Examples of light emitting diode

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In a light-emitting diode, the recombination of electrons and electron holes in a semiconductor produces light (be it infrared, visible or UV), a process called "electroluminescence". The wavelength of the light depends on the energy band gap of the semiconductors used.

The "Light Emitting Diode" or LED as it is more commonly called, is basically just a specialised type of diode as they have very similar electrical characteristics to a PN junction diode. This means that an LED will pass current in its forward direction but block the flow of current in the reverse direction.

LEDs (that"s "ell-ee-dees") are a particular type of diode that convert electrical energy into light. In fact, LED stands for "Light Emitting Diode." (It does what it says on the tin!) And this is reflected in the similarity between the diode and LED schematic symbols: In short, LEDs are like tiny lightbulbs.

There are those compact fluorescent lamps, for example--the ones that save you energy and money. But, even better, there are LEDs (light-emitting diodes) that are just as bright as bulbs, last virtually forever, and use hardly any energy at all.

An LED or a Light Emitting Diode is semiconductor device that emits light due to Electroluminescence effect. An LED is basically a PN Junction Diode, which emits light when forward biased.

Learn how LEDs work, how they are made, and what colours they emit. See examples of LEDs and their applications in TVs, displays, and indicators.

Photo: Unlike incandescent lamp bulbs (used in things like flashlights), which burn out relatively quickly, LEDs are extremely reliable—so much so, that they"re typically soldered right onto electronic circuit boards. They virtually never wear out! This is the tiny LED indicator lamp from a computer printer"s control panel.

If you know a bit about electricity,you"ll know that materialsfall broadly into two categories. There are some that let electricityflow through them fairly well, known as conductors,and othersthat barely let electricity flow at all, known as insulators.Metalssuch as copper and gold are examples of good conductors, whileplastics and wood are typical insulators.

What"s the difference between a conductor and an insulator?Solids are joined together when their atomslink up. In something like a plastic, the electrons in atoms are fully occupied bindingatoms into molecules and holding the molecules together. They"re notfree to move about and conduct electricity. But in a conductor theatoms are bound together in a different kind of structure. In metals,for example, atoms form a crystalline

structure (a bit like equal-sized marblespacked inside a box) and some of their electrons remain free tomove throughout the whole material, carrying electricity as they go.

Photo: LEDs are much smaller than lamp bulbs and use a fraction as much energy. They are particularly suitable for use in instrument panels, which have to be lit up for hours at a time. Put many diodes together and you can make as much light as a conventional bulb and still save energy.

Not everything falls so neatly into the two categories ofconductor or insulator. Put a big enough voltage across any materialand it will become a conductor, whether it"s normally an insulator ornot. That"s how lightning works. When a cloud moves through the airpicking up electric charge, it creates a massive voltage betweenitself and the ground. Eventually, the voltage is so big that theair between the cloud and the ground (which is normally an insulator)suddenly "breaks down" and becomes a conductor—and you get amassive zap of lightning as electricity flows through it.

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