**The Performance of high-grade concrete (M60) with full and partial replacement of crushed sand by Granulated Blast Furnace Slag (GBFS) in OPC**

**Abstract**

The over usage of manufactured sand (crushed sand) in construction has so many rock takes million of years to form again, the construction industry is forced to look for replacement of fine aggregate. We can balance the ecology on the earth by using replacement of fine aggregate by industrial by product. It further reduces the pollution effect on the environment by increasing the usage of industrial by products in our construction industry. In this context we conduct a study to check feasibility of use of GBFS (Granulated Blast Furnace Slag) as alternate to manufactured sand in OPC.

This experimental study focus on investigating behaviour of M60 grade of concrete by full and partial replacement of fine aggregate by Granulated blast furnace slag (GBFS). Cubes, cylinders and beams are tested for compressive strength, split tensile strength and flexural strength respectively after 7 days and 28 days curing. In aspects of durability, sulphate attack test is conducted on the 10 cm size cubes. In this study replacement percentage of fine aggregate by GBFS is 30%, 50%, 80% and 100%.

When the test results of full and partial replacement by GBFS with 100% crushed sand in the concrete are compared, it shows that with increase in percentage of GBFS the mechanical properties and resistance to sulphate attack has significantly increased