

EaglePicher™ Silver Zinc

PROVEN TECHNOLOGY FOR MISSILES AND LAUNCHERS



A HISTORY OF EXCELLENCE

Since the beginning of the Space Age, EaglePicher Silver Zinc batteries have been trusted to power historical NASA launches including Mercury, Gemini, Apollo and Skylab. Today, with more than 50 years of Silver Zinc battery production under its belt—and more than 200 battery designs—EaglePicher continues to produce highly reliable complex systems for the missile and aerospace industries.

STRENGTHS

From design to delivery, EaglePicher ensures each Silver Zinc battery meets stringent requirements:

- High energy density
- Flexible configuration
- Numerous qualified designs
- Long shelf life and activated life
- Excellent voltage regulation
- Proven safety and reliability

APPLICATIONS

EaglePicher's Silver Zinc batteries have been used in products ranging from long-life service applications to manned space flights, powering a wide variety of on board systems including:

- Flight termination
- Telemetry
- Guidance control
- Tracking
- Electronics

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EaglePicher's custom batteries include both primary (non-rechargeable) and secondary (rechargeable) products to meet customer requirements. The information below outlines typical operating characteristics, but modifications to the cell parameters can be made to optimize any characteristic desired including cycle life, calendar life and discharge current.

ELECTROCHEMICAL

AgO+Zn → Ag + ZnO
Theoretical Energy Density: 300 Wh/Kg
Open Circuit Voltage: 1.6 to 1.85 volts
Sizes: 0.8 to 850 Ah

COMPONENT CONSTRUCTION

Positive Plates: Sintered silver or silver oxide on highly conductive grid mesh. Electro formation controlled to 80-90% for dry charge units.

Negative Plates: Electroformed zinc, charged to limit oxide formation or zinc oxide pasted on highly conductive grid mesh.

Separators: Absorbent and multiple semi-permeable membranes.

Plate, Tab and Terminals: Fusion welded or soldered, depending on design. Pure silver lead wires.

Connectors: Standard or custom to user's requirements.

Plate Construction: Developed for optimum recycling. High surge power and rugged operation.

Cell Cases: Low pressure vented, non-spillable, molded Styrene and nylon or high performance ABS.

Battery Containers: Stainless steel, magnesium, titanium, plastic and PVC.

Electrolyte: Aqueous solution of potassium hydroxide.

Heater: Thermostatically controlled, designed not to emit noise; for +4° C and below operations.

LIFE EXPECTANCY

Shelf: Dry, 2-5 years; Wet, up to 2.0 years at 21° C

Cycle: Cycle life is dependent on depth-of-discharge and other operating conditions. Typically, high rate cells produce 10 to 30 cycles and low rate cells produce 50 to 100 cycles. At very low depth-of-discharge over 5,000 cycles are possible.

Charge Retention: Up to 1 year at 27° C

Charge Characteristics: Constant current or constant potential of 1.96 to 1.98 volts. Can be completely recharged in 16 hours. Electrolyte maintenance not normally required.

ENERGY DENSITY

Watt Hours per Kilogram: 55 to 286 as cells; 37 to 253 as batteries

Watt Hours per Liter: 80 to 415 as cells; 55 to 262 as batteries

Working Voltage: 1.55 to 1.0 volts

Voltage Regulation: For 90% discharge 0.1 volts

ENVIRONMENTAL CAPABILITY

Operating Temperature: -40° C to +74° C (with heater); +4° C to +74° C (without heater)

Storage Temperature: -54° C to +74° C

Shock: 100 g's (Typical) Mechanical

Thermal: -54° C to +74° C

Vibration: (Typical) 20 g's; 5-2000 Hz

Acceleration: (Typical) 120 g's

Altitude: No limit

Special: Can be made non-magnetic