

4 Construction

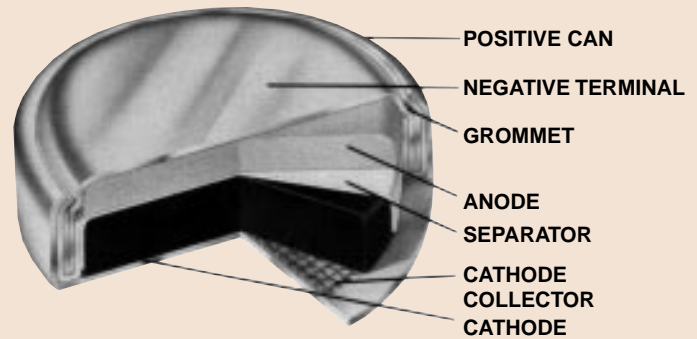
Three structural designs of Li/MnO₂ cells satisfy the complete range of today's electronic needs for small lightweight, portable power sources.

4.1 MicroLithium™ Coin (Button) Cells

Duracell offers a selection of flat, coin-shaped Li/MnO₂ cells for applications requiring small, thin, long-life batteries, such as memory retention, watches, calculators, remote control units, medical equipment, electronic games, and many other low current drain electronic devices.

Figure 4.1.1. shows a cutaway illustration of a typical coin cell. The manganese dioxide cathode pellet faces the lithium anode disc. The electrodes are separated by a nonwoven polypropylene separator impregnated with electrolyte. The cell is crimp-sealed, with the can serving as the positive terminal and the cap serving as the negative terminal.

FIGURE 4.1.1.



MicroLithium™ coin (button) cell.

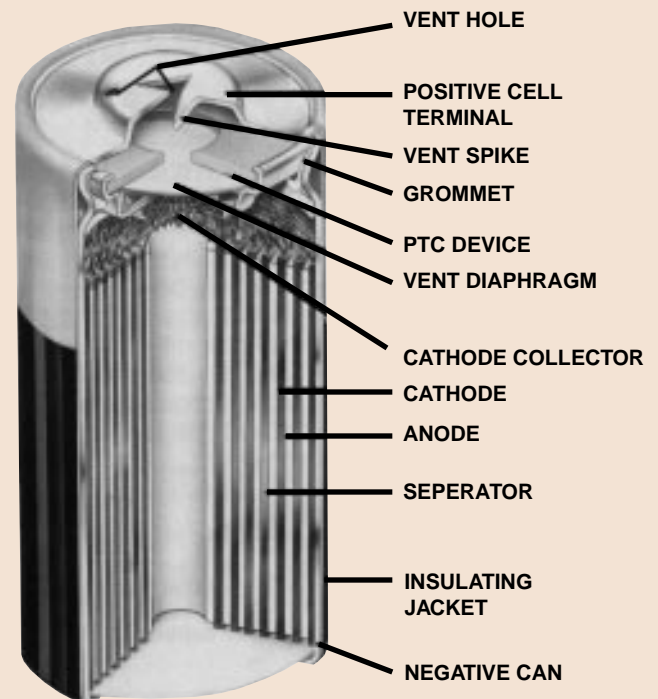
4.2 High Rate Spiral-Wound Cylindrical Cells

Spiral wound cylindrical cells are designed for high-current pulse capability (up to 5 ampere), as well as for continuous high rate operation (up to 1.2 ampere). The lithium anode and the cathode are wound together with a microporous polypropylene separator interspaced between thin electrodes to form a "jelly roll." In this way, high surface area is achieved and rate capability is optimized.

DURACELL® high rate spiral-wound cells are used in a wide range of devices requiring high-current pulses and/or very low temperature operation. In the new generation of fully automatic 35mm cameras, for example, DURACELL® high rate batteries operate all camera functions and provide rapid flash recycling time even at subzero temperatures. DURACELL® high rate spiral-wound cells are also used in computer memory back-up where consumer replaceability is desired.

High rate spiral-wound cells contain a safety vent mechanism to relieve internal pressure in the event of severe mechanical abuse. High rate cells also contain a resettable PTC (Positive Temperature Coefficient) device which limits current flow and prevents the cell from overheating if accidentally short-circuited. **Figure 4.2.1.** shows a cutaway illustration of the spiral-wound DURACELL® DL2/3A cell.

FIGURE 4.2.1.



DURACELL® high rate spiral-wound cell.