

**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

<b>IDENTITY</b> (As Used on Label and List) Wet or Dry Silver-Zinc Cells w/Cadmium Oxide, Lead Oxide & Bismuth 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.
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**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> August 12, 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/m <sup>3</sup>			
Zinc Oxide (Fume)	5.0 mg/m <sup>3</sup>			
Cadmium Oxide (Dust or Fume)	5.0ug/m3			
Lead Oxide (Dust or Fume)	50 ug/m3			
Bismuth Oxide (Dust or Fume)	none			

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**  
 Intense Heat and Acrid Smoke from Burning Metal and Plastic Components.

**Section V - Reactivity Data**

(msds.b)

<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.

Lead, Cadmium and Silver Bioaccumulate in human tissues. Cadmium Oxide and lead oxide are suspected human carcinogens. Zinc fumes can cause respiratory distress.

<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. To Zinc: Metal fume fever.

*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 Filter. 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*

Chemical Resistant Apron (Fill Operation)

*Work Hygienic Practices*

Wash thoroughly after working with any battery.