

# ENERG PRO NIMH BATTERY SAFETY - IMPORTANT!

**EnergPro NiMH** batteries are designed for use with Radio Control (R/C) model applications only.

They require special care and attention both in use and during charging due to their considerable energy capacity and high potential discharge rates.

## High energy density

The high 'energy density' of a NiMH (Nickel metal hydride) rechargeable battery means it can store around 2-3 times more power than a similarly sized nicad battery and can discharge itself very quickly. This means it can be dangerous if treated without appropriate care and attention, i.e. the battery can explode if abused.

## NiMH charge characteristics

Many NiMH battery chargers use the measurable drop in peak cell voltage associated with the completion of the charging process to stop the charge automatically, however, this voltage drop is small in a NiMH battery (compared with a nicad battery) and is temperature-dependant too. This means NiMH batteries are technically more difficult to charge than Nicad batteries and that the voltage drop (Delta V) at full charge is not always easy for a charger to detect. Hence battery overcharge is quite possible therefore choose a charger carefully.

## Temperature sensor recommended

Because of the above, NiMH batteries must never be left to charge unattended and we recommend that a temperature sensor (set to stop the charge upon a temperature change of 1-2 degrees Centigrade/minute) be used that will shut down the charger automatically when an increase in pack temperature associated with the completion of the charging process is recorded.

## Overnight charging

When charging at 1/10 of the rated capacity of the battery (C/10), end of charge sensing is not required and the time required to charge a completely discharged battery pack will be in the order of 15 hours. To preserve battery life; do not exceed this.

## Self-discharge

NiMH batteries have a higher self-discharge rate than most nicads and will discharge over time when not in use. Therefore charge and discharge (cycle) NiMH packs at least once every three months. Do not discharge below 1 Volt per cell.

## Reversed polarity cell caused by mistreatment

Like nicads, NiMH cells can reverse polarity if mistreated, or if discharged below 1V per cell or if neglected. Charging of a pack containing a cell with reversed polarity is potentially dangerous and could cause an explosion or fire!

**WARNING** Do not short circuit or overcharge!  
Battery may explode!

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## Charging NiMH's

- Only use a charger designed to charge NiMH batteries. Never use a nicad or other charger as this is very dangerous and may cause an explosion.
- For maximum safety and longer battery life, we recommend you charge at a rate of C/10 (or less).
- Never attempt to charge at a rate faster than 1C! A 1C charge rate means "1x the battery capacity in Amp Hours". For example, a 1 amp hour (1000mAh) capacity pack can be charged at a maximum rate of 1 amp (1000mA).
- Always use a temperature sensor if charging at rates greater than C/10.
- Never leave you battery unattended whilst charging in case of overheating or fire risk.
- Charge on a safe non-flammable surface or in a container (e.g. an old unused microwave oven). Never charge a battery placed inside a car!
- If the battery becomes hot to the touch (around 50 degrees Centigrade) during charging, disconnect and switch off immediately.
- Never charge a hot battery. Wait until it cools down.
- Never charge a damaged battery.
- Only use the recommended charger for NiMH batteries. If you use the wrong charger this will damage the cells and the cells may catch fire!

## Using NiMH's

- We recommend use of a Voltmeter to monitor the condition of the cells to ensure identical cell voltages.
- Never leave you battery in a fully discharged state.
- Use an appropriate NiMH ESC (electronic speed controller) with your NiMH battery pack.
- Do not carry loose batteries in your pocket or bag.
- If you do need to dispose of your NiMH type battery, discharge it fully first by the use of a light bulb.
- Keep battery packs away from children!

## Charger recommendations

We recommend JP 4402900 Li-Pro Plus 5 computer charger with JP 4402882 Lipro Charger Temperature Probe for charging EnErG Pro NiMH batteries.

J Perkins Distribution is a member of a UK Battery Compliance Scheme contributing to a reduction in environmental impact by recycling.

For detailed information on battery recycling in your area of the UK, go to:

[www.recycle-more.co.uk](http://www.recycle-more.co.uk)

Please consult your supplier if any of these instructions are unclear or if further information is required.

• **EnErG Pro**

