

**PRODUCTION OF INSULATION BOARDS BASED ON CRUSHED
COTTON AND CEMENT**

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ABSTRACT

High-quality production of traditional building materials on a scientific basis, adaptation of their creation technologies to modern requirements, development of cheap, economical, high-quality materials and technologies, acquisition of new and refined materials, creation of their cost-effective technologies, repair and reconstruction of buildings and structures. Perfection of production methods and effective use of materials in this process are important issues

KEYWORDS

INTRODUCTION

It is desirable to increase the use of agricultural waste, which provides a valuable product in the optimal production. But at present there is such a situation that due to certain reasons, it seems that there is no possibility to use the exhausts of this direction, which are burning and polluting the air. The amount of flax and hemp core waste that is not used annually is 0.9 mln. t., cotton stalk - 2-2.5 million. t. constitutes. This agricultural waste can be used in the production of building materials. In regions with limited wood resources, non-agricultural waste for the production of building materials is of great interest. Extensive research is being conducted in the Republic of Uzbekistan to study the possibility of producing arbolite with organic fillers. In addition to wood waste, shredded cotton, hemp stalks, rice husks and flax seeds can be used in them. The developed arbolite is resistant to bio-effects, difficult to burn, has good heat and sound insulating properties, can be easily processed with a cement mixture, cut and nailed. The average density of heat-insulating products is 300-400 kg/m³, structural-heat-insulating products - 400-800 kg/m³. Arbolite (from Latin arbor-tree and Greek lithos-stone) is a kind of lightweight concrete building material. It is made from organic fillers (crushed cane, hemp, cotton stalks, rice husks and similar wastes), binder (portland cement, slag alkali binder, etc.) and water.[3] In order to mineralize the filler and accelerate the hardening of cement, calcium chloride, sulfur-fermented alumina together with lime or other additives are added to the mixture. The average density of wood-cement slab mixture is 400-700 kg/m³. Wall blocks, panels for the construction of low-rise residential, public, industrial and agricultural buildings from arbolite. plates and the like are made.

As an example, we would like to give an example of the products of the VELOKS company in Austria, made on the basis of wood waste used as insoluble Opalubka. These include:

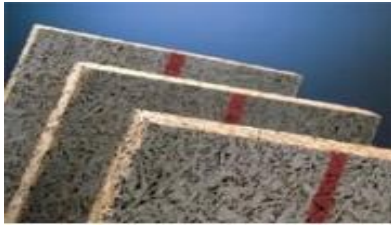


Figure 1.1. Wood-cement slab; Standard dimensions are 2000x500x35mm[4]

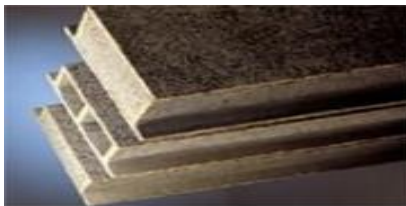


Fig. 1.3. A medium-sized plate with a gap; standard dimensions; 2000x500x170mm [4]

1.



Fig.1. 2. Wood-cement slab with insulation layer; standard dimensions; The size of polystyrene foam is 2000x500x135mm; 2000x500x100mm [4]



Figure 1.4. Wood-cement block standard dimensions; 190x190x390mm[4]

Cement and wood chips are among such materials. The difference from arbolite is that high pressure is used to obtain material in the form of a plate, and these materials are widely used as a coating. These plates are resistant to the biological environment, cold and fire, have good sound and heat conduction properties, and are easy to nail. Especially in rural areas, the use of wood-cement slabs in the construction of low-rise buildings is very effective from an economic point of view. It is divided into classes according to compressive strength, and for products and constructions, it is divided into brands. Depending on the conditions of use and the climatic conditions of the construction district, the specific type of wood-cement boards is accepted in accordance with the design conditions of the cold resistance brand and the standard for the specific product. or specification must be specified.

Table 1.1. The average density of plates depending on the type of filler[16]

type of wood cement board	Compressive strength class	Brand for axial compressive strength	Average density of arbolite by type of organic filler, kg/m ³			
			ground stalks	cotton	hemp	ground rice husk
heat insulator	B 0,35	M5	400-500		400- 450	500
	B 0,75		550-650		550- 650	600-700
	B1	M15	500		500	-
construction	B 1,5		550-650		550- 650	600-700
	B 2	M25	600-700		600- 700	-
	B 2,5	M35	700-800		-	-
	B 3,5	M50	-		-	-

The following materials are used to make the products we want to produce: Mineral binder (portland cement, Portland cement with mineral additives, sulfate-resistant Portland cement, etc.) binders not smaller than 400 brand. mineralizer is added to the arbolite mixture to eliminate the effect of water-soluble substances that slow down the setting and hardening process of cement and reduce the strength of the material: calcium chloride, liquid glass and sulphurous alumina lime. Other chemical additives are also included.

