What is a battery

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battery, in electricity and electrochemistry, any of a class of devices that convert chemical energy directly into electrical energy. Although the term battery, in strict usage, designates an assembly of two or more...

A battery can be defined as an electrochemical device (consisting of one or more electrochemical cells) which can be charged with an electric current and discharged whenever required. Batteries are usually devices...

A battery is a device that stores energy and then discharges it by converting chemical energy into electricity. Typical batteries most often produce electricity by chemical means through the use of one or more...

A battery is a device that converts chemical energy contained within its active materials directly into electric energy by means of an electrochemical oxidation-reduction (redox) reaction. This type of reaction...

Batteries are broadly classified into two categories, namely primary batteries and secondary batteries. Primary batteries can only be charged once. When these batteries are completely discharged, they become useless and must be discarded. The most common reason why primary batteries cannot be recharged is that the electrochemical reaction that takes place inside of them is irreversible in nature. It is important to note that primary batteries are also referred to as use-and-throw batteries.

On the other hand, secondary batteries are the batteries than can be charged and reused for many charging-discharging cycles. The electrochemical reactions that take place inside these batteries are usually reversible in nature. Therefore, secondary batteries are also known as rechargeable batteries. When discharging, the reactants combine to form products, resulting in the flow of electricity. When charging, the flow of electrons into the battery facilitates the reverse reaction, in which the products react to form the reactants.

The nickel-cadmium battery (sometimes referred to as the "NiCad" battery) is a type of rechargeable battery that employs metallic cadmium and nickel oxide hydroxide as the electrodes o the battery. The NiCad battery is known to offer varying discharge rates that are dependent on the size of the battery itself. For example, the discharge rate (maximum) for a typical AA sized cell is approximately equal to 1.8 amperes. On the other hand, the discharge rate for a D size battery can be as high as 3.5 amperes.

The lithium-ion battery, often abbreviated to LIB, is a type of secondary battery which is rechargeable. LIBs are known to have many applications in powering electric vehicles and is also known to be used extensively in the aerospace industry.

Within the batteries, during the discharging process, lithium ions are known to pass from the negative electrode to the positive electrode (through an electrolyte). These lithium ions are also known to travel back

when charging. Lithium-ion batteries usually employ an intercalated lithium compound in the positive electrode and usually graphite in the negative electrode as the fuel. Lithium-ion batteries are highly desirable due to their high energy capacity, no memory effect (with the exception of LFP cells), and low self-discharge.

Wet cell batteries are electric batteries that contain liquid electrolytes. They are also known as vented cells and flooded cells. They are known to be used as learning tools in many electrochemistry labs. It is important to note that both primary and secondary cells can be constructed from electrolytes in the liquid state. Therefore, a wet cell need not necessarily be a primary cell.

A dry cell is an electrochemical cell in which the electrolyte is a paste. The electrolytes in such cells only contain enough moisture to facilitate the flow of current. Therefore, these cells can be operated in a wide range of orientations without the fear of spillage. Dry cells are widely used in portable electronic devices since they do not contain any free liquid.