

Performance of Extruded Composite with High-Volume Class F Fly Ash

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ABSTRACT

Traditionally, utilization of fly-ash is driven by cost considerations. Since fly ash is considered as a low cost by-product, it is anticipated that incorporation of fly ash would result in cost reduction. It implies that addition of fly ash is not aimed at increasing performance; rather, incorporation of fly ash is accepted as long as it is cost competitive and doesn't compromise performance.

Research conducted at ACBM indicates that incorporation of Class F fly ash noticeably enhances the mechanical properties. High-performance composites made by extrusion with and without Class F fly ash show that substitution of the fly ash for portland cement increases the flexure strength, ductility, fracture toughness, prevents embrittlement of glass fiber and thereby improves durability. Furthermore, addition of fly ash improves the fluidity and lowers the yield stress, thus either more fibers can be incorporated or alternatively lesser amounts of high-cost additives are needed.