

## POSSIBILITY OF PRODUCING SINTERED FINE POROUS GRANULATED CERAMIC FILLER USING ASH OF THERMAL POWER STATIONS IN COMBINATION WITH CLAY ROCKS

SARSENBEK ALIAKBARULY MONTAYEV, NURGUL SARSENBEKOVNA MONTAYEVA,  
ALTYNAY BAKY TZHANOVNA SHINGUZHIYEVA, KARZHAUBAI ZHANABAEVICH DOSOV &  
MURATBAI ZHANAIDAROVICH RYSKALIYEV

*West Kazakhstan Agrarian-Technical University named Zhangir khan, Uralsk, Kazakhstan*

### ABSTRACT

*In localities where rocks for production of coarse and fine fillers are unavailable, it becomes necessary to develop innovative artificial materials based on processing of local nonconventional natural and manmade feed stocks. This work presents experimental studies devoted to development of sintered fine porous granulated ceramic filler based on ash of thermal power station in combination with clay rocks. Clay-ash ceramic composition has been studied. Ash content in this composition was from 10 to 30%. Granules of the ceramic composition were sintered in rotary kiln at 1,000°C. Main features of physico-mechanical properties of samples were studied as a function of ash content up to 30%. With addition of ash of Ekibastuz Power Station in amount from 10% to 30%, the strength of granules increases. Thus, at annealing temperature of 1,000°C, the strength increases to 12.4 MPa. Here with, the average density decreases and is from 1,250 kg/m<sup>3</sup> to 910 kg/m<sup>3</sup>. The obtained experimental data also evidence intensification of sintering and crystallization in ceramic pastes containing ash of Ekibastuz Power Station. Samples without ash addition are characterized by dense sintered structure with insignificant micropores. Granules with ash addition to 30% are characterized by developed sintered porous structure. It has been established that keramidor materials based on the considered composition are characterized by strong microporous structure after annealing. In addition, ash of Ekibastuz Power Station in the ceramic paste exerts favorable influence on heat conducting properties of sintered microporous granulated ceramic filler, which makes it possible to use them as material, increasing energy efficiency of buildings and structures. The use of ash in ceramic paste for production of granulated sintered microporous material allows improving environmental protection, partially.*

**KEYWORDS:** *Ash, Ceramic Composition, Granulated Fine Porous Ceramic Filler, Burning, Rotary Kiln & Crystalline Phase*

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