

Rutgers University Lithium Battery Guidelines

The following guidelines have been established to minimize the potential fire risks associated with the use, maintenance and storage of lithium ion and lithium polymer (LiPo) batteries. Use of these batteries requires special care for charging, discharging, and storage.

Purchasing a Battery:

- Select the most appropriate type of battery for your application
- Purchase replacement batteries compactable and approved by the device/equipment manufacturer
- Purchase batteries (or equipment containing such batteries) from reputable manufacturers/retailers
- Ensure batteries (equipment) meet safety standards set by a nationally recognized testing laboratory, such as UL, IEEE, NEMA, IE, UN, JSA, CE, D, or ENEC

Using and Charging a Battery:

- Carefully read and follow the manufacturer's instructions
- Regularly inspect the batteries for damage, swollen cells, or other deformities
- Never charge the battery unattended or overnight
- Use the correct charger recommended by the battery manufacturer
 - Ensure charger settings are correct for battery pack being charged
 - Use chargers that maintain balance and enable monitoring during charging/discharging
 - Do not exceed the maximum voltage and maximum charging rate
 - Do not leave battery connected to charger after charging has been completed
- Avoid over-discharging your batteries (recommended never to drop below 20% of its voltage capacity/cell)
- Ensure that there are no flammable/combustible materials near the battery when charging
- Charge the battery in a fire-safe container, i.e. a LiPo bag or metal/ceramic storage container
- Use a charger or a designated battery tester to check the condition of all the cells within the battery at regular intervals and before each charging

Do NOT Use or Charge the Battery If:

- The battery is damaged, swollen, deformed, punctured or otherwise physically damaged
- Any individual cell within the battery has the voltage below 3.0 V/cell or the level recommended by the manufacturer

Storing a Battery:

- Carefully read and follow the manufacturer's instructions
- Never place batteries or battery packs in pockets, drawers or bags where they might make contact with something made of metal or other conductive materials. This may short circuit the battery.
- Store with 50-70% charge. Check the battery's instructions to determine the recommended voltage (typically 3.8 volts/cell) or capacity level for storage.
- Store batteries in cool, dry environment (37-68 degrees F)
- Check the voltage and capacity monthly when storing over a long period of time
- Always store batteries in a safe and non-combustible container away from flammable /combustible materials. A LiPo bag or metal/ceramic storage container is safest.

Disposing of a Battery:

- Dispose of the battery if there is any visible damage to its shape or structure, the voltage indicates internal damage, was discharged below 3.0 V/cell or the manufacturer's recommendation, or is past its expiration date
- Ensure that the leads are protected with designated plastic caps or wrapped with insulating tape to prevent contact
- Follow the Rutgers University Laboratory Waste management Guidance for disposal - <https://ipo.rutgers.edu/rehs/labwaste-universal>