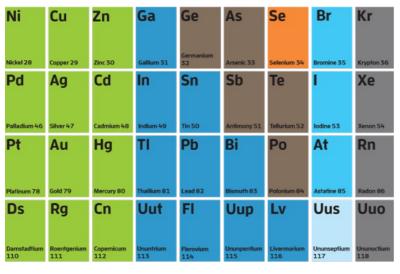
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COMPUTERS technology

# The periodic table of tech







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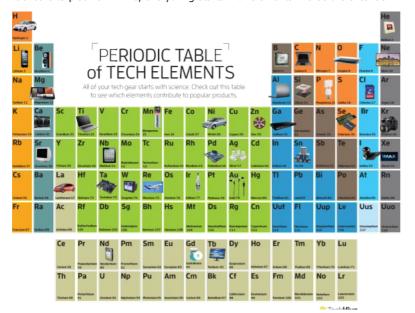






You're probably familiar with the periodic table of elements, which adorns the wall of every high-school science classroom. This comprehensive table charts elements by categories and characteristics, and even leaves room for synthetic elements yet in Share to be created. The elements are the basic building blocks for chemistry, scientific development, and the entire universe.

> But beyond the chemistry lab, most elements appear in everyday tech gear, too. We've researched each element to learn more about its properties and typical uses, and found common products that spawn from that element. From iPhones to microwave ovens, from alkaline batteries to camera lenses, and from hybrid-car fuel cells to plasma HDTVs, everything starts with elements. Here's the breakdown.





- Hydrogen is a major component in the fuel cells of some vehicles, such as the 2007 Mazda Premacy Hydrogen RE Hybrid.
- **2. Helium** serves as a cooling agent for such common products as the Bulldozer CPU, and it helped to cool a CPU that broke the overclocking world record.
- **3. Lithium** is found in batteries for small electronics. For instance, lithium-based batteries are found inside the Apple iPhone 5.
- **4. Beryllium** is used in the manufacture of high-frequency speaker drivers. Occasionally products will be marketed as containing beryllium, yet they may not. You'll most likely find beryllium in high-end home applications, such as the Pioneer S-4EX speaker system.
- **5. Boron**, like silicon or germanium, is a common *doping agent* in semiconductors. In English, that means small traces of boron are added to other elements to alter their properties. This is a crucial step in the production of CPUs such as the Intel Core-i5 quad-core desktop processor.
- **6. Carbon:** PC makers frequently use carbon fiber in laptop chassis designs because it is lightweight, and improved manufacturing techniques are reducing the cost and time necessary to make this material. The Lenovo ThinkPad X1 Carbon laptop has a carbon-fiber shell.
- **7. Nitrogen** acts as a cooling agent in some extreme cases, particularly in overclocking a PC—the process of pushing your computer components harder and faster than the manufacturer designed them to go. If you're planning to do some extreme overclocking, you're going to need to buy special equipment for using liquid nitrogen with your PC.
- **8.** Oxygen is used in the production of pretty much everything, but its liquid form is used to make polyethylene terephthalate, or PET. Many screen protectors for touchscreen smartphones and tablets, like BodyGuardz Classic screen protectors, are made of PET.
- **9. Fluorine** reacts with glass and acts as an etching chemical, removing unwanted film buildup in glass production. It's used in the production of LCD desktop monitors and TVs, including the line of Kyocera Display TFT monitors.
- **10. Neon:** Back in the 1920s, the first commercially available television sets contained neon in their TV tubes. Today, neon is found in plasma TVs such as the Panasonic Smart Viera Plasma HDTV, Class ST50.
- **11. Sodium:** Alternative energy production methods use sodium-sulfur batteries. The town of Presidio, Texas, uses a large sodium-sulfur battery as the emergency backup energy source.

shows how a CPU is made; it all starts with sand, which has a high percentage of

- **12. Magnesium** is a strong metal and commonly serves as a construction material. The new Microsoft Surface RT contains magnesium.
- **13. Aluminum** is a strong, light metal, and is optimal as a construction material. Apple's MacBook Pro line features an aluminum unibody design, as does the Samsung Series 7 notebook.
- **14. Silicon:** CPU makers construct their chips using silicon as a "scaffolding" of sorts, and they dope certain other parts of silicon with small quantities of other elements to make it more susceptible to conducting electricity. Intel offers a cool infographic that





silicon dioxide.

- 15. Phosphorus is commonly used in fluorescent light bulbs.
- **16. Sulfur:** As listed under sodium (11), sodium-sulfur (NaS) batteries play a role in alternative energy production methods. Tokyo's power plants used NaS batteries to generate additional power during the peak summer energy demands in 2010.
- **17. Chlorine:** According to the Dow Chemical Company, chlorine technology is used in the manufacturing of memory cards.
- **18. Argon** can glow either bright blue or bright green, so argon ion lasers are a common feature in laser light shows.
- **19.** Potassium: Potassium bromide (potassium combined with bromine) acts as a black-and-white film-developing agent in film photography. It improves the differentiation between exposed and unexposed crystals of silver halide, and thus reduces fog. You can purchase potassium bromide as developer formula.
- **20. Calcium:** Calcium fluoride lenses reduce light dispersion in photography, in a method that was introduced in the 1960s. The Canon EF 17-40mm f/4L USM Ultra-Wide Zoom lens is calcium fluoride-based.
- **21.** Scandium is used in the bulbs in metal halide lamps, which produce a white light source with a high color rendering index that resembles natural sunlight. These lights are often appropriate for the taping of television shows.
- **22. Titanium**, a strong metal, serves as a tech construction material. The old Apple PowerBook G4 had a titanium edition made of this metal.
- **23.** Vanadium: Although rechargeable vanadium redox batteries haven't caught on commercially yet, they are acclaimed as being instrumental in renewable-energy plans.
- **24. Chromium** is a transition metal and has a variety of industrial uses due to its toughness and its high resistance to heat and corrosion. Vinyl-record lovers should note that RCA Victor record player needles are based on chromium.
- **25.** Manganese is essential to the alkaline battery. Such batteries work due to a reaction between zinc and manganese dioxide. Any common alkaline battery—such as those of the Duracell and Energizer brands—has manganese.

The periodic table of tech

1 2 3 4 5



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