

Advisory Note - June 2006

Lithium Polymer Battery Safety Guidelines

Enormous advances in battery technology have occurred over the past few years, with the aim of reducing size and weight, and the environmental impact of disposal of old batteries. Lithium Polymer batteries are rapidly replacing Nickel Cadmium and Nickel Metal Hydride batteries as power sources in model aircraft. The reduction in weight compared to other types of battery chemistry, and ability to parallel batteries for increased capacity, offer advantages not previously available. However, with the advantages come a number of specific handling requirements that users need to be made aware of for safety reasons.

Nickel based cells that modellers are familiar with can be charged at a current many times the capacity rating, and at a terminal voltage higher than the nominal voltage, without damage. However, lithium polymer cells are the opposite and must be treated with care. They must be charged at carefully selected charging rates, and the terminal voltage must never be allowed to rise above 4.2 volts per cell. The main virtue required when charging lithium polymer cells is patience.

Safety Warnings

- Do not allow the cells to become physically damaged as lithium in metallic form will self ignite on exposure to air.
- If overcharged, cells can expand, rupture, and ignite.
- Do not allow the terminals of cells/packs to become short circuited.
- Use a charger designed specifically for lithium polymer chemistry.
- Never charge lithium polymer cells/packs at any charge rate unattended.
- Lithium polymer cells can ignite because of unmatched cell capacity or voltage, cell damage, charger failure, incorrect charger settings and other factors.
- Always use the correct charging voltage. Lithium polymer cells/packs may ignite if connected to a charger supplying more than 4.2 volts per cell.
- Always ensure the charger is working properly.
- Always charge lithium polymer cells/packs where no harm can result, no matter what happens.
- Never charge a cell/pack in a model. A hot pack may ignite wood, foam or plastic.
- Never charge a cell/pack inside a motor vehicle, or in a vehicle's engine compartment.
- Never charge a cell/pack on a wooden workbench, or on any flammable material.
- Protect battery packs from damage during transport.