practices when handling the actuating cartridge.

## \*\*\* Section 9 - Physical & Chemical Properties \*\*\*

<b>Appearance:</b> Metal case with various electrical connectors.	<b>Odor:</b> None
<b>Physical State:</b> Manufactured device.	<b>pH:</b> NA
<b>Vapor Pressure:</b> NA	<b>Vapor Density:</b> NA
<b>Boiling Point:</b> NA	<b>Melting Point:</b> NA
<b>Solubility (H<sub>2</sub>O):</b> NA	<b>Specific Gravity:</b> NA

## \*\*\* Section 10 - Chemical Stability & Reactivity Information \*\*\*

### Chemical Stability

Actuators are stable under normal conditions of operation.

### Chemical Stability: Conditions to Avoid

Fire/heat, unintentional application of electricity, and high radiofrequency energy.

### Incompatibility

Do not attempt to open or remove internal sealed capsule containing explosive material.

### Hazardous Decomposition

Lead, potassium, and zirconium oxides and chlorides, carbon dioxide and monoxide.

### Hazardous Polymerization

Will not occur.

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## \*\*\* Section 11 - Toxicological Information \*\*\*

### Acute and Chronic Toxicity

#### A: General Product Information

The chemicals contained in the actuator are hermetically sealed and pose no hazard under normal conditions of operation and storage. When activated, a small quantity of irritating and toxic fumes and gases are released, including lead oxide or other lead compounds. However, in normal operation, these fumes are diluted by the large volume of extinguishing agent (such as Halon) and pose minimal risk.

#### B: Component Analysis - LD50/LC50

No LD50/LC50's are available for this product's components.

### Component Carcinogenicity

#### Lead azide (13424-46-9)

ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans (related to Lead)

OSHA: 50 µg/m<sup>3</sup> PEL (as Pb); 30 µg/m<sup>3</sup> Action Level (as Pb, Poison - see 29 CFR 1910.1025)  
(related to Lead)

IARC: Supplement 7, 1987; Monograph 23, 1980 (Evaluated as a group) (related to Lead) (Group 2B (possibly carcinogenic to humans))

#### Zirconium (7440-67-7)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

## \*\*\* Section 12 - Ecological Information \*\*\*

### Ecotoxicity

#### A: General Product Information

No information is available for product. Due to physical form of actuator, and small quantity of chemicals, environmental impact is negligible.

#### B: Component Analysis - Ecotoxicity - Aquatic Toxicity

##### Lead azide (13424-46-9)

###### Test & Species

Test & Species	Concentration	Conditions
96 Hr LC50 brook trout	4.1 mg/L	
96 Hr LC50 fathead minnow	6.5 mg/L	related to Lead
48 Hr LC50 water flea	600 µg/L	related to Lead

### Environmental Fate

No information is available for product.

## \*\*\* Section 13 - Disposal Considerations \*\*\*

### US EPA Waste Number & Descriptions

#### A: General Product Information

Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

#### B: Component Waste Numbers

##### Lead azide (13424-46-9)

RCRA: 5.0 mg/L regulatory level (related to Lead)

### Disposal Instructions

Dispose of product according to Local, State, Federal, and Provincial Environmental Regulations.

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## \*\*\* Section 14 - Transportation Information \*\*\*

