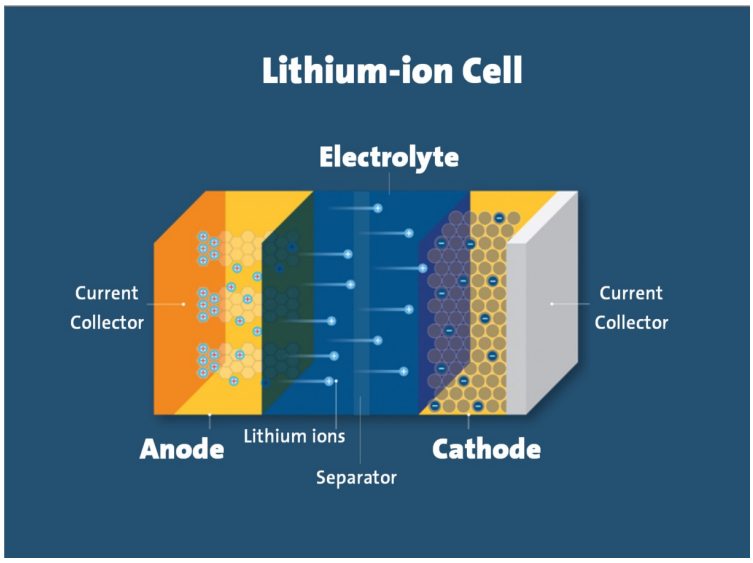
What is a lithium-ion battery?



Lithium-ion is the most popular rechargeable battery chemistry used today. Lithium-ion batteries power the devices we use every day, like our mobile phones and electric vehicles.

The products powered by lithium-ion batteries require a range of specifications for optimum and safe performance with respect to energy, power and life span. Lithium-ion batteries and cells are produced in a variety of chemistries and shapes, also known as formats.

Lithium-ion batteries consist of single or multiple lithium-ion cells, along with a protective circuit board.

In a lithium-ion cell, lithium ions (Li+) move between the cathode and anode internally. Electrons move in the opposite direction in the external circuit. This migration is the reason the battery powers the device – because it creates the electrical current.

Lithium-ion cell components include:

- **Electrodes:** The positively and negatively charged ends of a cell. Attached to the current collectors
- **Anode:** The negative electrode
- **Cathode:** The positive electrode
- **Electrolyte:** A liquid or gel that conducts electricity
- **Current collectors:** Conductive foils at each electrode of the battery that are connected to the terminals of the cell. The cell terminals transmit the electric current between the battery, the device and the energy source that powers the battery
- **Separator:** A porous polymeric film that separates the electrodes while enabling the exchange of lithium ions from one side to the other

Devices that use lithium-ion batteries include:

- Mobile phones
- Laptops
- Electric vehicles
- Drones
- Satellites
- Power banks
- Wearable tech
- Medical devices
- Tablets
- Public transit