

# SAFETY DATA SHEET

Issue Date No data available

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Version 2

## 1. IDENTIFICATION

### Product Identifier

Product Name Electric Squib

### Other Means of Identification

SDS # DLM-007

Synonyms Z16, Z16A, Z17, Z17A

### Recommended Use of the Chemical and Restrictions on Use

Recommended Use Electric squib.

### Details of the Supplier of the Safety Data Sheet

Supplier Address  
De La Mare Engineering, Inc.  
1910 First St.  
San Fernando, CA 91340

### Emergency Telephone Number

Company Phone Number 1-818-365-9208  
Emergency Telephone INFOTRAC 1-352-323-3500 (International)  
1-800-535-5053 (North America)

## 2. HAZARDS IDENTIFICATION

### Classification

Explosives

Division 1.4

### Signal Word

Warning

### Hazard Statements

Fire or projection hazard



**Appearance** Bead of dark grey powder deposited onto a plastic resin base and sealed in a clear lacquer membrane. The bead encloses a resistance wire in contact with insulated connecting wires

**Physical State** Solid

**Precautionary Statements - Prevention**

Keep away from heat/sparks/open flames/hot surfaces. — No smoking  
 Wear protective gloves/protective clothing/eye protection/face protection  
 Do not subject to grinding/shock/friction  
 Ground/bond equipment and your person

**Precautionary Statements - Response**

In case of fire: Evacuate area  
 DO NOT fight fire when fire reaches explosives  
 Fight fire with normal precautions from a reasonable distance

**Precautionary Statements - Storage**

Store in accordance with local regulations

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards Not Otherwise Classified (HNOC)**

May be harmful if swallowed

**Other Information**

Not Applicable

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Synonyms** Z16, Z16A, Z17, Z17A.

Chemical Name	CAS No	Weight-%
Zirconium	7440-67-7	22 - 28
Potassium perchlorate	7778-74-7	72 - 78

### 4. FIRST AID MEASURES

**First Aid Measures**

<b>Inhalation</b>	Remove to fresh air.
<b>Eye Contact</b>	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
<b>Ingestion</b>	Induce vomiting, but only if victim is fully conscious. Call immediately a physician or your local Poison Control Center.
<b>Skin Contact</b>	Wash off immediately with plenty of water. Take off contaminated clothing. Wash contaminated clothing before reuse.

**Most Important Symptoms and Effects, both Acute and Delayed**

**Symptoms** May cause irritation to the mucous membranes and upper respiratory tract. Contact may cause irritation and redness. Exposed individuals may experience eye tearing, redness and discomfort. Prolonged absorption can cause anemia and kidney injury from potassium perchlorate.

**Indication of any Immediate Medical Attention and Special Treatment Needed**

**Note to Physicians** Treat symptomatically. Exposure may aggravate pre-existing respiratory or skin problems.

## 5. FIRE-FIGHTING MEASURES

### Suitable Extinguishing Media

Dry chemical. Powdered limestone. Salt. Dry sand. Special class D mixtures.

**Unsuitable Extinguishing Media** Use water only to prevent product from catching fire.

### Specific Hazards Arising from the Chemical

Squib loads will explode and produce a large volume of hot, high velocity sparks, rapidly carrying fire to other squibs. Sensitive to friction, shock, heat, and electric current/electrostatic discharge. A single squib may throw incandescent sparks 10-15 feet, easily igniting other squibs. Radar and radio transmitters may set off non-shunted devices.

**Hazardous combustion products** ZrO<sub>2</sub>, KCl, and KOH in smoke when squibs burn. Hydrogen chloride.

**Sensitivity to Mechanical Impact** Yes.

**Sensitivity to Static Discharge** Yes.

### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment and Emergency Procedures

**Personal Precautions** Keep spill wet with water.

**Other Information** Anticipated release would only be from a damaged device.

### Methods and Material for Containment and Cleaning Up

**Methods for Containment** Prevent further leakage or spillage if safe to do so.

**Methods for Cleaning Up** Use only non-sparking tools. Keep broken devices wet with water.

## 7. HANDLING AND STORAGE

### Precautions for Safe Handling

**Advice on Safe Handling** Do not cut or alter device. Use personal protection recommended in Section 8. Do not subject to grinding/shock/friction. Do not remove devices from protective package or open wire shunts until ready to use. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Ground yourself and equipment to eliminate static electric sparks.

### Conditions for Safe Storage, Including any Incompatibilities

**Storage Conditions** Do not store improperly with other explosives (severe physical injury or death may occur from detonation). Store in accordance with all state, local, and federal regulations.

**Incompatible Materials** PdO. Molybdates. Tungstates. Alkali metal hydroxides. Alkali metal chromates. Strong reducing agents. Organic materials. Powdered metals.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Zirconium 7440-67-7	STEL: 10 mg/m <sup>3</sup> STEL: 10 mg/m <sup>3</sup> Zr TWA: 5 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup> Zr	TWA: 5 mg/m <sup>3</sup> Zr (vacated) TWA: 5 mg/m <sup>3</sup> (vacated) TWA: 5 mg/m <sup>3</sup> Zr (vacated) STEL: 10 mg/m <sup>3</sup> (vacated) STEL: 10 mg/m <sup>3</sup> Zr	IDLH: 50 mg/m <sup>3</sup> IDLH: 25 mg/m <sup>3</sup> Zr TWA: 5 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup> except Zirconium tetrachloride Zr STEL: 10 mg/m <sup>3</sup> STEL: 10 mg/m <sup>3</sup> Zr

**Appropriate Engineering Controls**

**Engineering Controls** Apply technical measures to comply with the occupational exposure limits. Explosion-proof general and local exhaust ventilation.

