**CAR-BON**

**http://www.chem4kids.com/files/elements/006\_speak.html**

Carbon is the magic element for everything on Earth. All life on Earth depends on carbon (C). It is in nearly every biological compound that makes up our bodies, systems, organs, cells, and organelles. When you breathe out, there is a lot of carbon dioxide (CO2). Carbon has been known and used for thousands of years. It was never really discovered. Ancient people knew of the black soot left over after a fire. That was carbon.

Carbon is the sixth element in the periodic table. Located between [boron](http://www.chem4kids.com/files/elements/005_speak.html) (B) and [nitrogen](http://www.chem4kids.com/files/elements/007_speak.html) (N), it is a very stable element. Because it is **stable**, it can be found both by itself and in many naturally occurring [compounds](http://www.chem4kids.com/files/atom_compounds.html). Scientists describe the three states of carbon as diamond, amorphous, and graphite. It is the same graphite you find in pencils.

**Importance of Carbon http://youngchemist.blogspot.com/2010/08/importance-of-carbon.html**

**Carbon** is the chemical element with symbol **C** and atomic number 6. It is a member of group 14 on the periodic table. The name "carbon" comes from Latin language *carbo*, coal.

* Carbon is Non-metallic
* Tetravalent
* Has three naturally occurring [isotopes](http://en.wikipedia.org/wiki/Isotopes) ( 12C and 13C is stable, 14C is radioactive)
* Has many allotropes of which the best known are graphite, diamond, and amorphous carbon

Carbon is the 15th most abundant element in the Earth's crust, and the fourth most abundant element in the universe by mass after hydrogen, helium, and oxygen. It is present in all known life forms, and in the human body carbon is the second most abundant element by mass (about 18.5%) after oxygen. This abundance, along with the unique diversity of organic compounds and their unusual catenation ability at the temperatures commonly encountered on Earth, make this element the chemical basis of all known life.

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**Where can you find carbon?**

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| Plants | **Plants**All plants have carbon as their most important element. Without carbon plants would not exist. That means every animal on Earth also needs carbon to survive. You can't just eat carbon, it needs to be in plants before humans can do anything with it.  |
| Diamonds | **Diamonds**When you see a diamond it is one big chunk of carbon. After a very long time and carbon is left in a very high pressure area, all of the atoms are pushed together to form a crystal. That crystal is called a diamond.  |
| Charcoal | **Charcoal**The next time your family goes to a barbecue you'll know that the main ingredient of the charcoal is carbon. Carbon compounds store lots of energy and is good at holding onto heat. That's why it's used for charcoal.  |
| Pencils | **Graphite**Take a look at your pencil. The black stuff you write with is made of carbon. It is a special type of carbon called graphite.  |
| Gasoline | **Petroleum Products**Next time you're at the gas station you can know that carbon is the most important part of gasoline. Gasoline is made up of oil and oil is created from the plants which died millions of years ago. You know there is carbon in plants... That means there is carbon in oil and gasoline.  |
| Plastics | **Plastics**Everything that is plastic has carbon in it. We just talked about gasoline. Like gasoline, plastic things are made from oil. That means carbon is also the most important element plastic.  |

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| **Carbon Facts ( http://www.sciencekids.co.nz/sciencefacts/chemistry/carbon.html)**Enjoy a huge range of interesting carbon facts. Carbon plays a huge role in the world we live in, from the carbon dioxide in the air to the graphite in your pencil, you’ll find its imprint everywhere.Learn more about carbon uses, the carbon atom, carbon properties, hydrocarbons, carbon structure, carbon fiber, carbon monoxide, your carbon footprint and other amazing carbon facts. |   |  |

