

Glossary

battery A device that converts chemical energy into electrical energy. A D-cell battery has two different electrodes, a carbon rod and a zinc case. Battery acid is an electrolyte. The electrodes form the terminals of the battery. Electrons flow from the negative terminal (the zinc case) to the device being powered and back to the positive terminal (carbon rod) of the battery.

charge A property of matter. Matter can have a positive charge, a negative charge, or no charge. Matter has a positive charge when it loses electrons, leaving it with more positive than negative particles. Matter has a negative charge when it gains electrons, leaving it with more negative than positive particles. Charged matter attracts other matter that has an opposite charge. Charged matter repels other matter that has a like charge.

circuit A path through which electric charges flow. A continuous, unbroken path through which electrons can flow is a closed circuit. Charges, or current, can flow only through a closed circuit. A break or opening in a circuit creates an open circuit. Charges cannot flow through a circuit that is open. A burned out bulb, dead battery, open switch, or disconnected wire can open a circuit and stop the flow of current.

conductor A material current can pass through easily. A good conductor has low resistance to the flow of electric charges. Metals, like aluminum, gold, and copper, are good conductors. Solutions that contain ions also are good conductors. A material that resists, but does not stop, the flow of electric charges is a poor conductor. The filament of a light bulb is an example of a poor conductor. Pure water is also a poor conductor of electricity.

current A flow of electric charges. Charges flow through a closed path called a circuit. Current flows because negatively charged particles are attracted to positively charged particles at the other end of the circuit.

electromagnet A magnet made by passing electricity through a coil of wire wrapped around an iron core. Electromagnets are used in the construction of electric motors, electric generators, and devices such as doorbells and earphones.

electron A negatively charged particle that surrounds the nucleus of an atom. When objects touch, one material can give up electrons to another. When an object gives up electrons it gains an overall positive charge.

fuse A safety device in a circuit. A fuse contains a thin wire or metal strip that melts and opens the circuit when there is too much current. The wire in a fuse is thinner than the other wires in the circuit. This causes the fuse to melt and stop the flow of current before other wires in the circuit get hot enough to start a fire. Cars have many fuses to protect the clock, locks, lights, and radio. Appliances may also have fuses. Homes may have either fuses or circuit breakers.

generator A device that uses magnets to convert the energy of motion into electrical energy. A generator works by turning a wire coil in a magnetic field. This causes current to flow through the wire.

insulator A material that current cannot pass through easily. Insulators block the flow of current. Plastic and rubber, like that used to cover wires, are examples of insulators.

ion Atom with an electric charge. When dissolved in water, molecules of table salt break apart, forming ions of sodium and chlorine. These ions have electrical charges that allow them to carry electric current through the water.

Glossary (continued)

microamp A unit used to measure very small amounts of electric current. There are one million microamps in 1 amp of current.

motor A device that uses magnets to convert electrical energy to the energy of motion. Motors use both electromagnets and permanent magnets. Electric current moving through the motor creates an electromagnet that interacts with a permanent magnet. This interaction causes the electromagnet to spin, producing motion.

neutral Having neither a positive or negative charge. Atoms are neutral because they have equal numbers of protons (positively charged particles) and electrons (negatively charged particles). Objects that do not have a buildup of positive or negative charges are also neutral.

parallel circuit A circuit that provides more than one possible path for current to follow. Electrical devices in a parallel circuit are on different branches of the circuit. This allows current to continue flowing to some parts of the circuit when no current flows to other parts. The electrical outlets in your home are wired in parallel circuits. Bulbs in a parallel circuit do not share voltage. So, adding more bulbs does not cause the other bulbs to get dimmer.

resistance Opposition to the flow of electric current. Current flows through some materials more easily than others. For example, the filament of a bulb resists the flow of current. This resistance causes the filament to get hot and glow. In this way, the filament changes some electrical energy to heat and light.

series circuit A circuit that provides only one possible path for current to follow. Electrical devices in a series circuit are connected one after the other. If one part of the circuit stops working, current can no longer flow. This causes all parts of the circuit to stop working. Bulbs in a series share the voltage in the circuit. If more bulbs are added, all the bulbs receive less power and get dimmer.

short circuit An unintended path that connects one part of a circuit with another. A short circuit may be caused if a cord is damaged and lets two wires inside the cord touch. This changes the path of the current in the circuit, allowing current to skip bulbs or other devices before returning to a battery or other power source. When a short circuit happens, current can change to heat and cause a fire.

static electricity The buildup of charges on an object. Static electricity occurs when electrons move from one object to another. This leaves a buildup of charges on the surface of both objects.