### US DOT Information

**Shipping Name:** Actuating Cartridge, Power Device

**UN/NA#:** UN0276 **Hazard Class:** 1.4C **Packing Group:** II

**Required Label(s):** Explosives

**Additional Info.:** EX-9303392 (for PN 262299-1), EX-971 0087 (262299-2), EX-971 0087 (446090-2), EX-971 0087 (446090-3), EX-941 0086 (446138), EX-941 0085 (446139), EX-98031 32 (446161), EX-9809079 (446161-1), EX-971 0087 (446189-1), EX-9303394 (446384), EX-971 0087 (446384-1), EX-991 2054 (446384-2), EX-941 0087 (446479), EX-9701 102 (446518-1), EX-9702028 (446582-1), EX-9702028 (446582-2), EX-9702028 (446582-3), EX-9702029 (446596), EX-98031 33 (446616), EX-98031 34 (446617), EX-991 2054 (446705), EX-0105146 (446736), EX-2001 110154 (446738), EX-2001 110155 (446754), EX2008020493 (446924), EX2008020494 (446963), NA (474351), EX-98031 36 (876296-3), EX-9809078 (876561-3), EX-9303391 (878492 & 878492-1), EX-99061 28 (878492-2), EX-9303393 (878493 & 878493-1), EX-99061 28 (878493-2), EX-971 0087 (878562-2), EX-971 0087 (878563-2), EX-9701 102 (A805300-1 2), EX2006090049 (446842 & 446850 for 1 .4C), EX2006090048 (446842 & 446850 for 1 .4S), EX2005020431 (446665 & 474351 for 1 .4C), EX20050101 18 (446665 & 474351 for 1 .4S) EX2009030412 (475031) EX2009060176 (446842-1 for 1.4C), EX2009020384 (446842-1 for 1.4S)

### TDG Information

**Shipping Name:** Actuating Cartridge, Power Device

**UN/NA#:** UN0276 **Hazard Class:** 1.4C **Packing Group:** II

**Required Label(s):** Explosives

Note: These cartridges may be shipped as 1 .4S (UN0323) when packaged appropriately. Go to [www.kidde-aerospace.com](http://www.kidde-aerospace.com) and select "1 .4C to 1 .4S Packaging" for details.

## \*\*\* Section 15 - Regulatory Information \*\*\*

### US Federal Regulations

#### Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

#### Lead azide (13424-46-9)

SARA 313: 100 lb Reporting Threshold (PBT Chemical) (related to Lead)

CERCLA: 10 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches); 4.54 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches) (related to Lead)

### State Regulations

#### A: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Lead azide (related to Lead)	13424-46-9	Yes 1	Yes	Yes 1	Yes	Yes 1	Yes 1
Hexanitrostilbene (HNS)	20062-22-0	No	No	No	Yes	No	No
Zirconium	7440-67-7	Yes	Yes	Yes	Yes	Yes	Yes
Potassium perchlorate	7778-74-7	No	Yes	No	Yes	Yes	Yes
Graphite	7782-42-5	Yes	Yes	Yes	No	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

### Canadian WHMIS Information

#### A: General Product Information

This product has been classified in accordance with the Canadian Controlled Products Regulations (CPR) and this MSDS contains all of the information required by the CPR.

#### B: Component Analysis - WHMIS IDL

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The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Lead azide	13424-46-9	0.1 % (English Item 937, French Item 1435) (related to Lead, elemental)
Zirconium	7440-67-7	1 % (English Item 1733, French Item 1736)

WHMIS Classification: PIC.WHMIS Class D2 D2A, D2B

## Additional Regulatory Information

### A: General Product Information

All components are on the TSCA Inventory, are exempt from the TSCA inventory requirement, or are otherwise not required to be listed on the TSCA Inventory.

### B: Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Lead azide	13424-46-9	Yes	DSL	EINECS
Hexanitrostilbene (HNS)	20062-22-0	Yes	NDSL	EINECS
Zirconium	7440-67-7	Yes	DSL	EINECS
Potassium perchlorate	7778-74-7	Yes	DSL	EINECS
Graphite	7782-42-5	Yes	DSL	EINECS
Fluoropolymer binder	9011-17-0	Yes	DSL	No

## \*\*\* Section 16 - Other Information \*\*\*

### Other Information

The information herein is presented in good faith and believed to be accurate as of the effective date given. However, no warranty, expressed or implied, is given. It is the buyer's responsibility to ensure that its activities comply with Federal, State or provincial and local laws.

