

TECHNIQUE AND TECHNOLOGY OF SILICATES

INTERNATIONAL JOURNAL OF BINDERS, CERAMICS, GLASS AND ENAMELS

Vol. 21, no. 4

October – December, 2014

Article 1

Berdov G. I., Zyryanova V. N., Ilyina L. V., Nikonenko N. I., Sukharenko V. A.
Interfacial interaction and mechanical strength of the composite binding materials. Part 2. Cement materials

Berdov G. I., Doctor of Technical Sciences, prof., *Zyryanova V. N.* (vnzyr@mail.ru), Doctor of Technical Sciences, prof., *Ilyina L. V.*, Doctor of Technical Sciences, prof., *Nikonenko N. I.*, engineer, *Sukharenko V. A.*, engineer, Novosibirsk State University of Architecture and Civil Engineering (Sibstrin)

Key words: cement materials, mineral microfillers, mechanical strength, water resistance, frost resistance

Abstract

Mineral microfillers (wollastonite, diopside, limestone flour, etc.) contribute to strengthening the structure of hydration products of inorganic binders (Portland cement, magnesium binders). This improves the most important properties of building materials: mechanical strength, frost resistance, water resistance, chemical resistance. The optimal number of microfillers depends on their dispersion and decreases with increase it.

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Article 2

Kotlyar V. D., Ustinov A. V., Terekhina Yu. V., Kotlyar A. V.
Features of the burning process of coal slurries in the production of wall ceramics

Kotlyar V. D. (diatomit_kv@mail.ru), Doctor of Technical Sciences, *Ustinov A. V.*, postgraduate, *Terekhina Yu. V.*, assistant, *Kotlyar A. V.*, postgraduate, Rostov State University of Civil Engineering

Key words: waste coal, coal slurries, burning, temperature, wall ceramics, processes, minerals, strength

Abstract

The prospects of using coal slurries Eastern Donbass in the production of wall ceramics to reduce the density of products and reduce gas spending on burning. Knowledge of the processes occurring during the burning of coal slurries, allows to optimize the burning mode to achieve maximum energy-saving effect and obtain products with desired properties.

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Article 3

Pshenichnyy G. N., Galkin Yu. Yu.
On the mechanism of creep of cement concrete

Pshenichnyy G. N. (pgn46@mail.ru), Candidate of Technical Sciences, *Galkin Yu. Yu.*, postgraduate, Kuban State Technological University

Key words: cement hydration, the staging process, microconcrete, creep, residual surface-active zone

Abstract

Until now, no quite a full understanding of the physical essence of creep deformation of cement concrete. The existing hypotheses, based on the physico-mechanical approach, do not reflect adequately the features of the process, making it difficult justification of choice of technological regimes to increase the operational reliability of structures. Based on the results of studies of the process of hardening cement systems, structure and properties of cement stone (concrete) concluded a significant role in the creep deformation of chemical transformations.

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Article 4

Sarkisov Yu. S., Shepelenko T. S., Gorlenko N. P., Afanas'ev D. A.
Corrosion as a factor in the degradation of materials

Sarkisov Yu. S. (Yu-s-sarkisov@Yandex.ru), Doctor of Technical Sciences, prof., Shepelenko T. S., Candidate of Chemical Sciences, Gorlenko N. P., Doctor of Technical Sciences, prof., Afanas'ev D. A., postgraduate, Tomsk State University of Architecture and Building

Key words: corrosion, degradation, metals, building materials, cement, concrete, thermodynamics, kinetics, synergetics, nonequilibrium materials

Abstract

Analyzed the most common factors of corrosion and degradation of materials, metallic and non-metallic nature. Corrosion should be considered as one of the factors in the degradation of materials. In accordance with the joint equation of the first and second laws of thermodynamics to manage these processes can be directed by adjusting thermal, chemical, electrical, surface and other kinds of transformations in the system itself or by external influences on it. Kinetic factors determine the rate of corrosion and degradation of materials. When choosing a method of corrosion protection is necessary to move from the principles of equilibrium to the concept of nonequilibrium materials science, using the methods of bionics, geonics and other basic sciences.

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Article 5

Krivoborodov Yu. R., Kataev S. A.

The influence of polymer additives on the properties of oil-well cements

Krivoborodov Yu. R. (ykriv@rambler.ru), Doctor of Technical Sciences, prof., Kataev S. A., postgraduate, D. Mendeleev University of Chemical Technology of Russia, Moscow

Key words: oil-well Portland cement, polymer dispersion, redispersible polymer powder, vinyl acetate-ethylene (Vac-E)

Abstract

The influence of polymer additives in the form of polymer dispersions and redispersible polymer powders based on vinyl acetate-ethylene on physico-mechanical properties of oil-well Portland cement is considered. It is shown the positive changes in the technical properties of cements with polymer additives. It was fixed that polymer additives promote the formation of polymer pellicles. They provide high adhesive and elastic properties of cement stone.

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