

УДК 691.311:691.54

ГРНТИ 61.35.33

#### **Direction of phosphogypsum utilization**

\* D. M. Kuzmenkov, N. M. Shalukho, E. V. Lukash, M. I. Kuzmenkov  
*Educational institution "Belarusian State Technological University",  
220006, Belarus, Minsk, Sverdlova str., 13a  
email: [310\\_chtvm@mail.ru](mailto:310_chtvm@mail.ru)*

An expedient direction of industrial waste disposal is their use in the production of large-tonnage construction materials, which allows up to 40% reduction in the cost of material resources used in their production. In the cement industry, waste from related industries is widely used – instead of natural carbonate and clay raw materials, aluminosilicate technogenic products (slags, ash, etc.) are used. In Russia in the 1980s, the share of waste in cement production reached 26%. For the production of 83 million tons of cement from 137 million tons of raw materials, 36 million tons were replaced with waste. Currently, this indicator has decreased to 15–17% for various reasons. This also applies to phosphogypsum, given that its annual output in Russia is about 1.5 million tons, and according to [1] to date, about 430–430 million tons have accumulated in the dumps of enterprises. The development of the physico-chemical foundations of the technological process of obtaining cement clinker from phosphogypsum is attractive from the point of view of resource conservation. Traditionally, calcium carbonate (limestone, chalk, marl, etc.) is used as a raw material component providing the formation of CaO, which is involved in the formation of all clinker minerals (C3S, C2S, C4AF and C3A). Thermal analysis of furnace units operating on a "classical" raw mixture shows that approximately 96% of the heat, formed from the combustion of fuel in the furnace unit, it is spent on the process of decarbonization of calcium carbonate. In this regard, the use of phosphogypsum instead of "classical" raw materials is promising from the point of view of resource conservation.

#### **Список литературы**

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