

Flexural behaviour of reinforced lightweight concrete beams made with oil palm shell (OPS)

Abstract

This paper presents an investigation on the flexural behaviour of reinforced concrete beams produced from oil palm shell (OPS) aggregates. Utilising OPS in concrete production not only solves the problem of disposing this solid waste but also helps conserve natural resources. A total of 6 under-reinforced beams with varying reinforcement ratios (0.52% to 3.90%) were fabricated and tested. Data presented include the deflection characteristics, cracking behaviour, ductility indices and end-rotations. The investigation revealed that the flexural behaviour of reinforced OPS concrete beams was comparable to that of other lightweight concretes and the experimental results compare reasonably well with the current Codes of Practice. It was observed that beams with low reinforcement ratios satisfied all the serviceability requirements as per BS 8110.