CHEMICAL TECHNOLOGY AND ROLE OF CONCRETE IN THE CONSTRUCTION INDUSTRY.

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Abstract: In this scientific article, the role of concrete, which is considered the main core of the construction industry, and its use is presented.

Key words: Concrete, resource, raw materials, energy-efficient, filler, plasticizers.

Introduction: Humanity is created so that it has a demand for the construction of buildings and structures. If we look at the early stages of human evolution, we can understand that the human child knowingly or unknowingly satisfied his need for housing by using tree branches to protect himself from the vagaries of nature. If we look at the history, the construction of buildings and structures is connected with the history of the ancient world. The Egyptian pyramids, the Great Wall of China, and the Roman Colosseum are clear examples of this. Grinding and baking natural stones into lime, ganch, gypsum, etc. the production technology of mineral binders was created several thousand years ago. If we look at the construction of our historical cities such as Shahrisabz, Samarkand, Bukhara, Khiva, Tashkent, we see that royal palaces, madrasas and mosques, fortress walls, and water structures were selected and built on the basis of mixtures of natural stones and baked bricks[3]. In fact, whether it is a primitive community or a developed country, the main requirement of any society is engineering structures, and this process remains unchanged even in today's advanced age of science and technology. In today's time when digital technologies are developing, scientists are introducing innovative technologies that digitize any field and control it. Such technologies have penetrated the construction industry on a large scale, as a proof of our word, we can cite only one information obtained as a result of scientific research and research conducted by the UK company "Techno Inno Analysis" in 20 developed countries of the world (G20).

According to the research, concrete was found to be the second most consumed product of humanity after water. What this proves, it is no exaggeration to say that concrete has taken an indispensable place in the list of basic human needs in today's time [1]. In this regard, it can be concluded from the decisions and projects adopted in the field of construction in our country and the large-scale creative works being carried out that in this regard, not only the 20 developed countries of the world, but also our country is in the leading position among the CIS countries in terms of concrete consumption. it is not difficult to say. By changing the type of mineral binders and fillers, it is possible to create different types of concrete with strength, deformability, adaptability to different conditions, super heavy, light, ultra light, fire resistant, radiation proof and others[1] . 0.01-1.2% polymer additives and 15-40% surface-activated dispersed materials, such as quartz minerals, can be used to improve the properties of concrete and save cement. Currently, concrete contains microsilica, microalumina, metakaolin, etc. Active amorphous oxides containing nanodiapers (1-10 nm), inorganic monomers - zeolite gels ($MeO \cdot Al_2O_3 \cdot nSiO_2 \cdot H_2O$; here: Me - metal ion) are introduced as highly effective modifiers [2]. Concrete made from cement or other inorganic binders is widely used in construction. These concretes are mainly mixed with water. The active constituents of concrete are cement and water, as a result of their reaction, a single cast cement stone is formed that binds the filler particles. Cement and water are the active constituents of concrete: as a result of the reactions between them, a cement stone is formed that binds the filler particles into a single monolith. Local rocks and production waste (slag, etc.) are mainly used as fillers. The use of such inexpensive aggregates reduces the cost of concrete, since aggregates and water make up 85-90% of concrete, and cement 10-15%. In recent years, lightweight concrete made of porous artificial fillers has been widely used in construction. Porous aggregates reduce the density of concrete, which improves its heat retention properties. In order to control the properties of concrete and concrete mixture, chemical additives are mixed into its composition, the hardening of the concrete mixture is accelerated or slowed down, it is made more plastic and easily flowable,

the hardening process is accelerated, its strength and frost resistance are increased. If necessary, concrete properties are changed in another direction. Concrete is the main building material. It can be given a wide range of properties, including strength, density, thermal conductivity, and other such properties. Nowadays, various types of concrete are used in construction. Types of concrete can be classified according to the characteristics of the materials used and their intended purpose. Many properties of concrete depend on its density, that is, the density of concrete depends on the density of cement stone, the type of fillers and the structure of concrete. Concrete is very heavy in terms of density (2500 kg/m3 and more); heavy (1800-2000 kg/m3); light (500-1800 kg/m3); divided into very light (less than 500 kg/m3) types. Super-heavy concretes are made from heavy fillers - steel shavings and slag (steel concrete), iron ore (limonite and magnetite concretes) or barite (barite concrete). Ordinary heavy concrete with fillers (granite, limestone, diabase, etc.) taken from rocks with a density of 2100-2500 kg/m3 is mainly used in the construction. Concrete with a density of 1800-2000 kg/m3 is made from rocks with a density of 1600-1900 kg/m3 - gravel. Lightweight concrete is obtained from pore fillers (keramsite, agloporite, expanded slag, pumice, tuff). The use of lightweight concrete reduces the weight of construction structures and makes construction cheaper, so their production is growing rapidly, but it still has not replaced ordinary heavy concrete, i.e. consumer concrete. Ultra-light concretes include aerated concretes, in which the binder, finely crushed aggregates and water are mixed in a special way (aerated concrete, foam concrete) and large-pored concrete light balls. prepared on the basis of ldiru. In porous concrete, air in artificially prepared pores is considered instead of filler. The binder is the main component that determines the properties of concrete, and concretes are distinguished by its types, including: cement, silicate, gypsum, alkali slag, concrete-polymer, polymer-cement concretes and special concretes [3]. Types of concrete used in construction: Cement concrete is made from different cements and most of them are widely used in construction. Among them, the main place is occupied by portland cement concretes and their various types (about 65% of the

total production). They are used in different constructions and depending on the conditions of use. Slag-portland cement concrete (20-25% of the total production) and putsolan cement concrete are also successfully used. Types of cement concrete include: decorative concrete made of white and other colored cement; concretes made of elastic cement for self-tensioning structures; concretes prepared for special purposes from specific loamy and impermeable types of cement, etc. Silicate concretes are made on the basis of lime. The autoclave method is used to harden concrete prepared in this way. Gypsum concretes are made of various types of gypsum, used in the preparation of internal walls, suspended ceilings and finishing elements. Different types of concrete - gypsum - putsolan concrete have a wide range of applications due to their high resistance to water (volume blocks of bathrooms, constructions of low-rise houses, etc.). Slag concrete has just started to be used in construction. A mixture of crushed slag with an alkaline mixture is used as a binder in such concretes. The basis of concrete polymers is made from various polymer binders (polyester, epoxy, urea) consisting of resin or monomers that harden in concrete with the help of special additives such as furfurolacetone. Such concretes are suitable for use in aggressive environments and conditions with extreme effects (friction, cavitation, etc.).

CONCLUSION:

In conclusion, it can be said that the peculiarity of concrete production is that the quality of the obtained material cannot be known in advance. It demonstrates the necessary properties based on the requirements set for concrete during the construction process. These relationships take into account the physico-chemical nature of concrete, most often the nature obtained by the experimental method. It is considered necessary to test them in production conditions and, if necessary, carry out accurate calculations. Concrete is a complex material, its properties can significantly change over time and during operation. Only a deep study of the nature of the laws governing the molding of the properties and structure of this material can ensure its effective and efficient use in building constructions for various purposes.

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