Insulators and Conductors

Use the Word Bank to fill in the blanks below.

| Word Bank (each word can only be used once - so cross them out as you use them) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| materials rub  winter protect | will  wires  drier  charge | does not plastic attract useful | charged ground never conductors | freely insulator transfer  copper | plastic  rubber  gold  glass | insulators  winter  more  aluminum |

**Insulators**

We often wear clothes of different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, such as wool and cotton, at the same time. These different fabrics continuously \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ against each other and become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with static electricity, especially during the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ months. These static charges remain in place where the materials rub together because they are electrical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

An electrical insulator is a substance that \_\_\_\_\_\_\_\_\_\_\_\_\_\_ allow electrons to move freely from atom to atom. This explains the continuous buildup of static \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on furniture and glass during cleaning. When you polish wooden furniture, the electric charges remain on the surfaces and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ uncharged dust particles.

While some insulators cause static electricity problems, some insulators are very \_\_\_\_\_\_\_\_\_\_\_\_\_. Since electrons cannot move through insulators, these materials can\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ us from electric shocks. The electrical wires of appliances are covered in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or rubber insulating material.

List 3 good insulators: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Conductors**

It doesn’t matter how hard you polish a metal tap, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ builds up a static charge because metals are electrical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

An electrical conductor is a substance that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ allow electrons to move freely from one atom to another. This means that electrons are able to move \_\_\_\_\_\_\_\_\_\_\_\_ through a substance that is a conductor. So the electrons that are transferred to a metal tap are conducted along the metal tap to the metal water pipes where they transfer to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Electrical conductors are used in electrical \_\_\_\_\_\_\_\_\_\_\_\_\_\_ for appliances so that electricity can be quickly transmitted.

List 3 good conductors: \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Static electricity and Winter**

The reason that static electricity is much worse in the winter than at other times during the year is that the\_\_\_\_\_\_\_\_\_\_\_\_ air is much\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and contains fewer water molecules. Dry air is an\_\_\_\_\_\_\_\_\_ and does not easily pick up charges. At other times during the year, there are\_\_\_\_\_\_\_\_\_ water molecules in the air. These molecules pick up and \_\_\_\_\_\_\_\_\_\_\_ electric charges easily so that static charges do not build up on objects.