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Which Battery Is Better?

Batteries come in many shapes and sizes. Some are no larger than a pill while others are too heavy to lift, but most batteries have one thing in common—they store chemical energy and change it into electrical energy. The cell is the basic unit that produces electricity. A battery has 2 or more cells, but people often use the word battery when talking about a single cell, too, like a dry cell. A dime-sized battery in a watch is a cell. Cells act like pumps to force electrons to flow along conductors (DK Science 150).

“The electrical force of a cell or battery is called its electromotive force (emf). This force, which makes electrons flow around a circuit, is measured in units called volts (v.). Each kind of cell has a particular emf. A dry cell, for example, has an emf of 1.5 volts” (DK Science 150).

Another way to measure a battery is by how much current it can provide. Current measures how many electrons flow through the cell. The unit used to measure current is amps.

A common cell has several important parts: the positive terminal and electrode, the negative terminal and electrode, and the electrolyte, which is between the two electrodes. The positive electrode is made out of a carbon rod. Powdered carbon and manganese oxide prevents hydrogen from forming on the carbon rod, which would stop the cell from working normally. The negative electrode is made out of zinc, which serves, as a case for the cell. Electrons flow from the negative terminal through a wire in the device the battery is powering into the positive terminal (Learning Center).

The most common cell is the dry cell and different types have different types of electrolytes. The dry cell works like the cell invented by the French engineer Georges Leclanche in 1865. His cell had a liquid electrolyte, but in the modern version the electrolyte is ammonium chloride paste (DK Science 150). Ordinary dry cells are used in most flashlight batteries. These dry cells use ammonium chloride as the electrolyte. "Cells needed to supply heavier currents use zinc chloride. Alkaline cells, which last longer and can supply even heavier currents, use the alkali potassium hydroxide" (DK Science 150).

Most flashlights take two or more dry cells. Cells are connected in series one after another. Large powerful flashlights may take four or more cells. The size of a cell has no effect on its emf. The chemicals in the cell determine its emf, but large cells last longer than small cells of the same basic type.

How long a battery lasts also depends on how it's used. Two batteries may last the same length overall but one might maintain higher voltage over more of its lifetime, in a sense providing better quality. A high powered device such as a motorized toy running constantly takes more current than a less power hungry device such as a personal stereo that alternately runs and rests. Batteries also don't perform as well at low temperatures (Best Batteries 71).

As you use a battery, its emf drops. You can consider an alkaline battery dead at 0.9 volts.

In order to work well in high drain devices you need to make the shell of the battery thinner so it can hold more electrons and deliver more current (Booth 127). The paper you are reading is posted as an example on the Science Buddies website.

Companies have made improvements in their batteries so they are better in high drain devices. A high drain device is a thing that takes a lot of current. Low drain devices would

include CD and cassette players and related devices. "Eveready meanwhile quantifies the power requirements as 400 to 800 mA for halogen lamps; 400-1000 mA for cellular phones; and 500-900 mA for camcorders. Digital cameras are in the 800-1200 mA range, while photoflash units are the thirstiest of all-1000 to 2000 mA according to Eveready" (Booth 127).

Works Cited

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