

QUARRY DUST FINE POWDER AS SUBSTITUTE FOR FINE AGGREGATES IN CONCRETE MIX

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Abstract: Large quantum of concrete is being used for construction industry all over the world. One of the essential ingredients of concrete is river sand in the form of fine aggregate. Now a day's river erosion and other environmental issues have led to scarcity of river sand. Large scale depletion of river sand leads to environmental problems. Excessive sand mining is a threat to bridges, river banks and nearby structures. It also affects the adjoining structures and the uses that local people make use of the river. To overcome this problem, there is a need to find an alternative innovative and cost effective material. Quarry dust, a by-product obtained from crushing of coarse aggregates during quarrying activities has attained considerable attention to enhance the properties of concrete. This paper reports the experimental work conducted on the suitability of the quarry dust as inert material in concrete. This experimental study presents the variation of strength of concrete on replacing the sand by stone powder from 0% to 40% at an increment of 10%. The compressive strength of standard concrete cubes was found at 7, 14 and 28 days curing at room temperature. Design mix of M25 grade of concrete with replacement of 0%, 10%, 20%, 30% and 40% of quarry dust have been considered for laboratory analysis, in which slump test, compression test, split tensile test, and flexural strength of hardened concrete were found. The results have proved that replacement of sand by quarry dust satisfies the code provisions and can satisfactorily used in concrete. It was observed the results shown the positive changes and improvement in properties of conventional concrete due to the replacement of fine aggregate by quarry dust.