



UTILIZATION OF WASTE MATERIALS IN CONCRETE PRODUCTION FOR SUSTAINABLE DEVELOPMENT

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Abstract

In order to reduce the cement content used in concrete production utilization of waste materials for substitution of a part of cement can be considered. In this study, two pozzolanic-waste materials, silica fume and fly ash, are used as a part of cement up to 12% and 40%, respectively in concrete and compressive strength as well as permeability properties were determined. The test results were evaluated by using the response surface method. By keeping the cement content in concrete constant at 300 kgm^{-3} , the variation of strength grade and permeability properties were investigated. It was found that it is possible to obtain the same or better strength grades by replacing cement with silica fume or fly ash up to 12% and 40%, respectively in concrete. Besides, the impermeability properties of pozzolan replaced concretes were superior than those of plain concretes without pozzolan.

Key words: concrete, durability, fly ash, silica fume, waste materials.

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