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ГАЗОБЕТОНЫ И СОВРЕМЕННЫЕ ОБЛИЦОВОЧНЫЕ МАТЕРИАЛЫ И ИЗДЕЛИЯ НА ИХ ОСНОВЕ

Аннотация: *с резким увеличением сопротивления наружных стен нормативной теплопередаче проблема создания эффективного теплоизоляционного материала для однослойных стен стала весьма актуальной.*

Ключевые слова: *безавтоклавная технология, капиллярная пористость, конструкционный теплоизолятор.*

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AERABLE CONCRETE AND MODERN FACING MATERIALS AND PRODUCTS BASED ON THEM

Annotation: *With a sharp increase in the resistance of external walls to normal heat transfer, the problem of creating an effective heat-insulating material for single-layer walls has become very urgent.*

Keywords: *non-autoclave technology, capillary porosity, structural heat insulator*

After the energy crisis of the 20th century, many Western European countries, including the CIS countries, recognized the need to strengthen normative recommendations and requirements for thermal insulation of buildings. New regulatory documents have been adopted in many countries, which allow to increase the energy efficiency of buildings under construction, new construction and use. the problem of creation has become very urgent. Due to the fact that it takes time to create new materials that meet the requirements of the standards, scientists again turned to well-known materials - porous concrete.

Autoclave and non-autoclave porous concretes are distinguished according to the hardening conditions. Autoclave porous concretes are hardened in a saturated steam environment under a pressure of 0.8–1.6 MPa and at a temperature of 170–200 °C. Non-autoclaved aerated concretes are hardened by electric heating in natural conditions or by steam treatment at a temperature of up to 100°C at atmospheric pressure.

Since aerated concrete is not high in strength, it is advisable to use it in low-rise constructions, moreover, heat loss in one- and two-story houses is 4-5 times higher than in multi-story houses.For this reason, 8-10% of the masonry materials produced in the CIS countries correspond to masonry materials made of porous concrete.

It should be mentioned that most of the products made of aerated concrete have a density of 600-700 kg/m^3. According to the new requirements, their efficiency in single-layer barrier constructions will be lower compared to multi-layer walls. In such cases, it was necessary to increase the thickness of the outer walls. Without increasing the thickness of the walls, it is necessary to reduce the average density of aerated concrete to 400-500 kg/m^3, while maintaining the strength of the walls, in order to ensure their required heat protection properties. Such blocks would be very necessary in the construction of self-supporting walls for the frame-integrated cast construction, which is currently in full swing.

Production of autoclaved aerated concrete with an average density of 500 kg/m3 and a strength of 2.5-4 MPa for load-bearing and barrier structures is well established in most developed foreign countries. They have achieved this by using highly mechanized and automated conveyor lines equipped with quality technological equipment.

In terms of the modernity of production equipment and the quality of manufactured products, the CIS countries are far behind those of foreign countries, and for this reason, most enterprises have adopted the non-autoclave technology of aerated concrete.This technology is simpler, consumes less energy, and therefore the product is much cheaper. The average density of structural heat-insulating porous concrete obtained by this technology can be increased to 400-500 kg/m^3, and its strength can be increased to 2.5-3.5 MPa during the design period. In addition, there are possibilities to reduce the capillary porosity of such concretes, reduce thermal conductivity, avoid heat treatment, and use new cutting methods.

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