

REVIEW

scientific supervisor for the dissertation work of Tolegenova Aigerim Kairatovna «Development of the composition of monolithic concrete using chemical additives », submitted for the degree of Doctor of Philosophy (PhD) under the educational program 8D07305- «Civil engineering and production of building materials and structures»

Complex additives based on plasticizers and air-entrapping additives have recently been widely used. The use of these complex additives makes it possible to obtain high-strength and high-quality concretes with a low water-cement ratio and capillary porosity.

A wide range of complex additives contributes to the improvement of rheological and technological properties of concrete in various ways, but, as noted in a number of modern studies, there is no complete understanding of the mechanisms of their action and accurate rheological models.

Obtaining high-strength and high-quality cement concrete is possible with the purposeful formation of the cement stone structure, which is characterized by a low proportion of capillary pores and an increased content of hydrate neoplasms. Modification of cement concrete with complex additives is the most affordable and easiest way to significantly increase the efficiency of cement concrete and can be successfully used for these purposes.

In this regard, the production of complex additives based on plasticizers and air-entrapping additives and the study of their effect on the structure formation of cement compositions is an urgent and promising direction in the development of effective technologies for the production of modified concrete. Which are characterized by high performance and durability.

The author managed to study and link the dependencies of the influence of production waste on the improvement of the operational properties of fine-grained concrete. At the same time, interesting results were obtained, which prompted the author to the idea of controlling the characteristics of concrete by the optimal choice of concrete composition for creating structures in various fields of construction. Multicomponent monolithic concretes are increasingly being used, which in the past were not widely used due to their properties and structure.

Of particular value to the work are the results obtained by testing the possibility of obtaining a homogeneous fine structure of concrete, a wide range of technological applications, the possibility of using various mixtures with guaranteed consistency of composition and properties, the versatility of the material, which allows you to obtain various types of concrete by adjusting dosages, changing components and technological techniques.

The formulation of research objectives, the content and conclusions of the dissertation work are satisfactorily consistent with the fundamental principles of research.

The reliability and scientific novelty of the results obtained in the dissertation work is beyond doubt due to the novelty of the set goal and the tasks solved in the work.

The practical value of the work has been proven by the implementation of the results in production. The results of the work have been tested at seminars, at meetings of the Institute of Architecture and Construction of KazNRTU named after K.I. Satpayev, International and national conferences.

In the process of completing the work, the doctoral student showed exceptional diligence, independence and conscientiousness, which allowed him to complete his dissertation work during his doctoral studies.

I believe that the doctoral student Tolegenova A.K., as an established scientist, can independently set scientific tasks and solve them at a high scientific and technical level.

The dissertation work, in terms of the significance of the results obtained and the volume, meets the requirements of the Committee for Quality Assurance in the field of Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan for dissertations for the degree of Doctor of Philosophy PhD, and doctoral student Tolegenova Aigerim Kairatovna deserves to be awarded the degree of Doctor of Philosophy PhD under the educational program 8D07305 – «Construction and production of building materials and structures».

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