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USE OF PRE-TREATED INDUSTRIAL WASTE IN THE CONSTRUCTION INDUSTRY

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Анотація. В результаті проведених аналітичних досліджень встановлено, використання у будівельній галузі попередньо підготовлених промислових відходів дасть можливість значно зменшити частку використання природної сировини та покращити - екологічну та економічну ситуацію в Україні.

As a result of the conducted analytical studies, it was established that the largest amount of industrial waste is generated by enterprises of the mining, metallurgical and thermal power industries. Man-made industrial waste disrupts the ecological balance in the natural environment and is a source of environmental pollution [1-2].

The use of industrial and household waste in the construction industry will allow solving the ecological, economic and social situation in Ukraine [3].

One of the most widespread wastes in the Vinnitsia region is the ash removal of the Ladyzhinsky TPP. The use of sand in concrete and mortar has a positive effect on the main physical and mechanical properties. First, the average density of construction products decreases compared to products made of natural raw materials. Secondly, due to the significant hydraulic activity of the soil, the term of heat treatment is reduced and 10-15% of cement is saved [4]. The replacement part of the cement is ash, which leads to a decrease in the water consumption of the concrete mixture [5]. The moderate content of ash in the mixture increases the waterproofing of concrete, which is due to the hydraulic properties of the ash, improves the granulometric composition of the concrete mixture, and reduces the open porosity of concrete [6-7].

The second widespread industrial man-made waste is the red sludge of the Mykolaiv Alumina Plant. A very important feature of red mud is its alkaline reaction and finely dispersed structure. Also, red mud is characterized by a constant chemical composition, which is very important for its use.

VNTU scientists proposed to use fly ash as an active mineral additive. Such an additive can be obtained after chemical activation of the ash with a solution of red mud. The efficiency of ash activation depends on the chemical destruction of the inert surface. The activation of ash leads to an increase in the adhesion strength of the cement stone with the filler, which leads to an improvement in the basic performance properties of building products. The authors in their studies [8-9] found that the water absorption of concrete on activated ash decreases depending on the activity of the alkaline medium of the red mud solution.

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