



HONG KONG BATTERIES MANUFACTORY LIMITED

香港電池工業有限公司

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RE: Handle the Rechargeable Batteries Become Further Longest Life.

Each battery has unique needs that must be met to obtain reliable service and long life. The Do and don't battery table summarizes these needs and advises proper handling of each battery type.

Optimal handling may not always be practical in real life. Deviations from the ideal are acceptable but will lower the life expectancy of the battery to some degree. Exposure to heat may be the larger deterrent.

	Nickel-cadmium (NiCd)	Nickel-metal-hydride (NiMH)	Lithium-ion (Li-ion)	Lead-acid (Sealed or flooded)
Used in	Two-way radios, power tools, medical.	Similar application as NiCd; higher density.	Cell phones, laptops, video cameras.	Motorcycles, cars, wheelchairs, UPS.
Charging	<p>Do run the battery fully down once per month; try to use up all energy before charging.</p> <p>Do not leave battery in charger for more than 2 days because of memory.</p>	<p>Do run the battery fully down once every 3 months. Over-cycling is not advised.</p> <p>Do not leave battery in charger for more than 2 days because of memory.</p>	<p>Do charge the battery often. The battery lasts longer with partial rather than full discharges.</p> <p>Do not use if pack gets hot during charge.</p> <p>Check also charger.</p> <p>Charge methods: Constant voltage to</p>	<p>Do charge the battery immediately after use.</p> <p>Lead-acid must always be kept in a charged condition. The battery lasts longer with partial rather than full discharges. Over-cycling is not advised.</p> <p>Charge methods: Constant voltage to 2.40/cell</p>



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	<p>Avoid getting battery too hot during charge.</p> <p>Charge methods: Constant current, followed by trickle charge when full.</p> <p>Fast-charge preferred over slow charge.</p> <p>Slow charge = 16h</p> <p>Rapid charge = 3h</p> <p>Fast charge = 1h+</p>	<p>Avoid getting battery too hot during charge.</p> <p>Charge methods:</p> <p>Constant current, followed by trickle charge when full. Slow charge not recommended.</p> <p>Battery will get warm towards full charge.</p> <p>Rapid charge = 3h</p> <p>Fast charge = 1h+</p>	<p>4.20V/cell (typical). No trickle-charge when full. Li-ion may remain in the charger (no memory). Battery must remain cool. No fast-charge possible.</p> <p>Rapid charge = 3h</p>	<p>(typical), followed by float held at 2.25V/cell. Battery must remain cool. Fast charge not possible; can remain on float charge.</p> <p>Slow charge = 14h</p> <p>Rapid charge = 10h</p>
Discharging	<p>Full cycle does not harm NiCd.</p> <p><i>NiCd is one of the most hardy and durable chemistries.</i></p>	<p>Avoid too many full cycles because of wear. Use 80% depth-of-discharge.</p> <p><i>NiMH has higher energy density than NiCd at the expense of shorter cycle life.</i></p>	<p>Avoid full cycle because of wear. 80% depth-of-discharge recommended. Re-charge more often. Avoid full discharge. Low voltage may cut off safety circuit</p>	<p>Avoid full cycle because of wear. Use 80% depth-of-discharge. Recharge more often or use larger battery.</p> <p><i>Low energy density limits lead-acid to wheeled applications</i></p>
Service needs	<p>Discharge to 1V/cell every 1 to 2 months to prevent memory.</p>	<p>Discharge to 1V/cell every 3 months to prevent memory.</p>	<p>No maintenance needed. Loses capacity due to aging whether used or not.</p>	<p>Apply topping charge every 6 months. Occasional discharge/ charge may improve</p>



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	Do not discharge before each charge.	Do not discharge before each charge		performance.
Storage	Best to store at 40% charge in a cool place. Open terminal voltage cannot determine state-of-charge. 5 years and longer storage possible. Prime battery if stored longer than 6 months.	Store at 40% charge in a cool place. Open terminal voltage cannot determine state-of-charge. Prime battery if stored longer than 6 months.	Store at 40% charge in a cool place (40% state-of-charge reads 3.75-3.80V/cell at open terminal. Do not store at full charge and at warm temperatures because of accelerated aging.	Store always at a full state-of-charge. Do not store below 2.10V/cell; apply topping charge very 6 months.
Disposal	Do not dispose; contains toxic metals; must be recycled.	Should be recycled. Low volume household NiMH may be disposed.	Should be recycled. Low volume household Li-ion may be disposed	Do not dispose; must be recycled.

To contact our professional Team: hkbatt@hk-batteries.com (Mr. Thomas To) for the detail.