### MSDS History

MSDS History New MSDS, 8/12/2004

Rev. 1.0001 on 10/11/2004

Rev. 1.0002 on 11/2/2004

Rev. 1.0003 on 11/11/2004

Rev. 1.0004 on 10/12/2007

Rev. 1.0005 on 12/8/2008

### Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; CPR = Controlled Products Regulations; DOT = Department of Transportation; DSL = Domestic Substances List; EINECS = European Inventory of Existing Commercial Chemical Substances; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; IATA = International Air Transport Association; mg/Kg = milligrams per Kilogram; mg/L = milligrams per Liter, mg/m<sup>3</sup> = milligrams per Cubic Meter; MSHA = Mine Safety and Health Administration; NA = Not Applicable or Not Available; NIOSH = National Institute for Occupational Safety and Health; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; SARA = Superfund Amendments and Reauthorization Act; TDG = Transport Dangerous Goods; TSCA = Toxic Substances Control Act; WHMIS = Workplace Hazardous Materials Information System.

Contact: Kidde Aerospace

Contact Phone: 1-252-246-7004

This is the end of MSDS # KA002



DEPARTMENT OF THE TREASURY  
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS

MAY 19 2003

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555.32  
03-000114  
5400

Mr. David Frasure  
Kidde Technologies, Inc.  
4200 Airport Drive, NW.  
Wilson, North Carolina 27896-8630

Dear Mr. Frasure:

This is in response to your letter and attachments dated February 19, 2003, in which you requested a variance from the Federal explosives regulations contained at 27 CFR, Part 555.

According to your letter, you are requesting that explosive cartridges manufactured by Kidde Aerospace and Kidde Graviner be exempted as special explosive devices in accordance with 27 CFR 555.32. Of these explosive cartridges, 16 contain 0.44 grams or less of explosive materials, 7 contain 0.59 grams or less of explosive materials, and 47 contain 0.72 grams or less of explosive materials. Eight of the cartridges received exemptions from 27 CFR, Part 555, on July 24, 2002.

The eight cartridges (part numbers 873571-2, 878492-2, 222A2, 223A2, 58311-006, 58311-010, 58311-011, and A718-3) that received an exemption from 27 CFR, Part 555, remain exempt. The additional 62 part numbers are as follows:

472001-1, 841155-1, 872627-2, 873364-1, 874000-1, 894846-1, 895188-1, 895408-1, 895409-1, 897776-1, 897899-1, 897899-2, 897899-3, 898558-1, 899855-1, 446041, 446046, 446047, 876299-3, 877597-1, 877744-2, 877744-3, 262299-2, 446032, 446138, 446139, 446158, 446201, 446203, 446282, 446283, 446290, 446307, 446479, 446596, 446616, 446617, 446705, 446736, 446754, 446090-2, 446161-1, 446189-1, 446384-1, 446384-2, 446518-1, 446582-1, 446582-2, 446582-3, 876296-3, 876561-3, 878493-2, 878562-2, 878563-2, A800545-2,

Mr. David Frasure

A805300-12, A805300-2, A805300-41, A805300-43, A805300-44, A805300-45, and A805300-46.

After consulting with our Explosives Technology Branch, we have determined that your completed explosive cartridges, meeting the specifications that you described in your February 19, 2003, letter and attachments, do not pose a threat to public safety when possessed and used for their intended purpose; therefore, we are exempting these items as special explosive devices under the provisions pursuant to 27 CFR 555.32.

This exemption applies only to the devices specified above. Any alterations to these devices, or the manufacture or different devices, will render this variance approval void and necessitate a separate request for exemption.

Although we have determined that these devices are not regulated, the explosive materials used to manufacture them are subject to all provisions of 18 U.S.C., Chapter 40, and its implementing regulations contained at 27 CFR, Part 555. Any explosive materials removed from these devices are also subject to regulation.

We trust that the foregoing has been responsive to your request. Please feel free to contact Specialist Megan Morehouse in the Public Safety Branch at 202-927-2310 if you have any additional questions.

