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CELLULAR CONCRETE AS A BUILDING MATERIAL OF MODERN LIFE

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Мақалада ұяшықты бетонның құрылымы баяндалады. Біздің елімізде ол кейінгі уақытта көп қолданылады, осы құрылыс материалының негізгі бағыттарын қарастырады. Құрылыс саласында қазіргі және жоғарғы технологиялық материалдар аз еңбекті, уақытша және қаржы шығыны шықпайтын аз уақытта сапалы құрылысты қалыптастыруды қажет етеді.

В этой статье представлена информация о свойствах ячеистого бетона. В нашей стране он используется относительно недавно, поэтому хотелось бы остановиться на главных преимуществах этого строительного материала. На сегодняшний день область строительства требует современные и высокотехнологичные материалы, которые требуют мало трудовых, временных и финансовых затрат, чтобы возводить качественные строения в кратчайшие сроки.

Information on properties of cellular concrete is presented in this article. In our country it is used rather recently, therefore it is necessary to pay attention to advantages of this building material. For today the field of building demands modern and hi-tech materials, which demand few labor, time and financial expenses to erect qualitative structures in the shortest terms.

After long studying and the analysis of local raw materials, experts had been made a choice in favor of a cellular gas concrete.

Cellular concrete - is one of the most effective kinds of concrete. There are various sources of raw materials for manufacturing of this kind of concrete. In process autoclave processings concrete components enter difficult chemical interaction with the basic knitting substances due to what the high indicator of durability and stability of cellular concrete is provided. Millions small air cells which result from so-called expansion process give to concrete cellular structure. Due to cellular structure this building material has such properties, as a high thermal protection, excellent sound insulation, and also maintenance of a good microclimate indoors.

The main feature of the block from cellular concrete is that it possesses properties as a stone, and a tree. The similar combination of properties allows applying cellular concrete in various designs. As the stone it fire resistant also doesn't react with water. As the tree it doesn't sink, possesses ease and a workability, easily is sawn, drilled and moves out, but unlike a tree doesn't decay and doesn't burn. We will stop on the main physic mechanical properties of a material [2].

ECOLOGICAL COMPATIBILITY. By results of the researches spent to Germany, cellular concrete possesses more than a low radio-activity, doesn't allocate toxic substances and similar to them of gases. The ecological compatibility factor of ecoblocks is equal 2.0, at a tree this indicator makes it is equated 1.0

PROFITABILITY. Walls from concrete panels on 20-40 % are easier and cheaper than other large-panel walls. At the expense of smaller heat conductivity of a wall from such blocks are erected in the thickness approximately in 1,5-1,8 times less, than at use of habitual kinds of a brick. Massiveness of a material provides temperature fluctuations in a building both in summer heat, and in a winter frost. The building constructed from ecoblocks allows to cut expenses on heating on 45-50 % that is especially important in our region with sharp temperature fluctuations [3].

The important role in profitability of erection of a building from cellular concrete is played by the exact sizes. At factory for manufacturing of blocks from cellular concrete a concrete mix fill in special forms, which have the certain sizes to receive products with strictly established sizes. For are sharp blocks are used cutting cars of various systems which provide accuracy and straightforwardness of sides of a product [2].

Because the surface of blocks doesn't need almost furnish, there is no necessity of application of gyps-cement plaster furnish for alignment of walls. And for laying special glue that allows cutting expenses on a solution considerably is used. At the expense of large and surprisingly exact sizes of blocks it is possible to save essentially expenditures of labor, and thanks to an easy workability time for installation is essential to save expenditures of labor and thanks to an easy workability time for installation decreases on 30-40 % in comparison with other materials.

INSTALLATION AND PROCESSING. For processing of blocks from cellular concrete the minimum tooling is usually used, namely: a trowel-trowel, a grinding board a special saw (in certain cases a tape saw, sometimes a hacksaw), a mixer, scrapers for a cutting of grooves, a plane etc. At the expense of a good workability of blocks can be made the form of corners, arch overlap pings, pyramids etc. Necessary elements of a decor are easily cut by means of an ordinary hacksaw [1].

