BY INORGANIC SUBSTANCES

Omonova Mahfuza

ANNOTATION

First, simple substances are inorganic: they consist of atoms of one chemical element. For example, it is oxygen, gold, silicon and sulfur. However, this includes the entire periodic table.

Keywords: many complex substances, structure called carbon skeletons.

Secondly, many complex substances (or compounds) containing atoms of several elements are among the inorganic substances. The exception is carbon organic compounds that make up a separate large class of substances. They have a special structure called carbon skeletons. But some carbon compounds are inorganic.

Properties of inorganic substances:

Molecules usually bind to ions. That is, atoms of elements with low electronegativity "donate" electrons to atoms of another simple substance. As a result, various charged particles are formed - ions that are attracted to each other (with a"plus"-cation and "minus" - anion).

Compared to most organic compounds, the molecular weight is low.

Chemical reactions between inorganic substances proceed quickly, sometimes instantly.

Many inorganic substances are soluble in water to one degree or another. At the same time, they are divided into ions (dissociated), due to which they conduct an electric current.

Most often, these are solids (although there are gases and liquids). At the same time, they have a high melting temperature and do not break when melted.

As a rule, they do not oxidize in air and are not flammable. So, after the combustion of fuel (for example, wood or coal), mineral impurities remain in the form of ash.

Some inorganic substances are part of the cells of living organisms. This is, first of all, water. Mineral salts also play an important role.

Simple and complex inorganic substances are divided into several classes, each of which has different properties.

Metals: lithium (Li), sodium (Na), copper (Cu) and others. From a physical point of view, these are usually solid (except liquid mercury) substances with a specific luminosity, high thermal and electrical conductivity. As a rule, in chemical reactions, they give reducing agents, that is, their electrons.

Non-metals. For example, fluorine (F2), chlorine (Cl2) and oxygen (O2) gases. Simple substances that are not solid metals-sulfur (S) phosphorus (P) and others. In chemical reactions, they usually act as oxidizing agents, that is, they attract electrons of reducing agents.

Amphoteric simple substances. They have a secondary property: they can exhibit both metallic and metallic properties. These substances include, in particular, zinc (Zn), aluminum (Al) and manganese (Mn).

Noble or inert gases. These are helium (He), neon (Ne), argon (Ar) and others. Their molecule consists of one atom. It is chemically inactive, having the ability to form compounds only under special conditions. This is due to the fact that inert gas atoms are filled with external electronic layers: they do not give up themselves and do not pull the electrons of other elements.

In nature, the most common class of complex organic compounds is oxides. These include one of the most important substances - water or hydrogen oxide (H2O).
Oxides are caused by the interaction of various chemical elements with oxygen. In this case, the oxygen atom attaches two "foreign" electrons to itself.
Since oxygen is one of the strongest oxidizing agents, almost all binary (containing two elements) compounds with it are oxides. Oxygen itself is oxidized only by fluorine. The resulting substance - OF2 belongs to fluorides.
There are several groups of oxides:
the main (with an emphasis on the second syllable) oxides are compounds of oxygen with metals. Reacts with acids to form salt and water. The main ones are, in particular, sodium oxide (Na2O), Copper (II) oxide CuO;
acid oxides-compounds with non-metallic or transition metal oxygen at the oxidation state from +5 to +8. They interact with the bases, thus forming salt and water. Example: nitric oxide (IV) NO2;
amphoteric oxides. Reacts with both acids and bases. It is specifically zinc oxide (ZnO), which is part of dermatological ointments and powders;
oxides that do not form salts that do not react with acids and bases. For example, it is CO2 and CO carbon oxides that are well known to everyone, such as carbon dioxide and carbon monoxide.
Hydroxides contain the so-called hydroxyl group (- OH). It contains both oxygen and hydrogen.
Hydroxides are divided into several groups:
bases are metal hydroxides with a low oxidation state. Water-soluble bases are called alkalis. Examples: caustic soda or sodium hydroxide (NaOH); lime, aka calcium hydroxide (Ca (OH) 2).
acids are non-metallic hydroxides and metals with high oxidation states. Most of them are liquids, less often solids. Almost all are water soluble. Acids are usually very alkaline and toxic. In production, medicine and other industries, sulfuric acid (H2SO4), nitric acid (HNO3) and others are actively used;
amphoteric hydroxides. They show basic or acidic properties. For example, it contains zinc hydroxide (Zn (OH) 2).
Salts consist of metal cations linked by negatively charged molecules of an acidic residue. Ammonium salts-NH4 + cation are also present.
Salts are caused by the interaction of acids with metals, oxides, bases or other salts. In this case, the hydrogen contained in the acid is partially or completely displaced by the metal atoms, so hydrogen or water is also released during the reaction process.
Brief description of some groups of salts:
medium salts-hydrogen in them is completely replaced by metal atoms. For example, it is potassium orthophosphate (K3PO4)used in the production of the food additive E340;
acidic salts, in the composition of which hydrogen remains. Sodium bicarbonate (NaHCO3) is common-baking soda;
contains the main salts - hydroxyl groups.
Among inorganic substances, binary compounds are distinguished separately. They consist of atoms of two substances. This may be the case:
anoxic acids. For example, hydrochloric acid (HCl), which is part of human gastric juice;

anoxic salts caused by the interaction of anoxic acids with metals or two simple substances. These salts include common table salt or sodium chloride (NaCl;
other binary compounds. It is widely used in carbon disulfide (CS2), especially in chemical industry and other industries.
Inorganic carbon compounds
As mentioned above, some carbon compounds are classified as inorganic substances. This is:
carbonate (H2CO3) and hydrocyanic acid (HCN);
carbonates and bicarbonate are carbonic acid salts. The simplest example is baking soda;
carbon monoxide-carbon monoxide and carbon dioxide;
carbides are the combination of carbon with metals and some non-metallic substances. They are solids. Due to their refractoriness, they are widely used in metallurgy, as well as in other industries to obtain high-quality alloys;
cyanides are salts of hydrocyanic acid. This includes the unknown potassium cyanide, which is a powerful poison.
Carbon is found in nature in its pure form and in dissimilar forms. Powdered powder, layered graphite and the most solid mineral on Earth, diamond all have the chemical formula C. Naturally, they are inorganic substances.

REFERENCES

1.Sodiqovna O. M., Alisherovna A. M. Classification Of Inorganic Substances and Their Types //Texas Journal of Multidisciplinary Studies. – 2021. – Т. 2. – С. 231-234.
2.Игамбердиев Б. Г., Халипаева С. И. К., Омонова М. С. Исследование влияния функциональных добавок на водопотребность гипсоволокнистой смеси //Проблемы современной науки и образования. – 2019. – №. 12-1 (145). – С. 29-31.