“Massive volume fly-ash concrete: A more sustainable material with fly ash replacing cement and aggregates”

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Abstract

Fly ash (FA) has been widely used to improve concrete sustainability for many years; however, the amount of FA has been limited by the relatively low cement contents in concrete. In this study, massive volume fly-ash concrete was developed that maximizes the use of FA in concrete through its use as both a cement and aggregate replacement. Concrete containing as much as 728 kg of FA per cubic meter was produced with a compressive strength greater than 30 MPa, a low permeability measured in terms of chloride ion permeability (2300C at 56 d) and electrical resistivity (60 Omega-m at 56 d), and a decreased environmental impact. (C) 2015 Elsevier Ltd. All rights reserved.

Keywords

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KeyWords Plus: PERFORMANCE; DURABILITY; MIXTURES