TECHNIQUE AND TECHNOLOGY OF SILICATES

INTERNATIONAL JOURNAL OF BINDERS, CERAMICS, GLASS AND ENAMELS

Vol. 23, no. 3 **July – September, 2016**

Article 1

Volokitin O. G., Vereshchagin V. I., Volokitin G. G., Skripnikova N. K., Shekhovtsov V. V.
Process analysis of traditional and plasma power plants ashes melting
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Key words: ash wastes, silicate melt, electroplasma installation

Abstract

Work is devoted to research processes of the combined heat and power plants proceeding at traditional and plasma melting of ashes. Calculation number of fusion change when melting ashes in the plasmochemical reactor taking into account her chemical composition is made by method of consecutive melting of eutectics.

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Article 2

Niyazbekova R. K., Shansharova L. S.
Advantages of using slags in the silicate material technology
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Key words: silicate materials, cement, industrial slag, cement water separation, X-ray analysis

Abstract

This article examines the prospects for the use of slag in cement production. The chemical and mineralogical composition of the slag of black, non-ferrous metallurgy were analyzed. The necessity of the use of blast furnace slag and an alkaline ash are revealed. The paper also used acidic and basic steel slag smelting plant. On the basis of research by the author proposed for the possibility of applying the basic and acidic steelmaking slag to produce glass-ceramic materials. The resulting composition can be recommended for obtaining wear-resistant materials.

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Article 3

Mulevanov S. V., Nartsev V. M., Beinarovich O. F., Gavrikova I. N.
The study of the structure of the original glass to produce silica fibers
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Key words: structure of sodium silicate glasses, silica fiber, phase inhomogeneity, metastable phase separation, coexisting phases, lever rule, the chemical composition, volume nucleating agents, scanning electron microscopy

Abstract

A feature structure of sodium silicate glasses that are used as raw to produce silica fibers by leaching technology is inhomogeneity having a crystalline nature. Recalculation of the full glasses composition (N 23 and N 11) was made into system with two components ($Na_2O–SiO_2$). Both glass compositions are in close proximity to alkaline border of metastable phase separation region. This region can actually be wider than the detected optical methods. The calculation by lever rule of compositions of coexisting glass phases for glass N 11 is shown that highly cationic phase forms a matrix and silica forms drops, which are the nuclei of bulk crystallization.

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Article 4

Strokova V. V., Baskakov P. S., Mal'tseva K. P.
The development of enamel with a stable silver nanoparticles applied for using with cement-lime plasters
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Key words: silver nanoparticles, water enamel, polymer dispersions, stability, biocide

Abstract

This article describes methods of producing biostable enamels, both traditional and based on the silver nanoparticles usage. Provide high bioactivity of nano silver in low concentration in the enamel (0.05%) requires their stability and chemical resistance. The possibility of using SNP (Silver Nano Particles) in composition of acrylic dispersion, followed by application to the cement-lime plaster and alkaline secretions inhibition.

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Article 5

Min'ko N. I., Yakh'ya M., Dobrinskaya O. A.
Influence of impurities in the quartz-feldspar sand glass quality
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Key words: silica sand, minerals-impurities, the glass composition, concentration, magnetic separation

Abstract

The results of studies of impurities in the quartz-feldspar sand, their impact on the quality of the glass. It was found that the impurity minerals do not form a «stone» as a part of container glass and other gaseous inclusions, but causes intense color, which can be reduced by enriching the sand magnetic separation method. This sand can be used in a batch painted glass and glass ceramics.

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Article 6

Kutugin V. A., Lotov V. A., Revenko V. V.

Foam glass based on natural and amorphous waste silica

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Key words: foam glass, hydrothermal synthesis, resource efficiency

Abstract

The article presents the results of research in the development of resource-efficient technologies of foam glass – a unique insulation material. It is shown that the proposed method of obtaining foam glass materials offers significant advantages over traditional foam glass technology.

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