

**Material Safety Data Sheet**

May be used to comply with  
 OSHA's Hazard Communication Standard,  
 29 CFR 1910.1200. Standard must be  
 consulted for specific requirements.

**U.S. Department of Labor**

(msds.a)

Occupational Safety and Health Administration  
 (Non-Mandatory Form)  
 Form Approved  
 OMB No. 1218-0072

**IDENTITY** (As Used on Label and List)  
 Dry Silver-Zinc Cells w/Cadmium Oxide, Lead Oxide

Note: Blank spaces are not permitted. If any item is not applicable, or no  
 information is available, the space must be marked to indicate that.

**Section I**

<b>Manufacturer's Name</b> Yardney Technical Products, Inc.	<b>Emergency Telephone Number</b> (800) 255-3924
<b>Address (Number, Street, City, State, and Zip Code)</b> 82 Mechanic Street	<b>Telephone Number for Information</b> 860-599-1100
Pawcatuck, CT 06379	<b>Date Prepared</b> 8/11/2004
	<b>Signature of Preparer (optional)</b>

**Section II - Hazardous Ingredients/Identity Information**

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits	
			Recommended	% (optional)
Silver Compounds (Dust or Fume)	.01 mg/m3			
Zinc (As Fume)	5.0mg/m3			
Cadmium Oxide (Dust or Fume)	5.0ug/m3			
Lead Oxide (Dust or Fume)	50 ug/m3			

Under normal conditions of use or service, this product does not expose the user to toxic fumes.

Prior to use, care must be taken when filling a dry cell with electrolyte in order to avoid a severe  
 chemical burn to exposed tissue. Skin and eye protection is strongly recommended for the cell fill operation.

This product contains the following EPCRA Section 313 chemicals: Silver Compounds, Lead Compounds  
 Cadmium Compounds and Zinc Compounds.

**Section III - Physical/Chemical Characteristics**

<b>Boiling Point</b>	N/A	<b>Specific Gravity (H2O = 1)</b>	N/A
<b>Vapor Pressure (mm Hg.)</b>	N/A	<b>Melting Point</b>	N/A
<b>Vapor Density (AIR = 1)</b>	N/A	<b>Evaporation Rate (Butyl Acetate = 1)</b>	N/A
<b>Solubility in Water</b>	N/A		
<b>Appearance and Odor</b>	No Odor		

**Section IV - Fire and Explosion Hazard Data**

<b>Flash Point (Method Used)</b>	N/A	<b>Flammable Limits</b>	N/A	<b>LEL</b>	N/A	<b>UEL</b>	N/A
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**Extinguishing Media**  
 Dry Chemical Extinguisher

**Special Fire Fighting Procedures**  
 Avoid Breathing Fumes, wear self contained breathing apparatus.

**Unusual Fire and Explosion Hazards**  
 Acid Smoke from Burning Plastic Components.

**Section V - Reactivity Data**

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<i>Stability</i>	<i>Unstable</i>		<i>Conditions to Avoid</i> Do not short circuit positive and negative terminals
	<i>Stable</i>	X	

**Incompatibility (Materials to Avoid)**

Acids, Solvents

**Hazardous Decomposition or Byproducts**

Toxic Fumes of Cadmium, Toxic fumes of lead.

<i>Hazardous Polymerization</i>	<i>May Occur</i>		<i>Conditions to Avoid</i> N/A
	<i>Will Not Occur</i>	X	

**Section VI - Health Hazard Data**

<i>Route(s) of Entry:</i>	<i>Inhalation?</i>	<i>Skin?</i>	<i>Ingestion?</i>
	X	X	X

**Health Hazards (Acute and Chronic)**

Potassium Hydroxide is corrosive to skin and eyes.

Zinc, Lead, Cadmium and Silver Bioaccumulate in human tissues. Cadmium Oxide is a suspected human carcinogen. Zinc oxide may cause metal fume fever.

<i>Carcinogenicity:</i>	<i>NTP?</i>	<i>IARC Monographs?</i>	<i>OSHA Regulated?</i>
	No	No	No

**Signs and Symptoms of Exposure**

To potassium Hydroxide: Skin and eye irritation. To Silver: Agryia. To Cadmium Oxide: Dryness. of throat, headache, cough, shortness of breath, vomiting, To Lead Oxide: Abdominal pain, nausea, vomiting, metallic taste in mouth.

**Medical Conditions**

*Generally Aggravated by Exposure* Cadmium Oxide & Lead Oxide are both the subject of specific OSHA Regulation-  
Refer to 29 CFR 1910.1025 Lead and 29 CFR 1910.1027 For Cadmium.

**Emergency and First Aid Procedures**

In response to KOH: flush effected area with copious amounts of water. Seek medical attention immediately. To metal fumes, dusts: Remove victim from area. Seek medical attention immediately.

**Section VII - Precautions for Safe Handling and Use****Steps to Be Taken in Case Material is Released or Spilled**Contains potassium hydroxide, neutralize with boric acid. DO NOT flush to sanitary sewer.

Collect all spillage and debris for proper disposal. Use a full face respirator with HEPA Filters or a PAPR with HEPA Filters. DO NOT create any dust, DO NOT sweep up the debris.

**Waste Disposal Method**

Silver-Zinc batteries contain RCRA regulated metals and a corrosive liquid. They should be recycled to recover the silver, follow all local, state and federal hazard waste regulations.

**Precautions to Be Taken in Handling and Storage**

Avoid short circuiting the terminals. Avoid exposure to intense heat or fire.

**Other Precautions**

Do not open these cells and expose the internal components.

**Section VIII - Control Measures****Respiratory Protection (Specific Type)**

N/A		
<i>Ventilation</i>	<i>Local Exhaust</i>	<i>Special</i>
	Yes	N/A
	<i>Mechanical (General)</i>	<i>Other</i>
	Per ACGI Handbook recommendation.	N/A
<i>Protective Gloves</i>		<i>Eye Protection</i>
Chemical Resistant (Fill Operation)		

**Other Protective Clothing or Equipment**

N/A

**Work Hygienic Practices**

Wash thoroughly after working with any battery.