



# MANAGING Lithium Batteries



**Answer:** Naval Lithium Battery Safety Program (NAVSEA 9310.1C) requires management in accordance with TECHMAN S9310-AQ-SAF-01 Revision 2 that specifies controls for acquiring, charging, storage, transport, use, and disposal. For Lithium Polymer (LiPo) batteries commonly used in robots and unmanned vehicles, NPS has additional management guidance (NPS LiPO SOP 1.4 series). R\*=Rechargeable or Secondary batteries.

**Normal disposal:** Contact HM representative. **DO NOT PUNCTURE**

- Damaged? Let cool in a safe place.
- Otherwise drain to 3.8V/cell, note otherwise to HM representative
- Tape terminals and place in or around the battery bucket

### Acquisition

- Note as HAZMAT in NPS purchasing system
- Inspect for material hazards. Deficiency = return. Do not repair new batteries.
- (R\*) Check charge of each individual cell (3.4V-4.0V) if possible
- (R\*) Check imbalance not greater than 0.1V
- Designate with unique identifier and date (project specific) and begin Log

### (R\*) Charging

- Shall not be charged in aircraft or vehicle unless:
  - Battery built in as shipped by manufacturer and
  - Battery Management System (BMS) to manage cell charging and balance
- Only use charger qualified according to manufactures specifications
- On variable chargers check cells and voltage selected properly– verify cells and voltages match
- Post an attendant
- Maintain standoff of non-attendants and potentially flammable materials

### Storage

- (R\*) For short term (two weeks or less), at least 3.5V/cell
- (R\*) For longer storage 3.8V-3.9V/cell, inspect voltage every 3 months, recharge if required
- 40-70F (no refrigeration)
- Metal storage cabinet away from combustible materials on ceramic tiles
- Labeled “Lithium Battery Storage Only”
- 6 inches clearance between top of battery and next shelf

### Inventory (recommended)

- Log each event – acquisition, duty cycle, crash, repair, charge anomaly, etc

**Repairs or adding connectors:** See Chapter 3.1 of NPS SOP

**Unmanned Aircraft Systems (UAS) Special Procedures:** See Appendix A of NPS SOP

**Multipack Requirements:** See Appendix B of NPS SOP

**Use in Marine Research:** See Appendix G of NPS SOP

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**\*\* This checklist is a reminder** of NPS SOP procedures detailed in “Safety and Usage Procedures for Lithium Polymer Batteries Version 1.4a April 2015”. This checklist is **not a substitute for the proper application of all the details in the SOP**, nor will it substitute for completion of the training specified in the Safety Orientation of Appendix H.