

ABSTRACT

A lot of research has shown that iron ore tailings (IOT) is not only a source of pollutant but also has good pozzolanic properties. However, the behaviour of IOT concrete in service is yet to be fully reported. This research investigates the effect of IOT on the mechanical properties of concrete whose fine aggregates is partially replaced with IOT. Fine aggregates content in concrete of mix ratio 1:2:4 of 10 to 40% was replaced with IOT. Young's modulus and Poisson ratio of the resulting concrete beams were determined by compression test. The results showed that 20% replacement of fine aggregates by IOT in the concrete mix gave the best mechanical properties of the resulting concrete. The Young's modulus of the concrete was seen to increase by 26.53% when with 20% IOT content when compared to that without IOT. The Poisson ratio at 20% IOT content was seen to also decrease by 61.54% when compared to that without IOT. As such, 20% IOT for fine aggregate content replacement in concrete mix 1:2:4 is recommended for structural uses.