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STUDY OF PRODUCTION OF LIGHTWEIGHT CONCRETES BASED ON EXPANDED CLAY

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A B S T R A C T

An important aspect of technical progress is the loss of mass in the use of effective material, in this case it is necessary to send porous fillers to them. The use of lightweight concrete reduces the mass of the building structure by 35%, and cement by 10%. In this situation, the size of the structure increases, and its thermotechnical and acoustic properties are improved. In the last 10 years, a lot of research and studies have been carried out on the selection of composition, stability of lightweight concrete in porous aggregates.

K E Y W O R D S

Keramzit, light, concrete, chemical, additive, science, technology, the most important task is to increase the well-being of human life. That's why experts in every field deeply study how their field can serve the well-being of human life. Among these we can include construction materials engineers.

INTRODUCTION

High-quality porous aggregates are needed to obtain lightweight concrete. It is known that currently 70-75% expanded clay is used for the production of lightweight concrete. Highly plastic and easily soluble clay-bentonite, kaolin, etc. are needed to obtain ceramsite.

However, due to the lack of the above-mentioned soils, high-quality expanded clay is not obtained in many regions.

Recently, researchers have been conducting research on the use of porous fillers (agloporite, quartzoporite, comporite, ceramporite).

Sufficient experience has been conducted in the CIS and abroad on the use of lightweight concrete in various porous fillers. The most common structures identified are: wall panels, intermediate slabs, domes, etc.

It is known that lightweight concrete is superior to heavy concrete in terms of physical and technical strength, density and stability.

The strengths and properties of lightweight concrete are being studied in detail. Lightweight porous concrete is more compact than heavy concrete.

Literature Analysis

I.N. Akhverdov studied the composition of lightweight porous concrete and came to the conclusion that ideal lightweight concrete can be obtained using porous filler. According to him, this concrete is considered the main type of concrete. Taking into account the very small amount of water in cement stone in cement hydration, the pores return the previously absorbed water, create favorable conditions for the hydration of cement and reduce the occurrence of compaction in cement stone and lightweight concrete in general. [1].

Ivanov.I.A. studies conducted by showed that small capillaries with a diameter of more than 0.05 mm, which is typical for a large number of filler capillaries, enter the cement-water suspension.

The process of internal hydration in the mirror of gross capillaries occurs with the formation of crystalline hydrates, the growth of which strengthens the filler with the capillary surface and brings its high adhesive strength to the cement stone.

A.I. According to Vaganov, the limit of compressibility falls when one of its components is reached.

If the capillary of the filler is like this, then the strength and compaction of the mortar will not lead to an increase in the strength and deformation of the concrete. The final strength of lightweight concrete is provided.

R.K. Jitkevich and Yu.E. In his research, Kornilovich presents the results of studies to determine the causes of compression of lightweight concrete by expanded clay. However, the degree of compaction of expanded clay concrete observed by them is relatively small.

Yu.E. The slow growth of Kornilovich compression is explained only by the deformability of cement-sand mortar, which is only between the filler capillary grains.

G.A. Bujevych notes that when the properties of expanded clay concrete and cement stones are close to each other, for example, the radiation strength and deformation indicators of light concrete can be obtained. P full = P with mixture.

When the initial strength of the mortar increases, the filler solution p leads to a high concentration in the contact zones, which does not allow the strength of the mortar to be used in concrete.

Research conducted by a number of scientists has proven that the main properties of aerated concrete and, above all, its deformation are related to the parameters of concrete and pore-filling mortar.

I.A. Ivanov and A.I. In Krotov's works, it is usually brittle under conditions of viscous contraction, and in rare cases it can undergo further expansion, which is deformable. Therefore, the compressibility and viscosity of the hardening bond significantly increase the strength of the filler [2].

From this point of view, it can be concluded that the actual strength of lightweight concrete is related to the strength of cement-sand mortar, as well as technological factors related to the preparation and further hardening of the concrete mixture.

Today, obtaining a high-strength filler is usually associated with increased requirements for raw materials for production or the search for new production methods, which often complicates the technology and is not always economically justified.

Therefore, this problem requires us to use a new type of porous aggregates in lightweight concrete for local raw materials and coal mining.

We believe that porous aggregates compressed in a cylinder with a strength of 2.5-3 MPa, which allows obtaining lightweight concrete classes B10-B30, with an average density of 730-750 kg / m3, can be used in our country.

Foam polystyrene "Thermotok-H" wall materials and products are produced in Hungary. 5- "Poroton-36" and "Thermopor" with a compressive strength of 800-900 kg/m3 density; 7.5; equal to 10 MPa.

In the production of "Poroton-36" wall products, polystyrene granules are used as a quantitative additive.

"Themopor" wall panels are made using incineration additives of industrial and agricultural waste.

In France, SEMATEK, Briques, Tuilles, Alsase, establishment companies JSO40, SETABLOK37, Maxithorme and S-figurative stones have expanded the production of wall materials and products.

The company "Serik" produces simple above-ground blocks. In the Czech Republic, large-scale wall materials and loose tile sheets with an average density of 900-1000 kg / m3 with a compressive strength of 35 are produced; 40 and 50 MPa.

In Italy, the companies "S.J.L.S.", "EDILFORNACIAL" produce a wide range of wall materials and concrete slabs for flooring, which are 7.5-12 MPa, with an average density of 700-800 kg / m3, in various sizes. It is produced with the help of fillers.

Today, there are many concrete production enterprises in the Republic of Uzbekistan. The annual growth rate of production varies from nine to ten percent.

However, the volume of production of reinforced concrete from lightweight concrete in our Republic is much lower than the demand for these products in the building materials market.

Approximate amount of raw materials:

Keramzite - 60%;

construction sand - 20 - 22%;

cement materials - 10%;

pure water - 8 - 10%.

20/40 FRACTION 1m³ - 280,000 soums, if more than 100 cubic meters, 270,000 soums)

05/20 FRACTION 1m³ - 280,000 soums (270,000 soums for more than 100 cubic meters)

0.5 FRACTION 1m³ - 270,000 soums (250,000 soums for more than 100 cubic meters)

The following are the materials used in the production of lightweight concrete based on artificial filler expanded clay, which has led to a decrease in the cost of concrete when using expanded clay produced in Bandikhon district of Surkhondarya region.

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