Palm oil industry’s bi-products as coarse aggregate in structural lightweight concrete

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Abstract

Recent trend is to use the lightweight concrete in the construction industry because it has several advantages over normal weight concrete. The Lightweight concrete can be produced from the industrial waste materials such as oil palm shell (OPS) and palm oil clinker (POC) from the palm oil producing industries. Extensive research has been done on lightweight concrete using OPS or POC over the last three decades. In this paper the aggregate properties of OPS and POC are plotted in conjunction with mechanical and structural behavior ofOPS concrete (OPSC) and POC concrete (POCC). Recent investigation on the use of crushed OPS shows that OPSC can be produced to medium and high strength concrete. The density of OPSC and POCC is around 20-25% lower than normal weight concrete. Generally, mechanical properties of OPSC and POCC are comparable with other types of lightweight aggregate concrete. It can be concluded from the previous study that OPSC and POCC have the noteworthy potential as a structural lightweight concrete.