

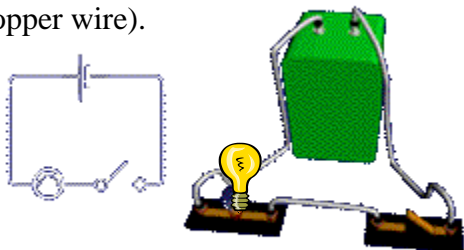
Electricity, Part 2

Keyterms: electric current, circuit, voltage, resistance

Voltage

Refrigerators, TVs, and stereos need a constant source of electric energy. This source of electric energy comes from an electric current, which is the steady flow of electrons through a conductor. Electric current is measured in units of amperes (A).

Electrons will flow continuously only if they are connected in an electric circuit. A circuit is a closed path through which an electric current can flow. Any device that uses electric current to operate has to be part of a circuit. A simple circuit consists of a source of electric energy (such as a battery), a device that uses the electrical energy (such as a light bulb), a switch to control the flow of electrical energy, and a conducting material to allow the electrical energy to flow through (such as a copper wire).



Simple Circuit

In a simple circuit, the battery releases a steady flow of electrons or electrical energy through the wire to whatever device is using this energy. The battery does this by separating the positive and negative charges inside it. The wire on one end is connected to the negative side and the end of the wire is connected to the positive side. Doing this allows negative charges to flow from the negative side, through the wire, and back to the battery on the positive side. The total stored energy in a battery is called electrical potential energy or voltage, which is measured in volts (V). The higher the voltage the more electrical energy is available to do work.

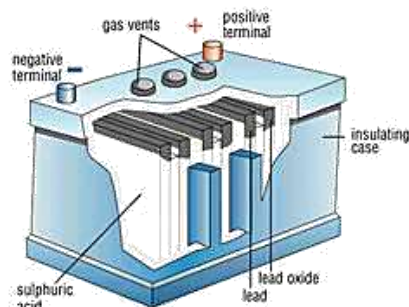
Batteries

There are 2 different types of batteries – dry cells and wet cell batteries.

A dry cell is like most batteries that you use to power toys, CD players, and most battery operated devices. Battery life depends on the fluid that is contained inside and how long it can produce and



electric charge. Once the paste has been used up by the battery and the voltage is gone, the battery can no longer produce energy to power the device. Wet cell batteries are generally larger batteries like car batteries that need a much larger voltage to start the electric current in the device such as the car.



Resistance

As you know electrons can move easier through conductors than through the insulators. As electrons flow through a conductor such as a wire they run into the particles of what the conductor is made of. The more particles they run into causes the electrical energy to slow down or dissipate. This is known as resistance. The easier an electric charge can flow through a material the less electrical resistance that material has.

Section 2 Review

- 1) How does increasing the voltage in a circuit affect the energy of the electrons flowing in the circuit?
- 2) What causes positive and negative charges to be separated in a battery?
- 3) Two identical 1.5 V batteries have the positive terminal of one battery connected to the negative terminal of the other. How does the voltage of the combination compare with the voltage of a single battery? Explain