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| * Carbon is a chemical element with the symbol C and atomic number 6.
* The word carbon comes from the Latin word carbo, meaning [coal](http://www.sciencekids.co.nz/sciencefacts/chemistry/coal.html).
* Carbon forms a large number of compounds, more than any other element. Because of its willingness to bond to other nonmetallic elements it is often referred to as the building block of life.
* While carbon forms many different compounds it is a relatively unreactive element.
* There are several allotropes (different forms) of carbon with the three most well known being amorphous carbon (coal, soot etc), [diamond](http://www.sciencekids.co.nz/sciencefacts/chemistry/diamond.html) and graphite.
* The properties of diamond and graphite are very different with diamond being transparent and very hard while graphite is black and soft (soft enough to write on paper).
* Graphite is used for its thermal insulation (lower rate of heat transfer) properties. It is also a very good conductor or electricity.
* The carbon atoms in graphite are bonded in flat hexagonal lattices and layered in sheets.
* Carbon is the 4th most common element in the Universe (after hydrogen, helium and oxygen). It is the 15th most common element in the Earth’s crust while it is the second most common element in the human body (behind oxygen).
* Carbon has the highest melting point of all elements, around 3500 °C (3773 K, 6332 °F).
* Hydrocarbons are organic compounds made entirely of molecules featuring just hydrogen and carbon. Organic chemistry involves the study of hydrocarbons.
* The simplest hydrocarbon compound is methane (CH4).
* Carbon was discovered by early human civilizations in the form charcoal and soot.
* The term carbon footprint refers to the amount of greenhouse gas emissions caused by a country, organization or individual person.
* The carbon cycle is the process in which carbon is exchanged between all parts of Earth and its living organisms. It is of vital importance to life on Earth, allowing carbon to be continually reused and recycled.
* Carbon is found in the Earth’s atmosphere in the form of carbon dioxide (CO2). Although it only makes up a small percentage of the atmosphere it plays an important role, including being used by plants during photosynthesis.
* Carbon monoxide (CO) is very toxic to both humans and animals. It forms in conditions when there is not enough oxygen to form carbon dioxide (CO2). In many countries around the world, carbon monoxide poisoning is the most common kind of fatal poisoning.
* Carbon fiber is a strong material that consists of thin fibers made up largely of carbon atoms which are bonded together in microscopic crystals. It is very useful for applications needing high strength and low eight.
* Fossil fuels such as methane gas and crude oil (petrol) play a large role in modern economies.
* Plastics are made from carbon polymers. Carbon is used to form alloys with iron such as carbon steel.
* Graphite and clay are combined to make the lead used in pencils.
* Charcoal is commonly used for grilling food on barbeques.
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Formation of the carbon atomic nucleus requires a nearly simultaneous triple collision of alpha particles (helium nuclei) within the core of a giant or supergiant star. This happens in conditions of > 100 megakelvin temperature and helium concentration that the rapid expansion and cooling of the early universe prohibited, and therefore no significant carbon was created during the [Big Bang](http://en.wikipedia.org/wiki/Big_Bang).

Carbon is essential to all known living systems, and without it life as we know it could not exist. The major economic use of carbon other than food and wood is in the form of hydrocarbons, most notably the fossil fuel methane gas and crude oil (petroleum). Crude oil is used by the petrochemical industry to produce, amongst others, gasoline and kerosene, through a distillation process, in refineries.

Cellulose is a natural, carbon-containing polymer produced by plants in the form of cotton, linen, and hemp. Cellulose is mainly used for maintaining structure in plants. Commercially valuable carbon polymers of animal origin include wool, cashmere and silk. Plastics are made from synthetic carbon polymers, often with oxygen and nitrogen atoms included at regular intervals in the main polymer chain. The raw materials for many of these synthetic substances come from crude oil.

Organometallic compounds by definition contain at least one carbon-metal bond. A wide range of such compounds exist; major classes include simple alkyl-metal compounds (e.g. tetraethyllead), η2-alkene compounds (e.g. Zeise's salt, and η3-allyl compounds (e.g. allylpalladium chloride dimer; metallocenes containing cyclopentadienyl ligands (e.g. ferrocene); and transition metal carbene complexes.

Carbon black is used as the black pigment in printing ink, artist's oil paint and water colours, carbon paper, automotive finishes, India ink and laser printer toner. Carbon black is also used as a filler in rubber products such as tyres and in plastic compounds. Activated charcoal is used as an adsorbent in filter material in applications as diverse as gas masks, water purification and kitchen extractor hoods and in medicine to absorb toxins, poisons, or gases from the digestive system. Carbon is used in chemical reduction at high temperatures.

Coke is used to reduce iron ore into iron. Case hardening of steel is achieved by heating finished steel components in carbon powder. Carbides of silicon, tungsten, boron and titanium, are among the hardest known materials, and are used as abrasives in cutting and grinding tools. Carbon compounds make up most of the materials used in clothing, such as natural and synthetic textiles and leather, and almost all of the interior surfaces in the built environment other than glass, stone and metal.

http://education-portal.com/academy/lesson/organic-vs-inorganic-nutrients-differences-importance.html#lesson