

عنوان مقاله:

An Experimental Investigation on Durability Properties of Reactive Powder Concrete

محل انتشار:

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خلاصه مقاله:

The durability of concrete subjected to an aggressive environment is a major issue faced by constructional engineers. Many researchers have tried to evaluate the durability characteristics of concrete against aggressive fluids. Amongst the fluids, compounds of sulphuric acid and chlorides cause massive deterioration in concrete. Reactive powder concrete (RPC) is a type of ultra-high-strength cement composite. In the present study, an effort is made to assess durability properties of RPC. The RPC with compressive strengths 110MPa, 120MPa and 130MPa have been produced. Acid immersion test, salt crystallization test and chloride ion penetration tests have been carried out to assess the degradation of concrete. The samples are exposed to sulphuric acid solutions over a period of 60 days with concentrations varying from 0.5% - 2%. The salt crystallization tests were carried out by immersing samples in 14% Na₂SO₄ solutions. Visual observations and deterioration in terms of mass and compressive strength reductions are recorded. The RPC shows higher resistance towards the crystallization of salts. A significant amount of weight loss and strength loss is observed for the samples exposed to higher concentrations of sulphuric acid. A negligible amount of chloride ion penetration is observed.

کلمات کلیدی:

Reactive powder Concrete, Acid Immersion Test, Salt Crystallization Test, Rapid Chloride Penetration Test

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