



Print Output: Ni-MH Technical Bulletin

Chapter: 9

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Proper Use and Handling

Nickel-metal hydride batteries can give years of safe and reliable service if they are used in accordance with recommended procedures and are not abused. The batteries can be used in any operating position. Other than charging, the only maintenance that should be required is to keep them clean and dry both during use and storage.

As previously discussed, nickel-metal hydride batteries, as with all battery systems, should not be exposed to extreme temperatures for any long period of time. They can be stored for many months in a charged or discharged state without any detrimental effects. Storage and operation at normal room temperatures is preferred, but wider temperatures can be safely tolerated as discussed in detail in this bulletin.

DURACELL nickel-metal hydride batteries are shipped in a partially charged state. Therefore, caution should be exercised to avoid short-circuiting the battery during handling.

After storage or periods during which the battery has not been used, the battery should be charged, using any of the methods discussed in this bulletin, before being placed in service. Extended overcharging or overheating of the battery should always be avoided.

The care and handling procedures outlined in the following section should be carefully followed.

9.1 Care and Handling

Disassembly

The battery should not be disassembled, opened or shredded under any conditions — high short circuit currents and fire could result. Nickel-metal hydride cells contain an alkaline electrolyte which can cause injury. In the event that the electrolyte comes into contact with skin or eyes, immediately flush with fresh water and seek medical advice.

Handling

DURACELL nickel-metal hydride batteries are designed to withstand normal handling. They should not be dropped or subjected to strong mechanical shock.

High Temperatures/Fire

Never subject the battery to heat or dispose of it in a fire — the battery can explode, leak or burn if exposed to fire or very high temperatures. For optimum life, batteries should be shielded from or placed away from heat sources. See Section 7.2 which describes recommended temperatures for use, operation and storage of nickel-metal hydride batteries.

Vented Battery Compartments

It is possible that cells may vent if the battery is overcharged or otherwise abused. Nickel-metal hydride cells release hydrogen gas during venting which could form potentially explosive mixtures with air. Caution should be exercised to prevent the gas from collecting in the battery or equipment. Exposure to a source of ignition and airtight device compartments should be avoided.

Severe Use Applications

Short-term use of nickel-metal hydride batteries outside of specified ranges may be possible. Please consult Duracell if such a requirement exists.

Proper Use and Handling (cont.)

9.2 Transportation

Procedures for the transportation of batteries are specified by the United States Department of Transportation in the “Code of Federal Regulations,” CFR49, entitled “Transportation.” Internationally, air transportation is specified by the International Civil Aviation Organization (ICAO) in their publication “Technical Instructions for the Safe Transport of

Dangerous Goods By Air.”

The nickel-metal hydride battery supplied by Duracell is recognized by the regulatory agencies as a “dry battery.” As such, it is not subject to regulation and can be shipped in normal packaging and transported on any mode of transportation without special handling.

9.3 Waste Management: Recycling and Disposal

The management of waste products in the United States is regulated by the U.S. Environmental Protection Agency (EPA). 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 cover the management of household waste, which is not included in the federal regulations.

The U.S. EPA has not provided any specific regulations or guidelines for the waste management of sealed nickel-metal hydride cells or batteries. As a result, a number of states and local governments have passed or are considering legislation which may require special procedures for the disposal of these batteries. Thus, state and local agencies should be contacted for their waste management guidelines. Internationally, procedures for waste management may vary from country to country.

In the absence of regulations or guidelines, the following is recommended for recycling and disposing of used nickel-metal hydride batteries:

A) Recycling:

Duracell encourages the recycling of DURACELL nickel-metal hydride batteries and offers a special worldwide recycling program. For information on recycling DURACELL nickel-metal hydride rechargeable batteries, please contact your nearest Duracell office. In North America, call toll-free 1-800-551-2355 (9:00 a.m. to 5:00 p.m. E.S.T.).

B) Disposal:

Household Use – Individual batteries can be disposed of with other household wastes.

Commercial Use – When ten or more batteries are accumulated, the commercial user may want to consider disposing the batteries in a [secure waste land-fill](#). Since these batteries are not classified as a “[hazardous waste](#),” they can be shipped to the secure waste facility as “non-hazardous waste.”

Local regulations, which specify other methods for the disposal of nickel-metal hydride batteries, supersede these recommendations. Waste management companies can provide assistance for the disposal of these batteries. As previously stated, nickel-metal hydride batteries should not be disassembled, opened or shredded.