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USE OF HEAT INSULATION WALL MATERIALS IN CONSTRUCTION

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ABSTRACT	***KEYWORDS***
Ушбу мақолада иссиқлик химояловчи материалларнинг ўртача зичлиги, иссиқлик ўтказувчанлик коэффициенти, иссиқлик химоялаш материаллар билан таққослаш кўриб чиқилган. В данной статье рассмотрены средняя плотность теплозащитных материалов, коэффициент теплопроводности, сравнение с теплозащитными материалами. In this article, the average density of thermal protection materials, the coefficient of thermal conductivity, the comparison with thermal protection materials are considered.	construction, average density, heat transfer coefficient, aerated concrete, foam concrete, arbolite concrete.

Currently, new modern materials are being used in the construction of all components of buildings, structures and structures. The development of wall insulation materials and energy efficiency industry in recent years, environmental protection, new wall materials, especially new wall insulation materials production capacity is 20% per year. Traditional high-energy building materials are gradually being replaced by new building materials. Energy-saving insulation materials are creating excellent development opportunities.

In the decision of the President of the Republic of Uzbekistan dated May 23, 2019 No. PQ-4335 "On additional measures for rapid development in the construction materials industry". During the meeting of the President with industry experts, instructions were given to reduce costs by introducing energy-saving technologies in the building materials industry.

Many countries of the world are dealing with the problems of heat protection of residential buildings and energy efficiency in the housing fund. As a result of the implementation of energy saving and heat protection measures, the relative consumption of energy consumed in the housing stock in industrialized countries has been reduced by 2 or more in the last 10 years. One of the most decisive directions in solving this problem was to increase the heat transfer resistance of the outer walls and windows of residential buildings. In technically

developed countries, most of the wall constructions are made multi-layered. Multi-layer external walls with efficient heating in the total volume of large-panel walls: in Norway - 100%, in Hungary - 95%, in Finland - 94%, in Romania -91%, in Great Britain -75%. At the same time, this figure was 5-10% in the CIS countries until about 2000.
Various technical solutions based on the creation of multi-layer constructions with sufficient thermal protection and operational qualities are proposed to meet the energy-saving requirements of the external barrier structures of existing and newly constructed buildings.
Currently, the types of effective thermal protection materials are expanding. Aerated concrete, foam concrete, arbolit concrete, expanded polystyrene concrete, vermiculite concrete and others are among the materials used for thermal insulation of buildings. Heat-shielding materials, i.e. ultra-light concrete with a density of 800 kg/m3 and a thermal conductivity coefficient of 0.08–0.175 W/m·0S, are used.

A. B. V. G. **D**

Figure 1. Heat protection materials.
a) aerated concrete. b) foam concrete. c) vermiculite concrete.
g) reinforced concrete. d) polystyrene concrete.

For the production of wood-concrete blocks according to GOST 19222-84, woodworking waste, crushed reeds, hemp, cotton stalks, rice husks, flax can be used. Average density r=250-1300 kg/m3, heat transfer coefficient λ =0.09-0.54 W/m·0S, high resistance to fire.
Production of foam concrete blocks, according to the requirements of GOST 25485-89, foam concrete that hardens without an autoclave is a multifunctional building material. The production technology is quite simple, and the equipment used in production requires little metal and energy consumption. The properties of foam concrete can be improved and controlled depending on the place of use and the climatic conditions of use. That is why its properties are variable in a large interval. Average density r=100-1200 kg/m3, thermal conductivity coefficient l =0.08-0.38 W/m·0S.
Results of the research, the optimal amount of the results obtained in the 10x10x10 cm molds was selected. Cement for foam concrete mixture 400 g, water 100 ml, "Zimpor" 1.5 ml for foam. Cement for aerated concrete mixture 400 g, water 120 ml, gas generating additive "PAK-3" 0.9 ml. 400 g of cement, 160 g of rice husk, 195 ml of water, and 7 ml of liquid glass were selected for arbolite concrete mixture.
Results of 7;14;28 day strength limit of ultra-lightweight concrete.

1-table

№	Example	Compressive strength kg/sm²		
		7	14	28
1	Foam concrete	0.9	1.02	1.15
2	Aerated concrete	1.2	1.87	2.0
3	Arbolite concrete	2.3	2.39	2.6
4	Vermiculite concrete	2.4	2.45	2.7
5	Polystyrene concrete	1.5	1.8	2.2

Modern heat protection materials differ from each other in terms of shape and appearance. In this case, materials can be divided into granular and dispersed types. Dispersable materials include powdery, fibrous, and granular materials. Examples of granular materials are arbolite, basalt fiber plates, aerated concrete, foam concrete and polystyrene concrete. Currently, the most popular heat-protective materials in construction are granular products. The quality of any heat-protective material is evaluated according to several indicators. One of them is the thermal conductivity of this material. Thermal conductivity is the ability of a material to transfer heat energy through itself.

In order to compare different options for building walls, we will quote the indicators of walls made of different materials

2-table

Types of materials	Average density kg/m³	Thermal conductivity Вт/м·°C	Thermal resistance м² · °C/W
Aerated concrete	700	0.13	0.26
Foam concrete	600	0.12	0.19
Arbolite concrete	550	0.17	1.17
Vermiculite concrete	480	0.11	0.16
Polystyrene concrete	420	0.10	0.18

The production and use of heat-insulating materials has a number of advantages compared to traditional building materials: the mass of the building is reduced, the heavy construction work is reduced, the thermal resistance of the structure increases, it is well sawed, it is resistant to bio-effects, it has a high heat and sound insulation index, it is fire-resistant, with a cement mixture works well, easy to drill holes in hand drill, holds nails well.

In short, by using the above modern materials, it is possible to reduce the construction time of high-quality buildings, to achieve great results in a short period of time, to achieve economically cheaper buildings and structures, to ensure the extension of the life of the building, and at the same time to meet the internal and external requirements of the building. provides optimal options for completion.

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