Wood-cement board is the best substitute for building bricks, because it is an economical, environmentally friendly material that can save 2.5 times more energy when used as a wall material. The environmentally friendly material is characterized by strength, biological resistance, low density, low thermal conductivity, easy processing, good nailing and high fire resistance. Wood cement boards have been created in European countries in recent years and passed all technical tests. tgan, as well as standardized and certified. Previously, it was not widely used in house construction due to the construction of large prefabricated houses, and its energy efficiency, heat preservation, and sound absorption properties were not taken into account.

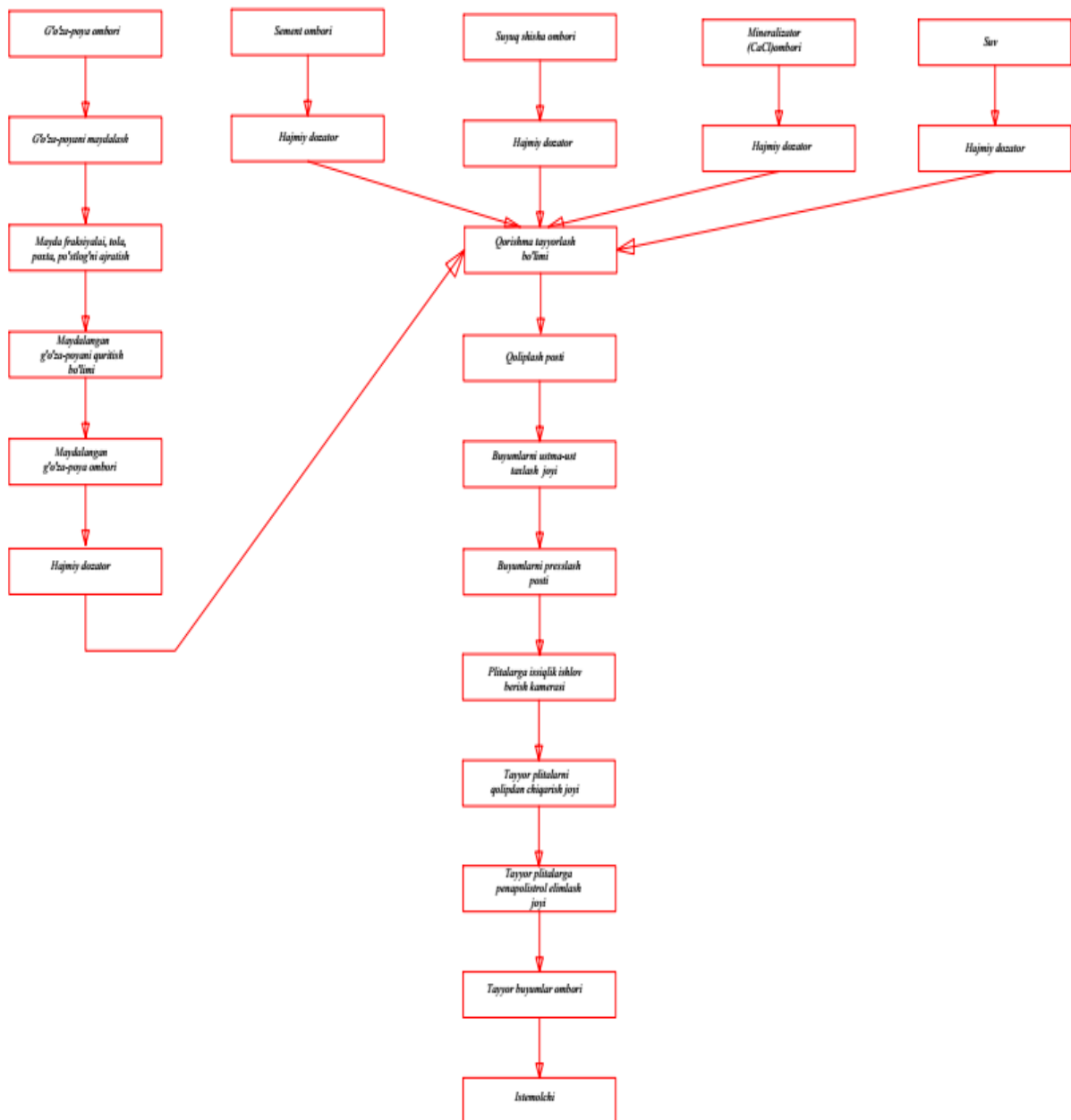
The production and use of cement and wood-based slabs has a number of advantages compared to traditional building materials: the mass of the building is reduced, the heavy work in the construction of the building is reduced, the consumption of cement and sand per 1 m³ is reduced by 2.5 times, my construction the thermal resistance is high. The important properties of wood-cement boards have a large pore structure, providing good air exchange in the room and reducing energy consumption for heating and ventilation of the building, providing high thermal performance. There is no need for additional external heat and sound insulation. Due to the large amount of cement in the composition of these plates, they belong to the category of hard-to-burn and anti-fungal materials. In private construction, the effect of building a load-bearing wall from medium-sized plates and blocks is quite noticeable: at a wall thickness of 390 mm, an average of 60% of wall material is saved. in unfavorable climatic conditions, costs for heating (cooling) the room are reduced by 2.5 times. Walls made of the above materials are well finished with traditional and modern finishing materials. Wood-cement products can be used as a heat-insulating material for umbrellas and load-bearing walls and partitions, as well as walls, partitions and roof coverings in buildings of various purposes. In addition, arbolite saws well, a simple hand drill is easy to drill, nails well and holds nails well. At the same time, its disadvantage is that it absorbs water well. It is not recommended to use arbolite in rooms with humidity above 70% (laundry room, bathhouse, sauna). The porous surface of wood-cement panels should be kept moist.

