



Tech Info Library

PowerBook Duo: Battery Information 10/92

Revised: 5/16/94
Security: Everyone

PowerBook Duo: Battery Information 10/92

=====

Article Created: October 19, 1992

TOPIC -----

The PowerBook Duo battery is different from the batteries in other PowerBook systems.

DISCUSSION -----

Advantages

Compared to the NiCad batteries used in other PowerBook models, the nickel-metal hydride (NiHy) rechargeable batteries in the PowerBook Duo:

- Are smaller and lighter.
- Have a 20% greater power capacity for the same size and voltage.
- Are considered environmentally safer because they lack cadmium.

A fully-charged PowerBook Duo battery will operate approximately 2 to 4.5 hours, depending on the operating temperature, the age of the battery, and the power-saving features implemented.

A NiHy battery has a similar discharge curve to a NiCad, with a sharp drop of available power as the battery approaches discharge. This drop is predictable, and system software will give the user adequate warning to recharge or replace the battery before full discharge.

The terminals on the NiHy battery are more recessed than those on the NiCads, and there is little likelihood of an accidental external short. The batteries will ship with a case to ensure that nothing damages the battery or the customer.

Precautions

Nickel-metal hydride batteries requires certain precautions:

- Because the self-discharge rate of a stored battery is approximately twice that of a NiCad, stored batteries must be frequently recharged.
- A NiHy battery is much more sensitive to temperature, especially high temperatures (over 40°C). Approximately 50% of the battery capacity will remain if the battery has been stored for 14 days at 40°C. If left for months at this temperature, the battery could be permanently damaged. Charging NiHy batteries below 5° C can also cause irreversible damage to the battery.
- Overcharging, or over-discharging, will cause permanent battery damage. Due to this sensitivity, a special power management chip was built into the PowerBook Duo to control charging and discharging. The chip will also stop charging when the battery temperature exceeds a specific value.

Battery Charging

A NiHy battery, like a NiCad, should be fully discharged in order to obtain a full charge. To maximize battery life, fully discharge and then recharge the battery once every 30 days. This should be done any time you note that the run time of the battery has decreased. With proper care, a battery should last for at least a year.

It should take about two hours to charge a fully depleted battery with the computer shut down or in sleep.

Specifications

Maximum dimensions	17.8 x 77.8 x 106 cm 0.7 x 3.06 x 0.17 in
Maximum weight	.75 lb
Battery capacity	approximately 900 to 950 mAh
Operating Temperature	0 - 45°C

Disposal

Dispose of batteries in accordance with the mandatory or voluntary battery collection scheme in each country.

- In the United States, dead batteries should be taken to an Authorized Apple Service Provider, who will return the battery to Apple for recycling.
- European countries have separate collection and/or recycling programs for dead batteries.
- In other countries, an Apple Service Provider should be contacted for

appropriate battery disposal.

Support Information Services

Copyright 1992, Apple Computer, Inc.

Tech Info Library Article Number:10832