THERMAL PROTECTION AND FROST RESISTANCE. Ability of cellular concrete to keep the physic mechanical properties at repeated influence of alternate freezing and thawing on air is called as frost resistance. Cellular concrete thanks to capillary-porous structure (to 80 % of volume of blocks it is filled by air cells) is a cold-resistant building material – frost resistance of cellular concrete makes 75 F. At humidifying of cellular concrete in atmospheric conditions water fills basically micro capillaries for the account absorption from air; large capillaries and a time are filled with water not completely, therefore at freezing in free space water from micro capillaries is wrung out, without causing destructions walls. For protection wall designs from such blocks from climatic influences it is enough to apply a thin film warm plaster, or not to put at all any coverings that essentially cuts expenses on others heat resistant materials.

One of the major properties of cellular concrete is ability to accumulate heat that seldom meets among other building materials. Blocks from cellular concrete are capable to accumulate heat from heating or from sun rays that then at low temperatures, for example at night when heating begins weaker to give saved up heat to internal premises. Even if solar heat heats a roof, for example in the summer, it doesn't influence internal temperature of a building – the temperature reaches the maximum values in 7-8 hours but also then air remains optimum for comfortable residing. Diffusive properties of cellular concrete have great value – it possesses good diffusion in relation to moisture. As we know, optimum humidity of air is the solving precondition for a favorable climate indoors, and it is no wonder, as thus rigid enough requirement cellular concrete proves to be from the best party – the material accumulates a moisture from air and transports it in internal premises, supporting optimum humidity of air. [1]

FIRE RESISTANT AND SOUND INSULATION. According to STATE STANDARD 30244-94, ecoblocks concern group of nonflammable materials. The numerous researches spent to Germany, Sweden and Finland have shown that at rise in temperature to +400 0C durability of cellular concrete makes 70 minutes.

Blocks from cellular concrete satisfy standard requirements on sound insulation and possess high ability in sound absorption that is important for comfortable residing

Many building companies of Kazakhstan have already estimated for a long time all advantages of products from cellular concrete and apply them at erection of buildings. Thanks to the high technical characteristics domestic company "EKOTON-BATYS" takes more and more strong positions at builders. The factory provides all Western region of Kazakhstan стеновым with a building material from cellular concrete and has proved, as the reliable supplier of hi-tech materials.

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**РАЗРАБОТКА ТЕХНОЛОГИИ КЕРАМЗИТА НА ОСНОВЕ ГЛИНИСТОГО
СЫРЬЯ ЗАПАДНОГО КАЗАХСТАНА**

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Алынған тәжірибелік зерттеулер нәтижелері жергілікті сары топырақты саздақты пайдаланып, керамзит қиыршық тасын өндірудің ресурс және қуат үнемдеу технологиясын жасаудың негізі болып табылады. Шаған кен орнындағы сары топырақты саздақ пен Погодаев кен орнындағы бентонитті балшықтың химиялық құрамының нәтижелері келтірілген. Келтірілген керамикалық массаны түйіршектеу технологиясы дайын өнімнің физика-механикалық және қалыпталуына қасиетін жақсартады.

Приведены результаты исследования глинистых сырьевых компонентов Западного Казахстана для получения качественного керамзита. Приведены результаты химических составов бентонитовой глины Погодаевского и лессовидного суглинка Чаганского месторождения. Предложенный технологический прием грануляции керамических масс, позволяет улучшить формовочные и физико-механические свойства готового продукта.

Results of researches of clay raw materials in West Kazakhstan to produce high-quality expanded clay are given. The article gives chemical compositions of bentonite clay of Pogodaevsky and loess clay loam of Chagansky fields. The proposed technological method of granulation ceramics allows to improve the form and physical-mechanical properties of the finished product.

Одним из важных направлений развития промышленности строительных материалов по технологии керамики является повышение номенклатуры и качества выпускаемых изделий при максимальном использовании местного сырья [1, 2].

Развитие мирового строительства неразрывно связано с нарастающей тенденцией применения строительных материалов и конструкций, обеспечивающих значительное снижение массы зданий и сооружений.

Одним из ведущих мест здесь принадлежит керамзиту, который в свою очередь, могут успешно развиваться только при наличии достаточно развитой и совершенной сырьевой базой для налаживания его производства [3].

Однако запасы глин для производства керамзита в Казахстане весьма ограничены и поэтому основным сырьем для производства строительной керамики служит малопластичные лессовидные суглинки, которые имеются во всех регионах [4].