Building Bricks Made of Fly-Ash Mixed with Sand or Ceramic Dust: Synthesis and a Comparative Study

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Abstract : Fly-ash bricks give a comprehensive solution towards recycling of fly-ash and since there is no requirement of firing to produce them, they are also eco-friendly bricks; little or no carbon-dioxide is emitted during their entire production cycle. As bricks are the most essential and widely utilized building materials in the construction industry, the significance of developing an alternate eco-friendly brick is substantial in modern times. In this paper, manufacturing and potential utilization of Fly-ash made building bricks have been studied and was found to be a prospective substitute for fired clay bricks that contribute greatly to polluting the environment. Also, a comparison between sand made and ceramic dust made Fly-ash bricks have been carried out experimentally. The ceramic dust made bricks seem to show higher compressive strength at lower unit volume weight compared to sand made Fly-ash bricks. Moreover, the water absorption capacity of ceramic dust Fly-ash bricks was lower than sand made bricks. Then finally a statistical comparison between fired clay bricks and fly-ash bricks were carried out. All the requirements for good quality building bricks are matched by the fly-ash bricks. All the facts from this study pointed out that these bricks give a new opportunity for being an alternate building material.

Keywords : coal fly-ash, ceramic dust, burnt clay bricks, sand, gypsum, absorption capacity, unit volume weight, compressive strength
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