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TECHNICAL/OEM

Primary Systems

Lithium Manganese Dioxide

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TECHNICAL BULLETIN Disposal



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● DISPOSAL Disposal Procedures for Li/MnO₂ Batteries

The disposal of waste products in the United States is regulated by the U.S. Environmental Protection Agency. The EPA Regulations are listed in the "Code of Federal Regulations," CFR40, entitled "Protection of Environment." Individual states and local communities also may establish regulations covering the disposal of waste products. These may be more stringent than the federal regulations and may cover the disposal of household waste, which is not included in the federal regulation. Thus, state and local agencies should be contacted for their disposal guidelines.

The EPA has provided no regulations or specific guidelines with respect to the disposal of Lithium Manganese Dioxide cells and batteries. Until such time that regulations or specified guidelines are issued, the following is recommended for the disposal of DURACELL Li/MnO₂ cells and batteries.

- . Batteries in Household Use
 - Individual cells and batteries can be disposed of with other household waste, but in compliance with local regulations.
- B. Commercial and Industrial
 1. The preferred procedure is for the cells and/or batteries to be in a discharged condition for disposal.
 - . Li/MnO₂ cells can be considered to be "discharged" if the cell voltage, under a C/100 current load (where C is the rated capacity in ampere-hours), is below 2 volts.
 - b. If not discharged, the cells or batteries should be discharged at a current less than C/S amperes until the voltage of each cell is below 2 volts as measured per (1a) above. The recommended procedure is to discharge the cell or battery through an appropriate resistive load until the cell voltage is below 2 volts.
 - c. "Discharged" batteries should be shipped, as hazardous waste to a hazardous waste, facility for final disposal. Disposal of these discharged batteries in a hazardous waste landfill is permissible.
 2. If the condition (state-of-charge) of the cells or batteries cannot be identified or if the disposer does not wish to discharge or determine the state-of-charge of the batteries, or if cells or batteries are leaking, cracked, opened, vented, etc., or are otherwise no longer physically sound, they must be shipped as a hazardous waste to a qualified waste facility. At this facility they can be treated to assure that they do not exhibit the characteristics of a hazardous material and then disposed of

appropriately.

3. Collection and Handling

Commercial or bulk quantities of spent Li/MnO₂ cells and batteries should be collected and transported in a manner to prevent short circuit, compacting or mutilation, or any other abusive physical or electrical handling that would destroy their physical integrity. CFR40 provides details and regulations for collection of hazardous waste products.

4. Shipment

DOT and EPA regulations cover the shipment of these cells and batteries to a disposal site within the United States (reference CFR49, paragraph 173.185(j) and CFR40). Individual states may establish additional regulations. Your state regulatory agency should be contacted for additional transportation guidelines.

5. Incineration

Li/MnO₂ cells and batteries should not be incinerated, unless suitable procedures are followed and appropriate precautions have been taken by qualified handlers. Exposure of these cells to high temperatures or fire can cause the cells to vent and/or rupture.

Note: Guidelines for the disposal of lithium batteries are continually under review. Duracell can be contacted if additional guidance is required for the disposal of Li/MnO₂ batteries. Waste management companies can provide assistance in the disposal of these batteries.