

# **EFFECTS OF AIR CONTENT AND FLY ASH ON PROPERTIES OF CONCRETE**

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## **ABSTRACT**

This research was carried out to evaluate the effects of fly ash and air content on strength and durability properties of concrete made with a Class C fly ash. Concrete mixtures with or without fly ash were proportioned with a 28-day design strength of 41 MPa. Fly ash concretes were produced with cement replacements of 0, 15, 30, 40, 50, and 70% by weight. Performance of each mixture was evaluated with respect to compressive strength, tensile strength, flexural strength, modulus of elasticity, shrinkage, abrasion resistance, and chloride ion permeability. Test results demonstrated that high-strength concretes incorporating significant amounts of Class C fly ash (up to 30%) can be manufactured. The results further indicated that concrete mixtures up to 50% cement replacement with fly ash are appropriate for structural applications requiring 30 MPa compressive strength concrete at 28-day age