

A Feasibility Study on Iron Ore Tailings as an Alternative for Fine Aggregate

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ABSTRACT

The production of steel has increased significantly over the years in order to meet the requirements of construction industry. Millions of tons of iron ore tailings (IOT) a solid waste produced during the beneficiation process of iron ore processing are disposed of every year in landfills, quarries, rivers, oceans causing serious environmental problems. On the other hand as the natural aggregates are gradually decreasing, there would be a need for alternative materials to be used as natural aggregate in concrete. Even though M Sand was found to be an alternative source, it is not considered to be a sustainable solution In this study, concrete specimens of M30 grade were cast by partially replacing the fine aggregate with IOT (10%, 20%, 30%, 40% and 50%). Specimens were tested for compressive strength and split tensile strength. The result shows that compressive strength in all the cases increased considerably when compared to the control cubes. The maximum increase in strength was around 13% for 40% replacement than the controlled cubes. Also the split tensile strength of concrete with 30% IOT increased by 7% was found to be the maximum.

Keywords: *Iron Ore Tailings, Compressive Strength, Split Tensile Strength, M sand*