Sincerely yours,



Carson Carroll  
Chief, Arson and Explosives  
Programs Division

c: Special Agent in Charge, Charlotte Field Division  
Area Supervisor, Greensboro Area Office  
Chief, National Licensing Center  
Explosives Industry Analyst



**Explosive Cartridges Manufactured by Kidde Aerospace**

**Explosive material contained within each Cartridge is shown below in Grams**

**Part Numbers for each applicable explosive material category are listed below along with the previous approval date**

<b>0.44 Grams or less</b>	<b>Approval Date</b>
472001-1	23-May-03
841155-1	23-May-03
872627-2	23-May-03
873364-1	23-May-03
873571-2	24-Jul-02
874000-1	23-May-03
894846-1	23-May-03
895188-1	23-May-03
895408-1	23-May-03
895409-1	23-May-03
897776-1	23-May-03
* 897899-1	23-May-03
* 897899-2	23-May-03
* 897899-3	23-May-03
898558-1	23-May-03
899855-1	23-May-03

<b>0.59 Grams or less</b>	<b>Approval Date</b>
446041	23-May-03
446046	23-May-03
446047	23-May-03
876299-3	23-May-03
877597-1	23-May-03
* 877744-2	23-May-03
* 877744-3	23-May-03

<b>0.72 Grams or less</b>	<b>Approval Date</b>
262299-2	23-May-03
446032	23-May-03
446138	23-May-03
446139	23-May-03
446158	23-May-03
446201	23-May-03
446203	23-May-03
446282	23-May-03
446283	23-May-03
446290	23-May-03
446307	23-May-03
446479	23-May-03
446596	23-May-03
446616	23-May-03
446617	23-May-03
446705	23-May-03
446736	23-May-03
446754	23-May-03
446090-2	23-May-03
446161-1	23-May-03
446189-1	23-May-03
* 446384-1	23-May-03
* 446384-2	23-May-03
446518-1	23-May-03
* 446582-1	23-May-03
* 446582-2	23-May-03
* 446582-3	23-May-03
876296-3	23-May-03
876561-3	23-May-03
878492-2	23-May-03
878493-2	23-May-03
878562-2	23-May-03
878563-2	23-May-03
A800545-2	23-May-03
A805300-12	23-May-03
A805300-2	23-May-03
A805300-41	23-May-03
A805300-43	23-May-03
A805300-44	23-May-03
A805300-45	23-May-03
A805300-46	23-May-03

The items listed below are manufactured by  
Kidde Graviner in the UK, and re-sold by  
Kidde Aerospace

<b>0.72 Grams or less</b>	<b>Approval Date</b>
222A2	24-Jul-02
223A2	24-Jul-02
58311-006	24-Jul-02
58311-010	24-Jul-02
58311-011	24-Jul-02
A718-3	24-Jul-02

\* The various dash numbers are covered by one drawing



U.S. Department  
of Transportation

Research and  
Special Programs  
Administration

400 Seventh Street, S.W.  
Washington, D.C. 20590

The US Department of Transportation  
Competent Authority for the United States

CLASSIFICATION OF EXPLOSIVES

Based upon a request by Alan J. Randle on behalf of Walter Kidde Aerospace, Inc., 4200 Airport Drive N.W., Wilson, North Carolina, the following items are classed in accordance with Section 173.56, Title 49, Code of Federal Regulations (49 CFR).

U.N. PROPER SHIPPING NAME AND NUMBER: Cartridges, power device, UN0276

U.N. CLASSIFICATION CODE: 1.4C

<u>REFERENCE NUMBER</u>	<u>PRODUCT DESIGNATION/PART NUMBER</u>
EX-9803132	P/N 446161
EX-9803133	P/N 446616
EX-9803134	P/N 446617
EX-9803135	P/N 873571-02
EX-9803136	P/N 876296-3

Approved by:

*Christine E. Whitney*

Alan I. Roberts  
Associate Administrator  
for Hazardous Materials Safety

MAR 25 1998

(DATE)