

Study of the Suitability for the Use of Gravel in the Regions around Araz River in Karabakh as a Concrete Aggregate

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Abstract : The physical, mechanical, and chemical properties of aggregates play an important role in the production of ready-mixed concrete. Furthermore, the alkali-silicate reaction of aggregates is one of the essential factors in construction projects for the durability and longer service life of buildings and construction structures to be built. It is necessary to use the aggregates from the liberated regions of Karabakh and East Zangazur in the preparation of concretes to be produced for reconstruction and renovation projects in those regions. In this regard, the study of the physical and mechanical properties of aggregates in the regions around the Araz River (Fuzuli, Jabrayil, and Zangilan) became a significant issue. So, gravel samples were taken from seven different sources located in the regions around Araz River, where the quarries are planned to be built. The chemical oxide composition of the samples was determined, water absorption and specific gravity tests, chloride, alkali-silicate reaction tests, aggregate crushing strength test, Los Angeles, and frost resistance (into the solution of $MgSO_4$ and Na_2SO_4) tests were performed, and the results were evaluated in accordance with the relevant standards. As a result, it was determined that the aggregates in the regions around the Araz River (Fuzuli, Jabrayil, and Zangilan) conform to the relative standards and can be used effectively in the production of various concretes to be used for the projects in Karabakh.

Keywords : aggregates of the regions around Araz River (Fuzuli, Jabrayil, and Zangilan), physical and mechanical properties, alkali-silicate reaction, Karabakh, Azerbaijan

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