

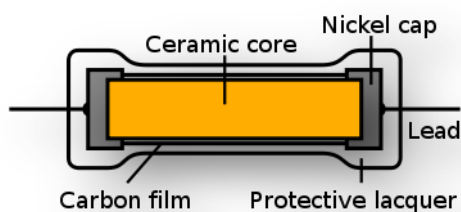
ELECTRICAL PROPERTIES OF CONDUCTORS

In order to make a fair comparison between the resistances of different metals we must consider conductors of equal dimensions. The table compares the resistance of different materials in the form of a wire 1 metre long with a circular section of diameter 1 mm.

- Material Resistance (Ω)
- Silver 0.019
- Copper 0.020
- Gold 0.029
- Aluminium 0.034
- Tungsten 0.069
- Constantan 0.62
- Nichrome 1.27

Connecting wire should offer as little resistance as possible to electron flow. Silver is the best conductor available but is far too expensive for this application. Most connecting wires are made from copper.

Construction of a resistor:



USING THE HEATING EFFECT OF A CURRENT Electrical appliances which are designed to produce a heating effect make use of conductors with high resistance. Nichrome, an alloy made from nickel and chromium, is used in the heating element of appliances such as electric fires. Lamp filaments must be made from a metal which can withstand being repeatedly heated to a temperature at which it becomes white. Nichrome is unsuitable for this application. Filaments are usually made from very thin tungsten wire.