

Conductors and insulators

“We differentiate the elements around us based on their physical properties, such as malleability, phase, texture, colour, polarity, solubility, etc. Another very important classification of elements is done on the basis of their conductivity of electric charge, i.e. conductors and insulators.

Electrical conductors are defined as materials that allow electricity to flow through them easily. This property of conductors that allow them to conduct electricity is known as conductivity. When a charge is transferred to such an element, it gets distributed across the entire surface of the object, which results in the movement of electrons in the object. Metals, humans, and earth are all conductors. This is the reason why we get electric shocks. Some metals such as silver, copper, and gold are more highly conductive than others. Copper is the practical choice for many applications due to its efficiency, affordability, and versatility.

Insulators are materials that hinder the free flow of electrons from one particle of the element to another. If we transfer some amount of charge to such an element at any point, the charge remains at the initial location and does not get distributed across the surface. Insulators such as plastic or rubber are used to cover electrical wires. This prevents electric shocks that could be caused if someone were to touch the bare wire.”

“source: <https://byjus.com/physics/conductors-insulators/>”

Exercise 1: Generate a list of new vocabulary (from text) and lookup the definition from a dictionary.

Exercise 2: Differences between Conductor and Insulators

Place the following sentences in the table below to differentiate between conductors and insulators:

- Materials that permit electricity or heat to pass through it.
- Materials that do not permit heat and electricity to pass through it
- Examples include paper, wood, and rubber.
- Examples include silver, aluminium, and iron.
- Electrons move freely within them.
- Electrons do not move freely within them.
- The electric field exists on the surface but remains zero on the inside.
- The electric field doesn't exist.

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Exercise 3: Reason and result

In the following sentence “due to” is used to justify the use of copper in many applications: “Copper is the practical choice for many applications due to its efficiency, affordability, and versatility.”

Try to use “because of” instead of “due to” and make the required adjustments to construct a correct sentence.

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Now try to use “therefore” instead of “due to”

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Now try to use “because” instead of “due to”

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Try to connect the following two sentences using therefore and because to form one sentence

-Humans are conductors

-We get electric shocks.

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-Plastic is a poor conductor of electricity.

-The outside of electric wires generally covered in plastic.

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