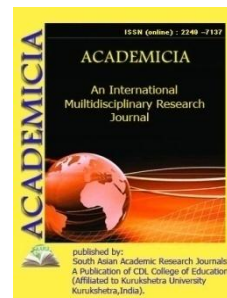




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CORROSION PROTECTION OF FOUNDATIONS OF BUILDINGS AND STRUCTURES

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ABSTRACT

Concrete and reinforced concrete structures are widely used in the construction and reconstruction of social and transport, communal infrastructure facilities of the country. They can decompose under the influence of an external aggressive environment during operation in buildings and structures. In addition, the lack of sufficient skills of some builders leads to errors in the construction of foundations, poor quality of waterproofing work. All this can lead to the acceleration of the erosion of foundations under the influence of mineralized groundwater.

KEYWORDS: *The Active Chemical Elements Of Mobet. As A Result, The Penetration. Mobet Material. However*

INTRODUCTION

An analysis of the condition of buildings and structures built over the years, including individual houses built on the basis of standard designs, revealed that this issue was not given good attention.

The design of standard houses does not take into account the natural and climatic conditions of a particular region, the impact of soils and groundwater mineralization on the foundations. In order to waterproof the foundations of houses, the projects envisage laying bitumen-soaked gravel on

the foundations and applying two layers of bitumen mastic to the surfaces of the foundations adjacent to the soil [1]. However, such measures, due to the strong mineralization of soils and groundwater in many parts of the country, do not provide adequate protection of the foundations of model houses under construction from erosion. In addition, the lack of sufficient skills of some builders leads to errors in the construction of foundations, poor quality of waterproofing work. All this can lead to the acceleration of the erosion of foundations under the influence of mineralized groundwater.

At present, foreign companies offer a number of waterproofing materials that protect brick, concrete and other stone materials from erosion under the influence of mineralized groundwater.

Such materials include leaking waterproofing material of the brand Mobet, produced by the Russian research and production company Antigidron [2].

When the foundation is treated with this waterproofing material, it creates a high chemical potential on the concrete surface, while the internal structure of the concrete retains a low chemical potential. The resulting osmotic pressure tends to equalize the difference between the potential values.

Using osmotic pressure, the active components of Mobet penetrate deep into the concrete structure. The water in the concrete helps the active chemical components to penetrate even deeper into the concrete body.

The active chemical elements of Mobet, which are deeply embedded in the concrete structure, react with calcium hydroaluminate ($3\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{H}_2\text{O}$) in concrete to form calcium hydro silicate ($2\text{CaO} \cdot \text{SiO}_2 \cdot \text{H}_2\text{O}$) and sodium aluminate ($\text{NaO} \cdot \text{Al}_2\text{O}_3$). Sodium aluminate in turn accelerates the hardening of concrete layers close to the absorption surfaces.

The water-insoluble calcium hydro silicate crystals formed during these reactions fill the pores, capillaries, and microcracks in the concrete, preventing the mineralized groundwater from penetrating the inner layers of the foundation (Figure). As a result, the water permeability and frost resistance of the concrete layer up to 150 mm increases several times.

The penetration depth of the active chemical components and the rate of crystal formation depend on many factors, including the porosity, density of the concrete and the concentration and temperature of the aggressive substance.



Picture. From processing of concrete structure with Mobet material previous (a) and subsequent (b) electronic images

Waterproofing materials of the series "Mobet" have the ability to reliably protect the concrete from the effects of mineralized concrete, groundwater and other aggressive substances with a pH of 4 to 11 for 50 years, as well as to achieve economic efficiency in waterproofing structures.

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