

## WAYS OF UTILIZATION OF SLUDGE RESERVOIRS IN UZBEKISTAN WITH PRODUCTION OF BUILDING MATERIALS

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**Аннотация:** В данной статье приведены сведения о производстве керамического кирпича в условиях Узбекистана и показаны сырьевые проблемы высококачественного доступного сырья. В частности, при производстве керамического кирпича по разработке составов керамических масс для получения кирпичей на основе различных классических сырьевых материалов, а также нетрадиционного сырья. Для этих целей предложены новые нетрадиционные сырьевые ресурсы-донные отложения водохранилищ. Изучены физико-химические и керамико-технологические свойства. Приведены пути повышение качественных характеристик керамической массы с

модифицированием другими легкодоступными сырьевыми материалами. Экспериментами установлен такой подход позволяет повышать морозостойкость и другие качественные показатели получаемого продукта.

**Ключевые слова:** водохранилище, донные отложений, глинистые илы, керамическая масса, лёссовидная суглинка, аргиллитоподобная глина, минерализатор, высокотемпературный обжиг, морозостойкость, механическая прочность.

**Abstract:** This article provides information about the production of ceramic bricks in the conditions of Uzbekistan and shows the raw material problems of high-quality affordable raw materials. In particular, in the production of ceramic bricks for the development of compositions of ceramic masses for the production of bricks based on various classical raw materials, as well as non-traditional raw materials. For these purposes, new non-traditional raw materials are proposed - bottom sediments of reservoirs. The physicochemical and ceramic-technological properties have been studied. Ways are given to improve the quality characteristics of the ceramic mass with modification by other readily available raw materials. Experiments have established this approach allows you to increase frost resistance and other quality indicators of the resulting product.

**Keywords:** reservoir, bottom sediments, clay silts, ceramic mass, loess-like loam, argillite-like clay, mineralizer, high-temperature roasting, frost resistance, mechanical strength.

At present, for the industry of ceramic building materials of the Republic of Uzbekistan, the issue of a significant expansion of the raw material base and the search for new sources of mineral raw materials is relevant. Uzbekistan is in great need for affordable, high-quality, efficient raw materials for the production of ceramic building materials. The solution of these problems is inextricably linked with the use of new

mineral raw materials, secondary raw materials, as well as various waste products, instead of the natural raw materials used.

In this regard, the purpose of this work is to use the mineral-silty bottom sediments of the Pachkamar and Chimkurgan reservoirs of Uzbekistan, as well as kaolin waste to develop and optimize new compositions of ceramic masses for the production of building ceramics. At the same time, it should be noted that, using silt deposits, it is possible to reduce the consumption of traditional mineral resources, as well as solve economic and environmental problems.

Rezume: Currently, for the ceramic building materials industry of the Republic of Uzbekistan, the issue of a significant year of expanding the resource base and finding new sources of mineral raw materials is topical. Uzbekistan is experiencing a great need for affordable, high quality efficient raw materials for the production of ceramic building materials. The solution of these problems is inextricably linked with the use of new mineral raw materials, secondary raw materials and various wastes instead of natural raw materials used. In this regard, the purpose of this work is to use the mineral-clayey bottom sediments of the Pachkamarsky and Chimkurgan reservoirs of Uzbekistan as well as kaolin waste to develop and optimize new compositions of ceramic masses for building ceramics. It should be noted that using silty deposits can reduce the consumption of traditional mineral resources and also solve economic and environmental problems.

The solution of these problems is inextricably linked with the use of new raw materials, secondary raw materials, as well as various wastes, in particular sludge, instead of the natural raw materials used.

The solution of these problems is associated with a comprehensive study of the physicochemical and technological properties of silt sediments - mineral silts in the examples of the Pachkamar (Pvh), Chimkurgan (Chvh) and Kattakurgan (Kvh) reservoirs of the Republic.

It is known that the development of irrigated agriculture and hydrotechnical construction in Uzbekistan has led to the creation of more than 25 large and small

reservoirs. The extraction and processing of their silty bottom sediments can become an economically viable way to solve the problem of resource conservation. Reservoirs are located mainly in densely populated areas with a fairly developed infrastructure. In addition, the population widely uses raw bricks in the construction of various structures.

Based on the foregoing, it can be said that using silt deposits for the production of building ceramic materials, in particular bricks, it is possible to reduce the consumption of traditional mineral resources, as well as solve economic and environmental problems.

The silty sediments of reservoirs contain stones and shells, which are removed before processing. During extrusion, delamination can occur, which, in particular, is observed in the presence of sand grains of uniform size in the mass.

Conducted by the authors of this work, it is shown that waste from reservoirs - bottom sediments - is of undoubted interest as a ceramic raw material. Chemical and mineralogical studies have established that the bottom sediments of the described reservoir are represented by silty clays of montmorillonite - hydromicaceous composition. Mineral composition, (%): clay minerals - 42.89; quartz - 18.67; calcite - 14.35; dolomite - 12.93; feldspars - 4.39; rutile - 1.96; chlorite - 4.30.

As a result of a comprehensive study of the chemical-mineralogical, granulometric composition, physico-chemical, physical-mechanical and ceramic-technological properties of silt sediments of reservoirs, it has been established that they are not inferior to classical loess and loess-like loams in terms of their index.

Thus, the use of silt from the reservoirs of Uzbekistan significantly expands the raw material base, at the same time improves the quality of the products obtained, and therefore they can be widely used in the industry of ceramic building materials for various purposes.

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