

# PRODUCT SAFETY DATASHEET

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Lithium Iron Disulfide Batteries  
February 2009

As a courtesy to our customers, Energizer has prepared copyrighted Product Safety Datasheets to provide information on the different Eveready/Energizer battery systems. As defined in OSHA Hazard Communication Standard, Section 1910.1200 (c), Eveready/Energizer batteries are manufactured "articles", which do not result in exposure to a hazardous chemical under normal conditions of use. For this reason, Material Safety Datasheets are not required. The information and recommendations set forth herein are made in good faith, for information only, and are believed to be accurate as of the date of preparation. However, ENERGIZER BATTERY MANUFACTURING, INC., MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM REFERENCE ON IT.

## PRODUCT SAFETY DATA SHEET

**PRODUCT NAME:** Energizer Battery

**Type No.:** L91, L92, EA91, EA92

**Volts:** 1.5

**TRADE NAMES:** ULTIMATE (L91, L92); ADVANCED (EA91, EA92) **Approximate Weight:** 7.6 g. (L92, EA92) – 14.5 g. (L91, EA91)

**CHEMICAL SYSTEM:** Lithium Iron Disulfide

**Designed for Recharge:** No

### SECTION 1- MANUFACTURER INFORMATION

Energizer Battery Manufacturing, Inc.  
25225 Detroit Rd.  
Westlake, OH 44145

Telephone Number for Information:  
800-383-7323 (USA / CANADA)

Date Prepared: February 2009

### SECTION 2 – HAZARDS IDENTIFICATION

Under normal conditions of use, the battery is hermetically sealed.

**Ingestion:** Swallowing a battery can be harmful.

**Inhalation:** Contents of an open battery can cause respiratory irritation.

**Skin Contact:** Contents of an open battery can cause skin irritation.

**Eye Contact:** Contents of an open battery can cause severe irritation.

### SECTION 3 - INGREDIENTS

**IMPORTANT NOTE:** The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

| MATERIAL OR INGREDIENT                 | PEL (OSHA)  | TLV (ACGIH)                                      | %/wt.                 |
|--|---|--|-----------------------|
| Carbon Black<br>(CAS# 1333-86-4)       | 3.5 mg/m <sup>3</sup> TWA   | 3.5 mg/m <sup>3</sup> TWA                        | 0-4                   |
| 1,2 Dimethoxyethane<br>(CAS# 110-71-4) | None established  | None established                                 | 2-4                   |
| 1,3 Dioxolane<br>(CAS# 646-06-0)       | None established  | 20 ppm TWA                                       | 5-9                   |
| Graphite<br>(CAS# 7782-42-5)           | 15 mg/m <sup>3</sup> TWA (total dust)<br>5 mg/m <sup>3</sup> TWA<br>(respirable fraction) | 2 mg/m <sup>3</sup> TWA<br>(respirable fraction) | 0-4                   |
| Iron Disulfide<br>(CAS# 1309-36-0)     | None established  | None established                                 | 24-35                 |
| Lithium or Lithium Alloy               | None established  | None established                                 | 6.7 / AA<br>6.6 / AAA |
| Lithium Iodide                         | None established  | None established                                 | 0.3-3                 |
| Non-Hazardous Components               |   |  |                       |
| Steel<br>(Iron CAS# 7439-89-6)         | None established  | None established                                 | 18-22                 |
| Plastic and Other                      | None established  | None established                                 | Balance               |

**SECTION 4 – FIRST AID MEASURES**

**Ingestion:** Do not induce vomiting or give food or drink. Seek medical attention immediately. CALL NATIONAL BATTERY INGESTION HOTLINE for advice and follow-up (202-625-3333) collect day or night.

**Inhalation:** Provide fresh air and seek medical attention.

**Skin Contact:** Remove contaminated clothing and wash skin with soap and water.

**Eye Contact:** Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

**Note:** Carbon black is listed as a possible carcinogen by International Agency for Research on Cancer (IARC).

**SECTION 5 - FIRE FIGHTING MEASURES**

In case of fire where lithium batteries are present, flood area with water or smother with a Class D fire extinguishant appropriate for lithium metal, such as Lith-X. Water may not extinguish burning batteries but will cool the adjacent batteries and control the spread of fire. Burning batteries will burn themselves out. Virtually all fires involving lithium batteries can be controlled by flooding with water. However, the contents of the battery will react with water and form hydrogen gas. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended. A smothering agent will extinguish burning lithium batteries.

Emergency Responders should wear self-contained breathing apparatus. Burning lithium-iron disulfide batteries produce toxic and corrosive lithium hydroxide fumes and sulfur dioxide gas.

**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

To cleanup leaking batteries:

**Ventilation Requirements:** Room ventilation may be required in areas where there are open or leaking batteries.

**Respiratory Protection:** Avoid exposure to electrolyte fumes from open or leaking batteries.

**Eye Protection:** Wear safety glasses with side shields if handling an open or leaking battery.

**Gloves:** Use neoprene or natural rubber gloves if handling an open or leaking battery.

Battery materials should be disposed of in a leak-proof container.

