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## Article 1

**Nesterov D. P.**

### **Interaction of silicate minerals of various structure with ammonium hydrodifluoride**

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**Key words:** fluoridation, ammonium hydrodifluoride, silicate minerals, ammonium fluoride salts

### **Abstract**

The reactions of interaction of various silicates with ammonium hydrodifluoride using methods thermogravimetry, X-ray diffraction, scanning electron microscopy, IR spectroscopy and chemical analysis are studied. The kinetics of fluoridation of minerals is determined.

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## Article 2

**Smoliy V. A., Kosarev A. S., Yatsenko E. A.**

### **Dependence of the reaction and foaming ability of compositions organic and inorganic porous steam generators of cellular heat-insulating construction glass material from their ratio and properties**

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**Key words:** resource-saving, cellular heat-insulating construction glass material, organic and inorganic porous steam generators, reaction and foaming ability

### **Abstract**

Results of studies of dependence of the reaction and foaming ability of compositions organic (glycerin) and inorganic (liquid glass, carbon and carbonate materials) porous steam generators from their ratio and properties are given. For this purpose were defined and estimated coefficients of foaming and

porization of a number of samples. The best foaming pores structure was composition «liquid glass – glycerin». Samples obtained with its use, characterized by density about 200 kg/m<sup>3</sup>, coefficients of foaming and porization 5–6 and large evenly distributed pores, which is a sign of good insulating properties.

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## Article 3

**Ivanov N. K., Ivanov K. S., Radaev S. S.**

### **Degree of polycondensation and alkalinity of water glasses**

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**Key words:** water glass, polymerization, polymer composition

## Abstract

The article is devoted to the development of ideas about polymer composition of silicate anions in water glass. On the base of sequential reactions of hydrolysis and growth scheme the estimated equation to determine the average degree of polycondensation of silicate anions is obtained. The method of determination of hydroxyl anions concentration on the known SiO<sub>2</sub> concentration values and water glass silica modulus for convenience of usage of the equation is offered.

Issues considered are of interest for explanation of structure formation processes in alumina-silicate disperse systems with additives of sodium silicate solutions.

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## Article 4

**Krivoborodov Yu. R., Elenina A. A.**

### **Hardening of cement stone with microfine additives**

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**Key words:** cement, microfine additives, hydration, hardening, strength

## Abstract

The possibility of activation hardening of cement stone by the use additives containing analogs of cement hydration products is investigated. Such additives increase the strength of cement at all stages of hardening.

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## Article 5

**Elesin M. A., Berdov G. I.**

### **Hydration of Portland cement minerals in lime and sulfur mixing**

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**Key words:** Portland cement, alite, belite, alumina ferrite, lime and sulfur mixing, mechanical strength

## Abstract

Interaction of Portland cement minerals (alite, belite and alumina ferrite) with lime and sulfur mixing is investigated. It is established that during hydration of minerals the maintenance of SiO<sub>2</sub> in a liquid phase increases, hydration process is accelerated. Use of such mixing with concentration of sulfur to 180 g/l allows to increase the strength of cement materials on 20–40%.

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## Article 6

**Gordeev E. V., Zakharova N. A., Indeykin E. A.**

**Determination of the cement gel parameters using pycnometric method**

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**Key words:** cement gel, concrete, pycnometric method, density of gel, singular points, water-cement ratio

## Abstract

The simple experimental method of determining the parameters of cement gel based on pycnometric measuring its density is considered. The possibility of determining of the self-stratifying beginning and normal consistency of cement paste as the singular points of pycnometric characteristic is established.

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