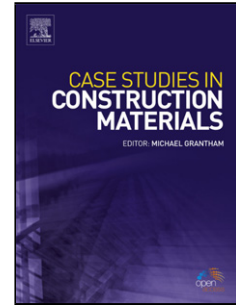


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DEVELOPMENT OF SOL-SILICATE COMPOSITION FOR DECORATION OF BUILDING WALLS

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Abstract

Information on the properties of liquid glass with the use of silica additives is given. It is shown that the addition of silica additives to a solution of liquid glass leads to an increase of silicate module. Formulations of silicate paints with the use of a sol silicate binder have been developed.

Keywords: liquid glass, coating, silicic acid sol, silicate module

1. Introduction

In the practice of finishing works have worked well silicate paint, which is the suspension of pigments and fillers in liquid potassium glass [1,2,3]. It is of interest to develop a recipe of silicate paints using liquid sodium glass, given the fact its lower cost. However, the use of liquid sodium glass does not provide the water resistance of silicate coatings. The need to address issues to develop and deploy in practice of new silicate paint materials required development of new approaches to developing of silicate paints. Poly-silicates is of interest for use as a binder for silicate paints, that ensure more high performance properties [4,5,6]. The poly-silicates are characterized by a broad range of degree of polymerization anions are dispersions of colloidal silica in an aqueous solution of alkali metals silicates.

The aqueous solution of sodium poly-silicate is an equilibrium mixture of silicate ions and negatively charged particles of colloidal silica with a size of approximately 5-20 nm, which provides improvement of the principal technical characteristics of silicate coatings [7,8].

2. The research methods

In the work poly-silicate solutions were obtained by the interaction of highly active forms of silica, e.g. colloidal SiO₂ particles sizes, mixing stable solutions of colloidal silica (sols) with aqueous solutions of alkaline silicates (liquid glass). We used the sol of silicic acid Nanosil 20 and 30, manufactured by PC "Promsteklotsentr". Silica powder characteristics are shown in table 1. Sodium silicate was used with the module M=2,78.

Given, that poly-silicate systems cannot withstand long-term storage, for their stabilization used lithium hydroxide. The binder was prepared as follows. In the first stage in an aqueous solution of potassium silicate (sodium) was injected portions of anhydrous lithium hydroxide. Mixing of each portion were doing out until complete dissolution (disappearance) of particles of the hydroxide of lithium, after which received solution was added with continuous stirring the sol of silicic acid.

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