

Oxygen is a chemical element with symbol **O** and atomic number 8. It is a member of the chalcogen group on the periodic table and is a highly reactive nonmetal and oxidizing agent that readily forms oxides with most elements as well as other compounds.<sup>[3]</sup> By mass, oxygen is the third-most abundant element in the universe, after hydrogen and helium.<sup>[4]</sup> At standard temperature and pressure, two atoms of the element bind to form dioxygen, a colorless and odorless diatomic gas with the formula O

2. This is an important part of the atmosphere and diatomic oxygen gas constitutes 20.8% of the Earth's atmosphere.<sup>[5]</sup> Additionally, as oxides the element makes up almost half of the Earth's crust.<sup>[6]</sup>

Dioxygen is used in cellular respiration and many major classes of organic molecules in living organisms contain oxygen, such as proteins, nucleic acids, carbohydrates, and fats, as do the major constituent inorganic compounds of animal shells, teeth, and bone. Most of the mass of living organisms is oxygen as a component of water, the major constituent of life forms. Conversely, oxygen is continuously replenished by photosynthesis, which uses the energy of sunlight to produce oxygen from water and carbon dioxide. Oxygen is too chemically reactive to remain a free element in air without being continuously replenished by the photosynthetic action of living organisms. Another form (allotrope) of oxygen, ozone (O

3), strongly absorbs ultraviolet UVB radiation and the high-altitude ozone layer helps protect the biosphere from ultraviolet radiation. But ozone is a pollutant near the surface where it is a by-product of smog. At low earth orbit altitudes, sufficient atomic oxygen is present to cause corrosion of spacecraft.<sup>[7]</sup>

Oxygen was discovered independently by Carl Wilhelm Scheele, in Uppsala, in 1773 or earlier, and Joseph Priestley in Wiltshire, in 1774, but Priestley is often given priority because his work was published first. The name *oxygen* was coined in 1777 by Antoine Lavoisier,<sup>[8]</sup> whose experiments with oxygen helped to discredit the then-popular phlogiston theory of combustion and corrosion. Its name derives from the Greek roots *ὀξύς* *oxys*, "acid", literally "sharp", referring to the sour taste of acids and *-γενής* *-genes*, "producer", literally "begetter", because at the time of naming, it was mistakenly thought that all acids required oxygen in their composition.

Common use of oxygen includes residential heating, internal combustion engines, production of steel, plastics and textiles, brazing, welding and cutting of steels and other metals, rocket propellant, oxygen therapy, and life support systems in aircraft, submarines, spaceflight and diving.

Symbol: O

## Oxygen

Atomic mass: 15.999 u

Electron configuration: [He] 2s<sup>2</sup>2p<sup>4</sup>

Atomic number: 8

Electronegativity: 3.44

Boiling point: -183 °C

Source: [Wikipedia](#)