

Surface phenomena in the film former on the basis of liquid glass

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Keywords: surface phenomena, liquid glass, protective and decorative coatings.

Abstract

The quality of the film former is characterized by such basic parameters as surface tension, contact angle of adhesion, adhesion strength. These factors influence the consistency of uncured protective and decorative material, the compressive and flexural strength, hardness and durability of the coating formed.

In our study we used a silicate coating based on liquid glass, being an inorganic film former, it has a number of advantages – it is environmentally friendly, both during the preparation and during the application, the cured by silicates at atmospheric action is able to form a strong weather- and chemically resistant coating, qualities (moisture-atmosphere and frost-resistance) is not fire hazardous, has a lower cost in comparison with organic paints, has antiseptic properties.

Dependences of the composition of the film former on surface phenomena such as surface tension, wetting contact angle, adhesion work, cohesion work, wetting action and wetting quality have been determined.

It is studied colloid-chemical properties of experimental uncured composite protective and decorative purposes for chrysotile-cement products. It was revealed that the composition of the uncured composition is 80-90 % wt. of potassium-sodium water glass with a mass fraction of 10% sodium glass and 10-20 % wt. latex Novopol-110 has a minimum value of the contact angle. The lowest surface tension have compositions containing 80-90 % wt. water-glass containing soda glass 5 and 10 % wt. Addition of sodium cation displaces maximum wettability coefficient downward latex content and increasing the proportion of the inorganic portion of the film former. It is recommended to use film-forming agent of protective and decorative coatings for chrysotile-cement containing 10-20 % wt. of the variance Novopol-110 and 80-90 % wt. of potassium-sodium water glass containing 10-20 % wt. sodium water glass.

As a result of the research, optimal compositions of the film former for the production of protective and decorative paints on the basis of potassium-sodium liquid glass and latex have been determined. It will improve the color characteristics of chrysotile-cement coatings and any mineral surfaces, as well as reduce the emission of tumorigenic products of destruction of chrysotile cement materials, import substitution of commercially available paints based on potassium liquid glass at the most affordable for the Russian consumer.

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