

ABSTRACT

The utilization of minimum natural materials content in the production of concrete represents the main concern of many researchers. In addition, lightweight aggregate concrete is desired for its low weight and modified physical properties. This study aims to produce lightweight aggregate concrete with adequate strength utilizing crushed clay brick (CCB) aggregates from discarded or broken brick pieces. The CCB aggregates are utilized by replacement of natural aggregate at (10%, 20% and 30%). Three types of CCB aggregate concrete series are produced. In the first series, natural sand is replaced with similar size CCB aggregate (red and yellow). The second series is produced by the complete replacement of coarse aggregate with yellow, red and an equal two portions of yellow and red coarse CCB aggregate. The third series with 100% coarse CCB aggregate is produced by further replacement of fine aggregate up to 30% CCB aggregate. In all mixes, the CCB aggregate is used in its dry state (without pre-wetting). The work ability of produced mixes are investigated. Investigations on density, water absorption and compressive strength is also presented. Results indicate the possible production of lightweight CCB aggregate concrete suitable for structural applications. Superplasticizer (SP) significantly affect the workability of crushed brick aggregate. A blend of yellow and red CCB aggregate is also suggested to produce workable light weight concrete suitable for structural applications