

ABSTRACT

The concept of partial replacement of fine aggregate which is capable for sustainable development is characterized by application of industrial wastes to reduce consumption of natural resources, energy and pollution of the environment. At present a large amount of Used Foundry Sand (UFS), is an industrial by-product of ferrous and nonferrous metal casting industry. Foundry sand containing high quality silica and few amounts of impurity of ferrous and nonferrous by-products from metal casting, process itself and variety of binders. This research work describes the feasibility of using the UFS in self-compacting concrete production as partial replacement of fine aggregate. UFS can be used as filler and helps to reduce the total voids content in self-compacting concrete. The fine aggregate has been replaced by UFS accordingly in the range of 0%, 10%, 20% and 30%, by weight of fine aggregate for M-30 mix. After iterative trial mixes the water/cement ratio (w/c) was selected as 0.45. Self-compacting Concrete mixtures produced, tested, and compared in terms of compressive, split tensile and Flexural strength with the conventional concrete for 7-28 days. It is found that, 20% of UFS are better in strength in comparable to the conventional concrete.