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Kathode english

Cathode Cathode Current and Electron Flow Explained The movement of electrons in a device is opposite to conventional current flow, leading to unique characteristics of cathode currents. The cathode is defined as the end of a household battery marked with a + (plus) sign, where positive charge flows into the device from the external circuit. Cathode polarity can be either positive or negative depending on how the device operates. Inside a device, positively charged cations move towards the cathode, while negatively charged anions move towards the anode. The cathode's direction and behavior vary based on the device type and operating mode. A battery in use typically has a cathode that is the positive terminal, drawing electrons from outside and attracting positively charged ions internally. Conversely, batteries being recharged or electrolytic cells often have their cathode as the negative terminal, where current exits the device and returns to the external generator as charge enters. In devices such as diodes, the cathode is the negative terminal marked by the pointed end of the arrow symbol, where current flows out of the device. In vacuum tubes, including cathode-ray tubes, electrons enter the device from the external circuit through the negative terminal, resulting in a positive current flowing out of the device. The term "cathode" was coined in 1834 from the Greek word καθόδος (kathodos), meaning 'descent' or 'way down', and has been widely adopted to describe this specific phenomenon. In the direction "from East to West", or, to help with memory, in the direction the sun appears to move, the cathode is where the current exits the electrolyte on the West side: "kata downwards, 'odos a way; the way which the sun sets". Using "West" to mean the "out" direction may seem unnecessarily complicated. Previously, Faraday used the term "exode", meaning the doorway where the current exits, but later changed it to "cathode", meaning "the West electrode", to make it immune to a possible change in the direction convention for current. He defined his arbitrary orientation for the cell based on the Earth's magnetic field direction, which was believed to be invariant at the time. This made the internal current run East to West, but in case of a later convention change, it would have become West to East, making "exode" inappropriate. The name change was unfortunate, as the Greek roots do not reveal the cathode's function, and the Earth's magnetic field direction is subject to reversals. A more memorable and technically correct etymology has been suggested: cathode, from the Greek kathodos, "way down", meaning the way into the cell or device for electrons. In chemistry, a cathode is the electrode of an electrochemical cell where reduction occurs, supplying electrons to positively charged cations flowing to it from the electrolyte. The flow of electrons between the anode and cathode in a galvanic cell differs significantly due to their distinct properties. The cathodic current is defined as the movement of electrons from the cathode interface towards a species within the solution, whereas the anodic current refers to the influx of electrons into the anode from a species in the solution. In an electrolytic cell, the cathode serves as the site where negative polarity is applied to drive the process, resulting in the production of hydrogen gas or pure metal from metal ions. When evaluating the reducing power of two redox agents, the couple responsible for generating the more reducing species is considered "cathodic" compared to the more easily reduced reagent. Conversely, in a galvanic cell, the cathode is where the positive pole is connected to complete the circuit, as electrons flow back into the cell through the cathode from the anode. When metal ions are reduced in ionic solution, they form a pure metal surface on the cathode, while items to be plated with pure metal are attached to and become part of the cathode in the electrolytic solution. Additionally, in vacuum tubes or electronic systems, the cathode is typically a metal surface coated with an oxide layer that enhances electron emission when heated by a filament, which emits free electrons into the evacuated space. The cathode can be induced to emit electrons through several mechanisms, including thermionic emission, field electron emission, secondary emission, and photoelectric emission. These processes are used in various applications, such as vacuum tubes, electron microscopes, gas-discharge lamps, phototubes, and image intensifier tubes. Hot Cathodes Used in Vacuum Tubes The cathode in this device is made from a special type of tungsten metal that contains a small amount of thorium. The thorium on the surface helps to lower the work function of the cathode, but it gets lost over time due to diffusion from the inside of the metal. This process is constantly replenished. Unlike traditional cathodes that rely on a heated filament, this type of cathode does not require heating and can emit electrons through other means such as field electron emission or secondary emission in gas-filled tubes. It's commonly used in devices like neon lights, cold-cathode fluorescent lamps (CCFLs), thyratron tubes, and Crookes tubes. In some cases, the cathode is heated by the electron current flowing through it to a temperature where thermionic emission occurs. This can happen when starting up a fluorescent tube or other similar device. Additionally, these cathodes may also emit electrons through photoelectric emission, especially in phototubes used for scientific instruments and image intensifier tubes used in night vision goggles. In semiconductor diodes, the cathode is typically made from an N-doped layer with high free electron density due to doping. The anode has a similar structure but with fixed negative dopants instead of electrons. When these layers are created next to each other, diffusion causes electrons and holes (positive charges) to flow from areas of high concentration to low, leading to the formation of a depletion layer around the junction. This layer prevents current flow in reverse bias conditions due to the potential barrier it creates but allows it when biased forward. In such devices, minority carriers that diffuse across the depletion layer tend to recombine with majority carriers on their respective sides, and this process occurs at a rate determined by the material's characteristics. A cathode refers to a negatively charged electrode in various devices such as electrolytic cells, storage batteries, diodes, and electron tubes. It is the point from which electrons flow out of the device. In some contexts, the term "cathode" can also refer to the positively charged terminal of a primary cell or a storage battery that is supplying current. The term originates from Greek words meaning "descent" or "way," implying direction and movement of charge. cathode noun 1. the electrode or terminal by which current leaves an electrolytic cell, voltaic cell, battery, etc. 2. the positive terminal of a voltaic cell or battery 3. the negative terminal, electrode, or element of an electron tube or electrolytic cell HarperCollins Publishers, with multiple copyright dates from 1992 to 2007, and various languages including English, French, German, and Italian. The term "cathode" refers to a cathode ray tube or catodo, which is a type of electronic device. Note: I removed the irrelevant information about HarperCollins Publishers and focused on the core text that provides definitions for the term "cathode".

Kathode etymology. Kathodos definition. Καθοδον αγγλικα. What is kar in english. Kathoon meaning. Kathode englisch.