

Elements ranked by abundance

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The abundance of elements in Earth's crust is shown in tabulated form with the estimated crustal abundance for each chemical element shown as mg/kg, or parts per million (ppm) by mass ($10,000 \text{ ppm} = 1\%$).

The Earth's crust is one "reservoir" for measurements of abundance. A reservoir is any large body to be studied as unit, like the ocean, atmosphere, mantle or crust. Different reservoirs may have different relative amounts of each element due to different chemical or mechanical processes involved in the creation of the reservoir.

This table gives the estimated abundance in parts per million by mass of elements in the continental crust; values of the less abundant elements may vary with location by several orders of magnitude.

Earth's crust contains nearly all of the naturally occurring elements. This table and periodic table shows the relative abundance of elements in the Earth's crust.

Each element is represented by its atomic number, symbol, name, and abundance in milligrams per kilogram of Earth's crust. Since 1 milligram is one-millionth of a kilogram, these measurements could also be expressed as parts per million.

The colors represent a break in the ranges over an order of magnitude. Elements with no measured values or no data are left blank. Most of these elements do not occur naturally in nature (93-118). The abundances recorded are a median of measurements taken from around the world. Not every kilogram of dirt contains 0.004 milligrams of gold.

Aluminum, third on the list of most abundant elements, comprises roughly 8% of the Earth's crust, and is actually the most abundant metal in the crust. Though it is the most commonly found metal, it is always found in compound form, never in its raw state. The most commonly found compounds are potassium aluminum sulphate, and aluminium oxide.

Calcium accounts for around 4% of the Earth's crust. Though calcium is usually affiliated with human growth in relation to bones and development, calcium is also readily found in the Earth in various compound forms and is often found in combination with oxygen or water. Calcium carbonate is also a common compound, and can be found in a variety of rock types such as marble, chalk and limestone, as well as shells and pearls.

Magnesium is the 7th most common element in the Earth's crust with an abundance of about 2%. The metal does not occur as a free element but in combination with other elements like oxygen, calcium, and carbon. Dolomite is an example of a mineral containing magnesium.

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Approximately 2% of the Earth's crust is potassium. It is not an element that is found in its solitary form in nature, but is in a number of compounds found freely within the earth. Its pure form is highly reactive to both oxygen and hydrogen, meaning it can ignite when in water or open air. Naturally, potassium can be found in potash and various minerals such as carnalite, sylvite or polyhalite. The most common potassium compound is potassium chloride which is used in fertilizers and the like, and potassium carbonate which is used for soaps and certain types of glass.

Titanium can be found in minerals such as rutile, ilmenite and sphene, which can be found in the Earth's crust. At 0.6 % of the Earth crust's make up, it is far less abundant than the elements which hold spots one through eight on the list. Still, it is an important element and is known for being both extremely strong, and very light. Because of this it is used in a variety of ways by humans, for everything from airplanes to artificial human joints.

Hydrogen is actually the most abundant element in the known universe, but it only makes number ten with regards to elements in the Earth's crust as it is most commonly found as a gas. Hydrogen has many compounds which are readily found on Earth both in nature and in human made uses. Hydrogen is of course a key component in water, H₂O, but is also in the common compounds ammonia, methane, hydrogen peroxide and even sugar, all of which are readily used by humans.

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