

**ON THE PRODUCTION OF REFRACTORY CEMENTS
BASED ON ALKALINE EARTH ALUMINATES**

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The development and introduction of new types of functional materials based on refractory cements is currently a promising task for the cement industry, given the deteriorating environment and the increase in crisis situations associated with high operating temperatures. To create such cement compositions, it is necessary to ensure enhanced technical properties of the resulting materials: strength, refractoriness, durability, and the ability to operate at high temperatures. In recent years, special attention has been paid to the development of binders based on substandard raw materials and chemical waste, which will reduce the cost of the final product and expand Ukraine's raw material base, as well as partially solve environmental issues in the country's industrial regions. Therefore, when studying modern resource-saving technologies using waste as a feedstock, attention is paid to the stability of waste indicators, and it is also taken into account that each type of complex raw material has its own specific economic and technical application.

From the analysis of modern scientific and patent literature on the problem of creating refractory cements, it was determined that for the development of refractory materials based on alumina cements using resource-saving technology when replacing the original raw materials with substandard raw materials, there is a need for a physicochemical substantiation of the coexistence of phases in the composition of the binder, which necessitated the study of the structure of multicomponent oxide systems [1].

The study of a system $(\text{Ba}, \text{Sr})\text{O} - \text{Al}_2\text{O}_3$ based on alkaline earth aluminates is determined to be promising in this aspect. The most thermodynamically stable compounds in the system under study were theoretically determined, and the maximum probability of their existence was determined. These developments can be used in fundamental studies of multicomponent systems, principles of predicting the properties of new refractory non-metallic materials of a given structure and phase composition obtained by targeted synthesis.

On the basis of theoretical studies, the possibility of synthesizing materials for the manufacture of refractory products for high-temperature units of various industries is considered, which also solves environmentally important problems of large-scale utilization of a wide range of waste.

References:

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2. Samchenko, S.V. Krivoborodov Y.R., Burlov I.Y. Usage aluminiferous waste in the production of aluminate cements // 17th International multidisciplinary scientific geoconference – SGEM 2017, Bulgaria, 2017. – vol. 17, issue 62. – pp. 465-472.