**Individual Protection Measures, such as Personal Protective Equipment**

- Eye/Face Protection** Chemical safety goggles/faceshield.
- Skin and Body Protection** Leather or flame resistant gloves advisable. Wear fire/flame resistant/retardant clothing.
- Respiratory Protection** Not required for intact devices-use particulate respirator for damaged devices.

**General Hygiene Considerations** Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on Basic Physical and Chemical Properties**

<b>Physical State</b>	Solid		
<b>Appearance</b>	Bead of dark grey powder deposited onto a plastic resin base and sealed in a clear lacquer membrane. The bead encloses a resistance wire in contact with insulated connecting wires	<b>Odor</b>	Not determined
<b>Color</b>	Dark grey	<b>Odor threshold</b>	Not determined
<b>Property</b>	<b>Values</b>	<b>Remarks • Method</b>	
pH	Not determined		
Melting point/freezing point	77-82 °C / 170-180 °F	ignites	
Boiling point/boiling range	Not applicable		
Flash point	Not applicable		
Evaporation rate	Not applicable		
Flammability (solid, gas)	Zirconium explosive range 0.16 g/L		
Flammability limits in air			
Upper flammability limits	Not applicable		
Lower flammability limit	Not applicable		
Vapor pressure	Not applicable		
Vapor density	Not applicable		
Specific gravity	5.7	(1=Water)	
Water solubility	Perchlorate component is soluble		
Solubility in other solvents	Not determined		
Partition coefficient	Not determined		
Autoignition temperature	Not determined		
Decomposition temperature	Not determined		
Kinematic viscosity	Not determined		
Dynamic viscosity	Not determined		
Explosive properties	Not determined		
Oxidizing Properties	Not determined		

**Other Information**

## 10. STABILITY AND REACTIVITY

### Reactivity

Not reactive under normal conditions

### Chemical Stability

unstable.

### Possibility of Hazardous Reactions

None under normal processing.

#### **Hazardous polymerization**

Hazardous polymerization does not occur.

### Conditions to Avoid

Heat, flames and sparks. Heat, shock, friction, static charges, and electrical current sources.

### Incompatible Materials

PdO. Molybdates. Tungstates. Alkali metal hydroxides. Alkali metal chromates. Strong reducing agents. Organic materials. Powdered metals.

### Hazardous Decomposition Products

ZrO<sub>2</sub>, KCl, and KOH in smoke when squibs burn. Hydrogen chloride.

## 11. TOXICOLOGICAL INFORMATION

### Information on Likely Routes of Exposure

<b>Product Information</b>	Product presents a hazard to health only when detonated or contents are released from encapsulated device
<b>Inhalation</b>	May cause irritation to the mucous membranes and upper respiratory tract.
<b>Eye Contact</b>	Avoid contact with eyes. <b>Skin</b>
<b>Contact</b>	Avoid contact with skin.
<b>Ingestion</b>	May be harmful if swallowed.

### **Component Information**

### Information on Physical, Chemical and Toxicological Effects

**Symptoms** Please see section 4 of this SDS for symptoms.

### Delayed and Immediate Effects as well as Chronic Effects from Short and Long-term Exposure

**Carcinogenicity** This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

### Numerical Measures of Toxicity- Product

Not determined

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral) 2273 mg/kg

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal

**Persistence and Degradability**

Not determined.

**Bioaccumulation**

Not determined.

**Mobility**

Not determined.

**Other Adverse Effects**

Not determined

**13. DISPOSAL CONSIDERATIONS**

**Waste Treatment Methods**

**Disposal of Wastes**

Dispose of in accordance with federal, state and local regulations. Please contact manufacturer for more detailed disposal information.

**Contaminated Packaging**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Chemical Name	California Hazardous Waste Status
Zirconium 7440-67-7	Ignitable powder
Potassium perchlorate 7778-74-7	Toxic Ignitable Reactive

**14. TRANSPORT INFORMATION**

**Note**

Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances

**DOT**

Please contact manufacturer for most current information

**IATA**

Please contact manufacturer for most current information

**IMDG**

Please contact manufacturer for most current information

**15. REGULATORY INFORMATION**

**International Inventories**

**Legend:**

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

*DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List*  
*EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*  
*ENCS - Japan Existing and New Chemical Substances IECSC*  
*- China Inventory of Existing Chemical Substances KECL -*  
*Korean Existing and Evaluated Chemical Substances*  
*PICCS - Philippines Inventory of Chemicals and Chemical Substances*

**US Federal Regulations****SARA 311/312 Hazard Categories****US State Regulations****U.S. State Right-to-Know Regulations**

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Zirconium 7440-67-7	X	X	X
Potassium perchlorate 7778-74-7	X	X	X

**U.S. EPA Label Information****16. OTHER INFORMATION****NFPA****Health Hazards****Flammability****Instability****Special Hazards**

Not determined

Not determined

Not determined

Not determined

**HMIS****Health Hazards****Flammability****Physical Hazards****Personal Protection**

Not determined

Not determined

Not determined

Not determined

**Revision Date**

01-Mar-2013

**Revision Note**

New format

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet