



## Lithium-Ion Battery Safety

Lithium-ion batteries supply power to a variety of consumer electronics including computers, smart phones, and power tools, as well as other items such as scooters and hover boards. Lithium-ion batteries are often chosen by manufacturers for their lightweight construction, high-energy density, low memory effect, and longer life span. However, if not properly charged or maintained, lithium-ion batteries are capable of overheating leading to a process called *'thermal runaway'*, which can cause heavy smoke, fire, or even an explosion. Stop using the battery if you notice problems including excessive heat, change in shape, leaking of material, or odd smells or sounds coming from the battery.

### Handling Lithium Ion Batteries

If the cells and batteries are correctly handled, the risk of a catastrophic failure, such as a fire from a lithium-ion battery from a reputable manufacturer, is very low. Most of the identified incidents involving lithium-ion batteries are found to be the result of mishandling or unintended abuse of the battery. Possible causes of lithium-ion battery fires include overcharging or discharging, unbalanced cells, excessive current discharge, short circuits, physical damage, excessive hot storage, and, for multiple cells in a pack, poor electrical connections between each cell.



Have you ever put the end of a 9-volt battery pack against your tongue and felt the light, tingling sensation? You are creating a short across the negative and positive terminals of the battery. Shorting a battery pack causes it to expand its energy and generate heat. To prevent a battery from shorting, keep the terminals free of metal or moist objects. Install covers on the battery terminals when not in use.

### Safety Tips for Lithium-Ion Battery Use

- Only use the batteries designed or manufactured for the appropriate device and only use the charger that the manufacturer approves of.
- Charge your batteries on a solid, nonflammable surface (such as a steel shelf), and have an ABC fire extinguisher nearby.
- Read and follow the manufacturers' charging instructions. Overcharging a battery can result in catastrophic failure.
- Always purchase batteries from a reputable manufacturer or supplier. Cheap or counterfeit batteries may not undergo the same quality control process and have a higher likelihood of failure.
- Avoid using or storing batteries in very hot or humid conditions, especially when batteries are fully charged, as they can overheat resulting in catastrophic failure and property loss.

### Battery Life Span and Disposal

Most lithium-ion batteries have a life span of approximately five years, losing a percent of their capacity each year whether or not they are used. For safety reasons, most batteries are not allowed to fall below a certain voltage, which is typically higher than the minimum voltage required to operate your device. This is why you may notice your battery going from working fine with normal power output to not working at all.

Do not put lithium ion batteries in the trash. Recycling the battery is always the best option. Contact your local recycling and/or community center for disposal instructions and locations.