

عنوان مقاله:

Effectiveness of nano-TiO₂ and fly ash in concrete

محل انتشار:

دومین کنفرانس بین المللی دستاوردهای نوین در علوم مهندسی و پایه (سال: 1393)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Ehsan Mohseni - *Department of Civil Engineering, University of Guilan, Rasht, Iran*

Mojdeh Mehrinejad - *Department of Civil Engineering, University of Guilan, Rasht, Iran*

Hamed Azar - *Department of Civil Engineering, University of Guilan, Rasht, Iran*

Bahareh Mehdizadeh - *Department of Civil Engineering, University of Guilan, Rasht, Iran*

خلاصه مقاله:

High performance concrete (HPC) offers several advantages over normal-strength concrete, namely, high mechanical strength and high durability. Therefore, HPC allows for concrete structures with less steel reinforcement and a longer service life, both of which are crucial issues in the eco-efficiency of construction materials. Nevertheless, international publications in the field of concrete with nanoparticles are scarce when compared to concrete total international publications (around 1%). HPC nanoparticle based publications are even scarcer. This article presents results of an experimental investigation on the mechanical properties and durability of HPC based on nano-TiO₂ and fly ash. The durability performance was assessed by means of water absorption by immersion, electric resistivity. The results show that the concretes with nano-TiO₂ increased content show decreased durability performance. The results also show that a concrete with 1% nano-TiO₂ and 30% fly ash for Portland cement replacement showed a high mechanical strength (C55/C67) and a high durability. However, the cost of nano-TiO₂ is responsible for a severe increase in the cost of concrete mixtures.

کلمات کلیدی:

Fly-ash; TiO₂ nanoparticles; compressive strength; durability; HPC; cost

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/358711>

