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MODERN REPRESENTATION ON THE PRODUCTION OF VARIOUS POROUS FILLERS

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Abstract: *This article presents modern representation on the production of various porous fillers*

Key Words: *porous aggregate, expanded clay gravel, light concrete, sand, industrial waste, quartz porphyry, carbonized clay, ceramporite, camporite, carboporite, light clay, high-energy expanded clay.*

1. INTRODUCTION:

In Uzbekistan, only expanded clay gravel is produced from porous aggregates, the quality and volume of release of which cannot ensure the fulfillment of the plan for the industrial construction of civil and industrial facilities in the future, due to the limited clay reserves for its production and low mechanical strength. Therefore, lightweight concrete with artificial porous aggregates from local raw materials and industrial wastes are of particular importance for construction, which can significantly expand the raw material base and reduce the cost of their production.

Many regions of the republic have huge reserves of substandard raw materials: sand dunes, loesslike loams, industrial wastes, on the basis of which new types of artificial porous aggregates were obtained - ceramporite, camporite, carboporite, etc. [1]. At the same time, quartz porphyries and carbonized clay, whose reserves in the Angren basin amount to tens of millions of tons, remain unstudied for this purpose.

2. LITERATURE REVIEW:

The problem of obtaining artificial porous aggregates and the study of their properties, as well as the development of technological and theoretical foundations, was dealt with by many specialist scientists, including A.I. Augustinian, A.S. Berezhnoy, D.S. Belyankin, L.M. Botvina, A.A. Baykov, G.S. Burlakov, D.P. Budnikov, H.S. Vorobyov, A.I. Gervids, V.N. Jung, P.P. Shepelev et al. [2].

3. MATERIALS:

So A.I.Gervids offers a new method for the production of expanded clay gravel, characterized by improved swelling of the granules, eliminating their sticking together and with the lining of the furnace by introducing quartz sand during firing. P.P. Budnikov, E.A. Kolesnikov, G.I. Knigina to prevent sticking of granules from fusible clays offer preliminary dusting with powder of refractory clays or their aqueous suspension [3]/

The leading place in the total production of porous aggregates (about 80%) is still held by high-energy expanded clay. However, it can be expected that in the current economic and environmental conditions in the CIS, the share of its production and use will decrease significantly (as is the case in foreign countries).

4. METHOD:

Research Institute Keramzit developed methods and recommendations for reducing the bulk density of expanded clay on average from 500 to 400 kg / m3, without raw materials, dusting granules in the furnace space and reuse of exhaust gases.

At the Research Institute Strom project, double-drum furnaces were developed to reduce the bulk density of expanded clay from 600 to 400 kg / m3 and 15% fuel consumption per 1 m3 of expanded clay, as well as the expanded clay cost by 1.5 times. A new technology for the manufacture of porous aggregates for lightweight concrete from glassy slags of metallurgical and chemical industries has been developed at the S.I.Dadashev Scientific Research Institute for Mining and Construction of Azerbaijan.

Industrial lots of porous aggregates from glassy wastes of metallurgical and chemical enterprises with a bulk density of 430-765 kg / m3 and a compressive strength of 3.7–13.8 MPa in the cylinder were produced.

5. DISCUSSION:

Due to the lack of raw materials for the production of expanded clay and agloporite in Uzbekistan, there was an urgent problem of obtaining other varieties of porous aggregates - ceramporite, camporite, quartzeporite, fiberglass and

carboporite, obtained on the basis of local raw materials and industrial wastes at the Tashkent Polytechnic Institute (now TACI) under the leadership of L .M. Botvina.

In the work of Umurzakov E.K. The objects of research were: hydromica clay raw materials of Kamyshbashinsky and sand dunes of the Yaz-Yavanskoye (Central Fergana) deposits, as well as waste from the Ferghana oil refinery used as a plasticizing and pore-forming additive

To establish the effect of the amount of plastic additives on the properties of sand dune, we prepared batch consisting of 55.60, 70% sand dune, 10.20.30% hydromica clay and 10-15% oil refinery wastes, due to which the filler is plastic and porous at burnout of organic substances, as a result of which the bulk density of the calcined material decreases.

Granules were formed from the blends mentioned above, which were dried before sintering, and some were burnt wet in muffle furnaces on special pallets for 20-30 minutes, granules on pallets were laid and a preheated oven to the required temperature of 1150-1180 C. Together In addition, refinery wastes have an unstable composition, which may adversely affect the quality of the porous aggregate.

Zeolite-containing rocks that swell at 1100-1200 C and form a porous cellular structure can become an alternative natural raw material source. When mixing the mixture with fluffs, it is possible to reduce the calcination temperature of granular penoceolite to 850 ° C. The properties of a porous granular material based on zeolite-containing rocks were studied when various carbon-containing additives were added to the raw material mixture, and their optimal amount was established to obtain a homogeneous porous structure.

Significant work is also being carried out abroad to improve the quality of aggregates and improve production technology.

Three types of porous aggregates are currently being produced in Great Britain: clay-based - Leca expanded clay, agloporite “Aglite” and fly ash - agloporite “SYTONG”.

In the same country, more than half of monolithic and precast concrete is made on lightweight aggregates. There are several varieties of lightweight aggregates with a bulk density of 300 to 900 kg / m3. The lightest Leca and Soloyt aggregates are obtained by swelling clays containing a significant amount of organic impurities. More severe are Aglite and Ligat aggregates. The first is expanded clay on an agglomeration belt, and the second is a sintered, pelletized particle made of pulverized coal ash on an agglomeration grid. There is no fundamental novelty in the production of these lightweight aggregates.

In the United States, expanded perlite is produced with dusting it with refractory powder until the material enters the furnace (69). The American company "Solite" produces a lightweight aggregate from a mixture of shale, clay and mica, which should not contain organic impurities that cause corrosion, stains or delamination.

In Japan, for the manufacture of artificial lightweight aggregate, fly ash from coal combustion, containing 25-40% of particles larger than 44 microns, is used, moistened in the range of 13-20%, depending on the quality of the ash. The optimum firing temperature should be 50-100C below the softening temperature of the ash. The size of the aggregate grains is 5-15 mm, the dried density is 1.4-1.5 g / cm3, the breaking load is 900-1300 N, and the water absorption is 12-14%.

In Canada, lightweight aggregate for concrete is made from sludge based on organic waste (wood flour, peat, sewage sludge). The strength of the obtained aggregate is 3 times higher than traditional.

6. SUMMARY:

A review of domestic and foreign literature data on porous aggregates and, based on them, lightweight concrete shows that quartz porphyry mixed with carbonized clay was not used in the technology for their production. In connection with this, it seems appropriate to conduct research on the development of the composition of the charge, the technology for producing porous aggregate from coal waste and light concrete based on it, which is not only of important scientific and practical, but also environmental significance.

The properties of lightweight concrete are determined by the characteristics of artificial porous aggregates. Therefore, in the next section of the dissertation, the analysis of literature data on the influence of technological factors on the properties of lightweight concrete is performed.

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