

Mix design for oil palm shell concrete

Abstract

The mix design of lightweight concrete using oil palm shell (OPS) as aggregate differs widely from the procedure of mix proportioning for conventional concrete with crushed stone aggregate. The mix design depends on the properties of aggregates. The 28-day compressive strengths of OPS concrete designed according to the ACI method for conventional concrete and methods mentioned in references [A. Short, W. Kinniburgh, *Lightweight Concrete*, third ed., Applied Science Publishers, London, 1978; M.S. Shetty, *Concrete Technology*, S. Chand, India, 1993] for lightweight aggregate concrete have been found to be very much less than the targeted design strength of OPS concrete. It is confirmed that the mix design method of ACI and methods mentioned in the above references fail for the design of mix for OPS aggregates. A trial mix design for concrete with OPS as coarse aggregate has resulted in acceptable strength of 24 N/mm² for 28-day. Fly ash as mineral admixture and calcium chloride as an accelerator have also been used to study the improvement in strength.