**SECTION 7 - HANDLING AND STORAGE**

**Storage:** Store in a cool, well ventilated area. Elevated temperatures can result in shortened battery life. In locations that handle large quantities of lithium batteries, such as warehouses, lithium batteries should be isolated from unnecessary combustibles.

**Mechanical Containment:** If potting or sealing the battery in an airtight or watertight container is required, consult your Energizer Battery Manufacturing, Inc. representative for precautionary suggestions. Do not obstruct safety release vents on batteries. Encapsulation of batteries will not allow cell venting and can cause high pressure rupture.

**Handling:** Accidental short circuit for a few seconds will not seriously affect the battery. Prolonged short circuit will cause the battery to lose energy, generate significant heat and can cause the safety release vent to open. Sources of short circuits include jumbled batteries in bulk containers, metal jewelry, metal covered tables or metal belts used for assembly of batteries into devices. Damaging a lithium battery may result in an internal short circuit.

The contents of an open battery, including a vented battery, when exposed to water, may result in a fire and/or explosion. Crushed or damaged batteries may result in a fire.

If soldering or welding to the battery is required, consult your Energizer representative for proper precautions to prevent seal damage or short circuit.

**Charging:** This battery is manufactured in a charged state. It is not designed for recharging. Recharging can cause battery leakage or, in some cases, high pressure rupture. Inadvertent charging can occur if a battery is installed backwards.

**Labeling:** If the Energizer label or package warnings are not visible, it is important to provide a package and/or device label stating:

WARNING: Battery can explode or leak and cause burns if installed backwards, disassembled, charged, or exposed to water, fire or high temperature.

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Where accidental ingestion of small batteries is possible, the label should include:

**WARNING:** (1) Keep away from small children. If swallowed, promptly see doctor; have doctor phone (202) 625-3333 collect.  
(2) Battery can explode or leak and cause burns if installed backwards, disassembled, charged, or exposed to water, fire or high temperature.

### SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

**Ventilation Requirements:** Not necessary under normal conditions.

**Respiratory Protection:** Not necessary under normal conditions.

**Eye Protection:** Not necessary under normal conditions.

**Gloves:** Not necessary under normal conditions.

### SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

|                                      |                               |
|--------------------------------------|-------------------------------|
| Boiling Point @ 760 mm Hg (°C)       | Not applicable for an Article |
| Vapor Pressure (mm Hg @ 25°C)        | Not applicable for an Article |
| Vapor Density (Air = 1)              | Not applicable for an Article |
| Density (g/cm <sup>3</sup> )         | 1.7 -2.0                      |
| Percent Volatile by Volume (%)       | Not applicable for an Article |
| Evaporation Rate (Butyl Acetate = 1) | Not applicable for an Article |
| Physical State                       | Solid                         |
| Solubility in Water (% by weight)    | Not applicable for an Article |
| pH                                   | Not applicable for an Article |
| Appearance and Odor                  | Solid object / no odor        |

### SECTION 10 - STABILITY AND REACTIVITY

Lithium iron disulfide batteries do not meet any of the criteria established in 40 CFR 261.2 for reactivity.

### SECTION 11 - TOXICOLOGICAL INFORMATION

Lithium iron disulfide batteries are not hazardous waste. Under normal conditions of use, lithium iron disulfide batteries are non-toxic.

### SECTION 12 - ECOLOGICAL INFORMATION

Issues such as ecotoxicity, persistence and bioaccumulation are not applicable for articles.

### SECTION 13 - DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable federal, state and local regulations.

**SECTION 14 – TRANSPORT INFORMATION**

In general, the transportation of primary lithium cells and batteries (and batteries packaged with equipment) is regulated as UN3090 (UN 3091) by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. However, Energizer lithium-iron disulfide batteries are exempt from the majority of regulatory requirements of UN3090 (and UN 3091) because they meet the requirements of Special Provision A45 (prior to January 1, 2009) and the new IATA Packaging Instructions 968 – 970 after January 1, 2009. (They contain less than 1 gram of lithium and pass the tests defined in UN model regulation section 38.3) The batteries must meet the following criteria for shipment:

- For air shipments, meet the requirements listed in Special Provision A45 (prior to January 1, 2009) and IATA Packaging Instructions 968 – 970 (after January 1, 2009) of the International Air Transport Association Dangerous Goods Regulations.
- Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185.
- With limited exceptions, the transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to August 9th, 2007 Federal Register (Hazardous Materials; Transportation of Lithium Batteries) for additional rules that are effective on January 1, 2008.

By complying with the requirements specified above, Lithium Batteries are not otherwise regulated as Dangerous Goods. Lithium Batteries manufactured, packaged and shipped by Energizer Battery Manufacturing, Inc. meet the requirements specified above. Any Lithium Batteries subsequently repackaged or reshipped are required to meet all of the requirements specified above.

**SECTION 15 - REGULATORY INFORMATION**

Outside of the transportation requirements noted in Section 14, lithium iron disulfide batteries marketed by Energizer Battery Manufacturing, Inc. are not regulated.

SARA/TITLE III - As an article, this battery and its contents are not subject to the requirements of the Emergency Planning and Community Right-To-Know Act.

**SECTION 16 - OTHER INFORMATION**

None.