

EFFECT OF MINERAL ADMIXTURE (GGBS) AND POLYPROPYLENE FIBER ON SELF COMPACTING CONCRETE

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DOI: 10.5958/2278-4853.2023.00037.X

ABSTRACT

This paper focuses on effect of mineral admixture ground granulated blast furnace slag (GGBFS) and polypropylene fiber on self-compacting concrete. The properties of self-compacting concrete are filling ability, passing ability, viscosity etc, which is measured by slump flow test, L box test, and V funnel test. A by-product of iron industries is a hot molten iron slag which is obtained from rapid cooled from a blast furnace in water or steam, to produce a glassy, granular product that is then dried and ground into a fine powder which is later known as ground granulated blast furnace slag which have similar properties to cement and can be used to replace cement by some proportion in concrete. Use of GGBS reduces the industrial waste which is also important for environmental aspects. Also use of CGBS, reduction in the temperature rise and to help in avoiding early age thermal cracking, improved workability, as well as light weight replacement of cement in large structures as bridges and retaining walls, GGBS can be very perfect replacement to the cement.

This study focuses on the effect of GGBS and polypropylene fiber on the properties of self-compacting concrete. In this research work, a series of experiments have been done in a row to detect the optimum percentage of replacement of cement by GGBS. The grade of concrete taken was M40 and grade of cement was 43 OPC. The experimental works carried out to find the feasible percentage replacements of constituent materials by supplementary materials. Specially, the replacements percentage in the castings of samples was varied only for the GGBS and 1% of polypropylene fiber is constant, where the replacement percentages for the GGBS by 5%, 10%, 15%, and 20% respectively. In conventional concrete there is some limitation like self-compaction, surface finishes, maintains strength at congested area. Due to these limitations here we are trying to make self-compacting concrete with the use of mineral admixture and fiber. This paper mainly focus on the mix proportions by replacement of cement by GGBS and fiber to critically check the fresh, mechanical and durability properties of self-compacting concrete.

KEYWORDS: *Sc Strength, Durability, Ggbs, Fiber.*

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