

# Granulation Characteristics Study of Silicate Mass Charge Mixtures

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*Abstract – The conditions and parameters of granulation of powdered silicate materials are considered in this work. The method of determining the strength of granular materials is proposed.*

Keywords: polymineral clay, granulation, granulated glass-ceramic material, speed-range mode, optimal rotational frequency, strength

## Introduction

The development of new materials of different nature with stable operational properties involves the manufacture of products of various shapes and types on their basis. One of these materials is foam glass, which is characterized by reliable performance indicators and is made in the form of blocks and friable granules. The granular foam glass can be used as a friable heat-insulating filler of building technical constructions and in industry. Raw materials for the production of such products are broken glass, a foam generator of diverse nature, and a wide range of adhesives of diverse nature [1].

The compilations of this material, developed by us, are made from the charge compositions of the fracture system of glass-zeolite-containing component-clay [2,3]. The role and content of such components and their influence on the process of material polishing are studied in detail [4].

However, the issue of granulation of these materials requires further study. The granulation was carried out using a laboratory drum granulator with an inner diameter ... and a length of ... mm.

It has been established that the optimal rotational frequency was chosen based on the condition of material granulation due to its rolling in the second quadrant while rotating the drum counterclockwise, equals to [rpm]:

$$n = \frac{8 \div 14}{\sqrt{r}} \quad (1)$$

where, r - radius of the interior of the granulator, m.

It has been established that the productivity and granulometric composition of the product depend on the charge, the fineness of its grinding and humidity.

The comparative strength of the granulate is proposed to be evaluated according to the intensity of the abrasion of dried granules when they are rotated in a laboratory ball mill for weight loss on a control sieve. The duration of the process is correlated with the conditions of their correction in a rotating kiln.

It has been established that the local highly plastic clay of the Yavoriv deposit in the amount of 15-25 % by weight promotes the process of granulation and increase the strength of the semi-finished product.

Thus, in the course of the work, the technological parameters of granulation of the developed charge mixtures were established, and a method for monitoring the strength characteristics of the granulate has been suggested.

## References

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