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MICROSTRUCTURAL AND MECHANICAL PROPERTIES OF ALKALI ACTIVATED SLAG CONCRETE

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ABSTRACT

KEYWORDS: **Alkali activated mix, Alkali activated slag Concrete (AAS), Fly ash, Ground Granulated Blast furnace Slag (GGBS), Municipal waste Sewage sludge, stress, strain, Alkaline activator (AA) solution**

Sustainability acts as a fourth dimension while selecting the Portland cement-based paste system after application, performance, and economy. Cement production is one of the major concerns when it comes to environmental issues and sustainability. The constant use of natural resources such as limestone, clay and fuels for cement production has depleted natural resources. Cement production also plays major role in emitting greenhouse gases and depletion of ozone. The calcination approximately between 50 and 60% of Carbon dioxide emitted from calcium carbonate. So, the various strategies for sustainability needed to be adopted concerning the above issues

In the present work, one such strategies used is lowering the cement usage as much as possible with application of by-products or waste materials from Industries which are abundantly available and replacing it by cement, the waste products used in these projects is Fly Ash , Ground Granulated Blast-Furnace Slag, and Municipal waste Sewage sludge. The aim is to achieve a suitable binder mix with replacement of cement by Fly ash, GGBS and Municipal Waste Sewage sludge by 5%, 10%. Tests were carried out on all mixtures to obtain fresh and hardened properties of mortar and Concrete. Microscopic Analysis such as SEM, EDS and was carried to study the chemical reaction. The tests such as Compression test, Stress Strain, Split Tensile is performed to predict failure pattern on the mortar cube and the Concrete cubes, and Cylinders involved.