

Nanodispersed additive for composite binders based on technogenic raw materials of Iraq

Ahmed Ahmed Anees Ahmed

The economic development of the Arab states is characterized by such trends as industrialization and urbanization, population concentration in large cities, saving land, increasing the number of storeys of buildings. Population growth in developing countries is causing acute housing needs. One of the most promising modern building materials is concrete and reinforced concrete. The main components of concrete, as it is known, are a binder (cement), large and small aggregates. The creation of comfortable conditions is provided by the optimization of the "man-material-environment" system. The theoretical basis for the development of materials science is knowledge about geological processes and the genesis of rocks. The evolution of the development of binders goes along the way of complicating their composition and structure. In the development of materials science there is the process of controlling the structure formation of binders using nanodispersed additives. Nanodispersed additive is produced by grinding in various grinding aggregates of the silica-containing component, the cement, the carbonate constituents, superplasticizers, air-entraining additives, etc. The result is a very complex system. After we introduce a nanodispersed modifier in cements in an amount of 3 to 12%, they absolutely change the processes of structure formation. Thus, it was found that when adding a superplasticizer and a nanodispersed modifier, the compressive strength increases to 47% and the bending strength increases to 27%. The nature of the influence of the nanodispersed modifier on the properties of binders is established. Maintaining a nanodispersed modifier in the composition of Portland cement allows optimizing the process of structure formation of the component of a nanodispersed modifier and has a multifunctional value.