

*Chemical raw materials* are classified:

- by origin: mineral, animal, vegetable, water, air;
- by chemical composition: organic, inorganic;
- by types of stocks: renewable, non-renewable;
- on the state of aggregation.

*Mineral raw materials* are divided into *ore*, *non-metallic* and *fuel*.

Raw materials are also classified as *primary* (natural sources) and *secondary* (intermediate and by-products of industrial production and consumption, waste); *natural* and *artificial* (obtained as a result of industrial processing of natural raw materials).

A number of requirements are imposed to raw materials, which should provide:

- minimum of process stages;
- minimum energy consumption;
- the minimum dissipation of the input energy;
- minimum energy loss with products;
- reduction of process parameters (temperature, pressure) and energy consumption to change the state of aggregation of reagents;
- a large yield of the target product.

The share of raw materials in the cost of production of the chemical industry reaches 70% - 80%. Therefore, the problem of resources and the rational use of raw materials during its processing and production is very relevant.

In the chemical industry, as a raw material, compounds of more than 80 elements are used, which are distributed in the earth's crust.

Quantitative characterization of the prevalence of elements in nature is estimated in *clarks*. *Clark* is a quantity that expresses the content of elements in the earth's crust in mass or atomic percentages, or grams per ton.

More than 98% of the mass of the crust is 9 elements (*O, Si, Al, Fe, Ca, Na, Mg, K, H*); all other elements account for only 1.87%. The carbon content is only 0.35% of the mass of the earth's crust.

Raw materials reserves are divided into identified (studied) and potential resources.

According to the degree of knowledge and serviceability of the reserves of raw materials are divided into three categories:

- 1) *A* - reserves, explored in detail and prepared for development;
- 2) *B* - reserves established as a result of geological exploration;
- 3) *C* - reserves determined by the results of exploration and study on natural discoveries.

The possibility of using raw materials for industrial production is determined by its value, availability and concentration of the useful component.

The value of raw materials depends on the level of development of technology and the challenges facing production and varies significantly over time. For example, in the second half of the 20th century, uranium, which was previously a waste in the production of radium, became the most valuable strategic raw material.

A significant impact on the ability to use stocks of raw materials has a concentration of useful element. Many elements with a relatively high content in the earth's crust are dispersed, making it difficult to use their compounds as chemical raw materials.

### ***The place of Kazakhstan in the world mineral complex***

On extraction and production of mineral and raw products Kazakhstan is ranked in the world: on chromites – the 2nd place, on the titan – 2-3 place, on zinc – 6, on manganese – 8, on lead – 6, on silver – 9, on uranium – 5, copper – 10, on oil, gas, coal and iron – Kazakhstan is included into 20 leading countries of the world.

Kazakhstan plays an important role in the world market of copper, uranium, titanium, ferroalloys and steel, is a monopolist in the Euro-Asian subcontinent on chromium, has a significant influence on the regional (CIS countries, first of all - Russia) market of iron, manganese, coal and