Advantage. High thermal insulation: concrete is known to be a strong, durable and fire-resistant material. But since concrete is monolithic, its heat-insulating properties are poor, that's why heat-insulating materials are used for concrete walls and ceilings. It is known that all heat-insulating materials are porous in structure, the smaller the pores, the higher the heat transfer properties. Arbolit is a porous material, the heat transfer qualities are high due to the pores and organic fillers in it. Arbolite boards with an average density of 400, 450, 500 kg/m³ can be used for thermal insulation.

Durability. Cement and crushed wood slabs are one of the types of light concrete. they can be used not only as heat-insulating materials, but also as structural heat-insulating materials with a strength of 7-35 kg/cm², as well as reinforced ones. It should also be taken into account that as the strength of

the material increases, its density also increases, porosity decreases, which means that the thermal conductivity indicators also deteriorate. [3].

Sement va maydalangan g'o'za-poya asosli plita iahtlab chiqarish korxonasining texnologik jarayon sxemasi



Bibliography

1. Turapov, F. K. (2022). USE OF HEAT INSULATION WALL MATERIALS IN CONSTRUCTION. *American Journal of Technology and Applied Sciences*, 5, 27-30.
2. Турапов Ф. Х. КИМЁВИЙ ҚЎШИМЧА “Beton strong-17” НИНГ ПОРТЛАНДЦЕМЕНТ ФИЗИК-МЕХАНИК ХОССАЛАРИГА ТАЪСИРИНИНГ ТАДҚИҚИ //Spectrum Journal of Innovation, Reforms and Development. – 2022. – Т. 8. – С. 268-269.
3. Khursanovich, T. F. (2022). Dry construction mixed for foam concrete. *Academicia Globe: Inderscience Research*, 3(05), 201-204.
4. Турапов, Ф. Х., & Холтаева, А. К. (2018). Исследование влияния суперпластификаторов на физико-механические свойства бетона. In *Проблемы геологии и освоения недр* (pp. 477-478).
5. Abduhalimzoda, Abdurahimov Abdugarim. "TECHNOLOGY OF PREPARATION, TRANSFER AND PLACEMENT OF FILLING MIXTURES." *Galaxy International Interdisciplinary Research Journal* 10.11 (2022): 1098-1101.
6. Абдуҳалимзода, Абдурахимов Абдукарим. "СУПЕРПЛАСТИФИКАТОР ҚЎЛЛАБ ТЎЛҒАЗУВЧИ ҚОРИШМАЛАРНИНГ ХОССАЛАРИНИ ЯХШИЛАШ." *Spectrum Journal of Innovation, Reforms and Development* 8 (2022): 250-254.