AMERICAN JOURNALS
Open Access, Peer Reviewed Journals

American Journal of Research in Humanities and Social Sciences
ISSN (E): 2832-8019 Volume 18, | November, 2023

DEVELOPMENT OF EXPANDED CLAY CONCRETE PRODUCTION TECHNOLOGIES BASED ON ADDITIVES

Abdurakhimov Abdukarim Abdukhalimzoda
Termiz State University
abduraximovabdukarim1996@gmail.com

ABSTRACT

It is not for nothing that the world community today includes only thermal energy in the most expensive energy class among the various categories of energy, because thermal energy, unlike other energies, does not change from one type to another, is not regenerated at all, it only burns and ends. It is for this reason that the countries of the European continent, which we recognize as developed, today prohibit the construction of a building or structure without the use of heat-insulating construction materials. In recent years, extensive measures have been implemented in our republic to further deepen economic reforms in the construction materials industry and to rapidly develop the network, to increase the production of new modern construction materials, structures and products, and to expand their types, and certain results are being achieved. The significant aspect of technical progress is that it is effective. is the loss of mass during the application of the material, in this situation 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.

KEYWORDS

Introduction

World scientists have conducted many studies on these matters:

I.N. Akhverdova, A.A. Arelyana, G.A. Bujevica, A.I. Vaganova, G.I. Gorchakova, Yu.P. Gorlova, V.G. Dovjika, I.A. Ivanova, S. M. Iskovicha, I.A. Korneva, Yu.E. Kornilovicha, A.A. Kudryavseva, Yu.D. Nasievskovo, N.A. Popova, I.E. Putlyaeva, B.G. Skramtaeva, M.Z. Works by Simona, N. Ya. Spivaka, Ya. Sh. Shteyna, M. P. Elinzona, A. Shorta, J. P. Valsa and others.

The scientists of our country also dealt with the physical and mechanical properties of artificial pore fillers and lightweight concrete:

L.M. Botvina, B.A. Askarov, K.A. Akramov, U.A. Gaziev, N.A. Samigov, E.U. Kosimov, A.A. Tolaganov, S.A. Khodjaev, M. K. Tokhirov, Kh.K. Kamilov, T.T. Shakirov and others are conducting scientific and practical work and developing innovative technologies.

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.

To obtain ceramsite, highly plastic and easily soluble clay-bentonite, kaolin, etc. are needed.

But 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)..

In the CIS and abroad, a lot of experience has been conducted on the use of lightweight concrete in various porous fillers. The most common structures identified are: wall panels, semi-circular slabs, domes, etc.

It is also noted that as a result of replacing heavy concrete with light porous concrete, the price of heavy porous buildings has also increased by 1:1.5.

The ratio of large panel houses is 1:2.5.

It is also known that the use of light concretes is superior to heavy concretes in physical and technical strength, density and stability.

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

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 compaction phenomena in cement stone and lightweight concrete in general [1].

Ivanov.I.A. studies carried out 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 precisely 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 ultimate strength of lightweight concrete is ensured.

R.K. Jitkevich and Yu.E. In Kornilovich's research, he 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. Bujevic points out 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 lightweight concrete can be obtained. P full = P with mixture.

In the case of an increase in the initial strength of the mortar, the filler solution p leads to a high concentration in the contact zones, which does not allow the strength of the mortar part to be used in concrete.

Researches conducted by a number of scientists proved that the main properties of aerated concretes and, above all, their deformation are related to the parameters of concrete and pore-filling mortar.

I.A. Ivanov and A.I. In Krotov work, it is usually brittle under conditions of viscous contraction, and in rare cases 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 and the strength of cement-sand mortar, as well as technological factors related to the preparation and further hardening of the concrete mix.

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 new types of porous aggregates in lightweight concrete in local raw materials and coal mining.

We believe that porous fillers with an average density of 730-750 kg/m3, which allows obtaining lightweight concrete classes B10-B30, 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.

Polystyrene granules are used as quantitative additives in the production of Poroton-36 wall products.

"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, a large volume of wall materials and loose tile slabs 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 pore fillers of various sizes with an average density of 7.5-12 MPa and an average density of 700-800 kg / m3 produced using

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

CONCLUSION

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. Nevertheless, scientific research in recent years not only shows that the base of raw materials for expanded clay is sufficient in the territory of Uzbekistan, and in this regard, bentanite sand, which is the main raw material for the production of expanded clay, especially in the Navoi region, is sufficient, but also proves once again that it is an ecologically clean material. took.

References

1.Х.А. Акрамов., Ш.Т. Рахимов., Х.Н. Нуритдинов., М.Т. Туропов “Бетон тўлдиргичлари технологияси” Ўқув қўлланма Тошкент-2011-йил.

2. Аскаров.Б.А.,Ботвина.Л.М. “Пористые заполнители из местного сырья и легких бетона на их основе”. Монография. Ташкент.Фан.1990г.

3. А.И.Адилходжаев, Ф.Ф.Каримова, У.Ж.Тургунбаев “Қурилисҳ материаллари” дарслик, Тосҳкент:. -2017-йил

4. Абдуҳалимзода, Абдураҳимов Абдукарим. "СТУДЙ ОФ ПРОДУСТИОН ОФ ЛИГҲТWЕИГҲТ СОНСРЕТЕС БАСЕД ОН ЕХПАНДЕД СЛАЙ." Америсан Жоурнал оф Педагогисал анд Едусатионал Ресеарч 13 (2023): 19-22.

5. Абдукҳалимзода, Абдурахимов Абдукарим. "ТҲЕ УСЕ ОФ ФИЛЛЕР МИХТУРЕС АССЕССМЕНТ ОФ ТҲЕ СУРРЕНТ СТАТУС." Галахй Интернатионал Интердиссиплинарй Ресеарч Жоурнал 9.12 (2021): 467-470.

6. Abdukhalimzoda, Abdurakhimov Abdukarim. "Application of ASH of Heat Power Plants in Mixtures." Central Asian Journal of Theoretical and Applied Science 2.11 (2021): 1-6.