

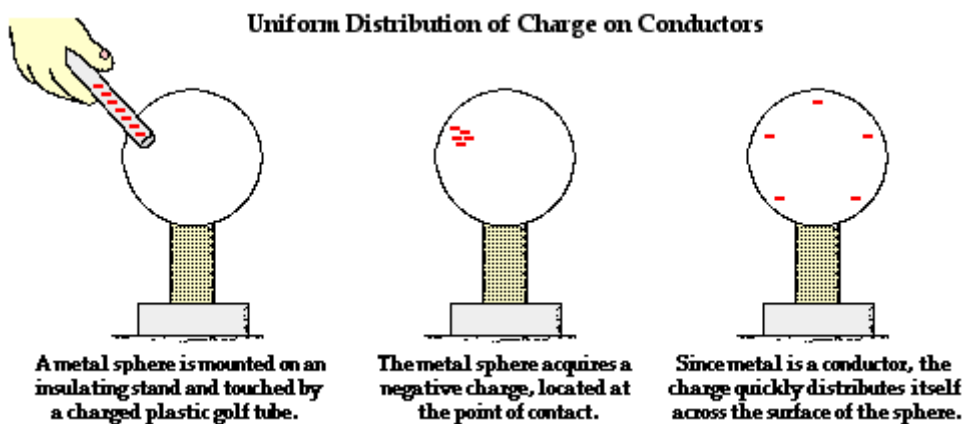
Conductor and Insulator

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Introduction to Conductor and Insulator

Conductor

Conductivity is the ability or power to conduct or transmit heat, electricity, or sound. Conductors are materials that electricity easily passes through, that do not resist the flow of electricity. Examples are copper, aluminum, steel, silver, and gold. Not all materials conduct electricity equally well.



Copper is considered to be a conductor

because it “conducts” the [electron](#) current or flow of electrons fairly easily. Most metals are considered to be good conductors of electrical current. Copper is just one of the more popular materials that are used for conductors.

Other materials that are sometimes used as conductors are silver, gold, and aluminum. Copper is still the most popular material used for wires because it is a very good conductor of [electrical current](#) and it is fairly inexpensive when compared to gold and silver. Aluminum and most other metals do not conduct electricity quite as well as copper.

Insulators

Insulators are materials that resist the flow of electricity, so electricity does not easily pass through. They do not let electrons flow very easily from one atom to another. Insulators are materials whose atoms have tightly bound electrons. These electrons are not free to roam around and be shared by neighboring atoms.



Some common insulator materials are glass, plastic, rubber, air, and wood.

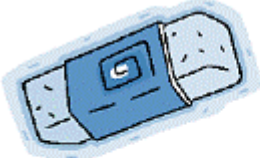

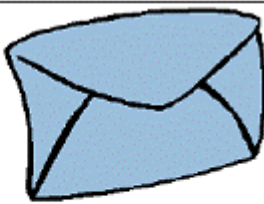



Insulators are used to protect us from the dangerous effects of electricity flowing through conductors. Sometimes the [voltage](#) in an [electrical circuit](#) can be quite high and dangerous. If the voltage is high enough, the electric current can be made to flow through even materials that are generally not considered to be good conductors. Our bodies will conduct electricity and you may have

experienced this if you have received an electrical shock.

Generally, electricity flowing through the body is not pleasant and can cause injuries. The function of our heart can be disrupted by a strong electrical shock and the current can cause burns. Therefore, we need to shield our bodies from the conductors that carry electricity. The rubbery coating on wires is an insulating material that shields us from the conductor inside. Look at any lamp cord and you will see the insulator.

Challenge

Do you think the following items are more likely conductors or insulators?

 Eraser <input type="checkbox"/> Conductor <input type="checkbox"/> Insulator	 Metal Pen <input type="checkbox"/> Conductor <input type="checkbox"/> Insulator	 Paper Envelope <input type="checkbox"/> Conductor <input type="checkbox"/> Insulator
 Pencil <input type="checkbox"/> Conductor <input type="checkbox"/> Insulator	 Paper Clip <input type="checkbox"/> Conductor <input type="checkbox"/> Insulator	 Chalk <input type="checkbox"/> Conductor <input type="checkbox"/> Insulator

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Reference links:

- <http://www.physics.about.com/od/glossary/g/electron.htm>
- <http://www.kpsec.freeuk.com/voltage.htm>
- <http://www.zephyrus.co.uk/circuits1.html>

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