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Economic and Environmental Aspects of the Production of Building Materials Based on Industrial Waste

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ABSTRACT. In this article analyzed saving money, valuable natural resources, providing the industry with cheap slag alkali cement, solving environmental problems, the main components for the production of slag alkali cement, the use of waste, the main raw materials for the production of waste from the metallurgical and chemical industries.

KEYWORDS: waste, slag, alkali, cement, production, components, compressive strength.

I.INTRODUCTION

The relevance of the topic is the high growth in the use of building materials and products based on industrial waste. The use of waste - it saves labor, money, natural resources.

Firstly, waste disposal allows solving environmental problems, liberating valuable land, alienated for dumps and sludge storages, and eliminating harmful emissions into the environment.

Secondly, industrial by-products to a large extent cover the need for a number of processing industries for raw materials, and in many cases high-quality, subjected to primary processing in the production process.

Due to the increase in gas prices, the cost of Portland cement has grown and continues to grow. There is an opportunity to solve the problem of providing the building materials industry with cheap slag alkali cement, which, in some respects, surpasses the currently used cements.

Compressive strength, depending on the type of alkaline components used, can be obtained up to 150 MPa (1500 kg / cm²) - steel 3 has a strength of 2100 kg / cm².

Frost resistance of slag-alkali cement is 1000 cycles of freezing and thawing (the best cements have 300 cycles). All other characteristics correspond to state standard specifications for cements.

II.METHODS OF RESEARCH

The main raw materials for production are waste from the metallurgical and chemical industries. Cement is obtained by grinding granulated slag or ash from thermal power plants with additives of alkali metal compounds - sodium or potassium, which give an alkaline reaction in aqueous solutions. The main component for the production of slag alkali cement is ground slag with a specific surface area of 500 m² / kg or ash TPP.

The cost of its production, in comparison with traditional cement, is much lower, since gas is spent only on drying slag (in the production of traditional cement, gas is used for sintering clinker).

The entire range of building products and materials that are made from traditional Portland cement can be made from slag alkali cement.

The economic efficiency of the use of slag-alkali concrete in construction is determined, first of all, by the fact that their production does not need cements and special high-quality aggregates. About ¾ of these concretes may consist of local soil aggregates or by-products of the industry. Thanks to the use of local raw materials, there is no need for further transportation, leading to a significant increase in the cost of the final product. Economic efficiency, first of all, is expressed due to the fact that BSHV is produced 95% of slag, which significantly reduces the cost of BShV. Large reserves are available to expand the production of granulated slag. Granulated slags are products of high temperature processes and therefore contain a large supply of thermal and chemical energy. Therefore, there is a real possibility, without prejudice to the cement industry, to allocate part of the slag for its direct purpose for the production of slag-alkali binder. The most scarce component of slag-alkali concrete is the alkaline component.

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In addition to the direct economic effect that is achieved with the use of slag-alkali concrete, it should be borne in mind that slag-alkali concrete qualitatively differs from cement concrete in a positive way.

Thus, the listed properties of slag-alkali concrete: high density and strength, increased frost resistance and corrosion resistance, water resistance, low filtration coefficient allows them to be classified as materials with special properties and recommend them for use in special types of construction where corrosion-resistant concrete is required, as well as in irrigation and road construction in places where aggregates are not necessary for such concrete on Portland cement. Due to the fact that slag-alkali concrete is characterized by higher deformability than concrete on Portland cement, it is recommended to use shchBch for flexible structures. Reinforcing corrosion in these concretes is 1.7 - 2.0 times less than in Portland cement concrete. The same cement is indispensable in the manufacture of massive concrete structures, because when concreting these structures on Portland cement, the following problem arises: concrete during heat hardening generates heat (this process is called exothermy), the larger the mass, the higher the temperature (it can reach 80 ° C). Next is the process of cooling the structure, and if it is not controlled, then during sudden cooling, deformation cracks can form.

Industrial waste actively influences environmental factors, i.e. have a significant effect on living organisms. This primarily relates to the composition of atmospheric air. Gaseous and solid wastes enter the atmosphere as a result of fuel combustion and various technological processes. Industrial waste actively affects not only the atmosphere, but also the hydrosphere, i.e. water environment. Under the influence of industrial waste concentrated in dumps, slag dumps, tailings, etc., the surface runoff in the area where industrial enterprises are located is polluted. The discharge of industrial waste ultimately leads to pollution, which leads to a sharp decrease in its biological productivity and adversely affects the climate of the planet. Waste from industrial activities negatively affects soil quality. In the soil, excessive amounts of compounds harmful to living organisms, including carcinogens, accumulate. In the contaminated "sick" soil, degradation processes are under way, the vital activity of soil organisms is disrupted.

III.CONCLUSION

Consequently, rational solution to the problem of industrial waste depends on a number of factors: the material composition of the waste, its state of aggregation, quantity, technological features, etc. The most effective solution to the industrial waste problem is the introduction of non-waste technology. The use of waste - it saves labor, money and natural resources. By replacing building materials obtained from natural raw materials, one can obtain an economic effect in the national economy. Increasing the level of use of industrial by-products is the most important task of national importance.

Talking about the problem of industrial waste, we would like to remind once again that the priority is given to the protection of the environment and public health, which enterprises could save by using free production waste instead of expensive natural raw materials.

REFERENCES

1. V.D. Glukhovsky. Slag-alkali binders and fine-grained concrete based on them. Textbook. Ph. Stroyizdat. 2016.
2. A.A. Tulaganov Fundamentals of non-calcined alkaline binders and concrete.2017.14 p