

A Technical Paper on Self-Compacting Concrete

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Abstract— In this technical paper we discussing about the self-compacting concrete and the fundamental which is related to the self-compacting concrete. In the following paper we mainly focused on the basic of self-compacting of concrete. We discuss about the fluidity which is allowed self-compacting concrete without external energy and flow easily through reinforcement. Basic materials which is used in the self-compacting concrete such as latex and SBR latex. Self-compacting concrete is a fundamental material mixture which is provide a quality to self-compacting. Which play an important role in the present time of construction.

Keywords: Self-Compacting Concrete, Glass Powder, Self-Compatibility

I. INTRODUCTION

Self-compacting concrete which is define as a mixture which is compact through its own weight is called self-compacting concrete. Self-compacting concrete does not want any type of vibration or external force to settle on its basic position. Self-compacting concrete was developed in Japan in 1980's. by the early 1990's Japan has developed and used SSC that does not required vibration to achieve full compacting. There are following fundamental properties of self-compacting concrete which is point out as below.

- 1) Self-compacting concrete have a fluidity that allows self-compaction without external energy.
- 2) It's remaining homogeneous in a form during and after the process.
- 3) Its flow easily through reinforcement.
- 4) Concept of self-compacting concrete-

Self-compacting concrete has high flow ability to undergo compaction by its own weight and having high workability. Basic concept of self-compacting concrete is based on the fineness of material (cement and aggregate) and low water content. It's having ability to self-compacting quality of concrete mixture. It's have low viscosity due to high fineness. That's why it is use full in construction and give an appropriate result for construction.

II. EFFECT OF SELF-COMPACTING CONCRETE

There are following effect of self-compacting concrete which is point out as below.

- 1) having self-compacting quality so external forced are not required in the construction that's why it's taking lesser time to settle down.
- 2) high workability improve its structural quality.
- 3) less water content is worked for less bleeding fundamentals.
- 4) high fineness of material increase the viscosity of material that's why construction time is reduced.
- 5) fineness of materials provide aesthetic finish for the construction.

III. LITERATURE REVIEW

- 1) Prof. Shriram H. Mayur, ' B.Vanjare et al, " Experimental investigation on self-compacting concrete using kiln dust" He focused on the possibility of using waste material in a preparation of innovative concrete. One kind of waste was identified. Cement kiln dust and also used material fly ash, super plasticizer and cement and conduced that addition of CKD in SCC mixture increase the self-compact ability characteristics like filling ability ,passing ability and segregation resistance CKD has fluidizing effect, economic In the admixture, increase filling ability, passing ability and segregation resistance
- 2) S.Srikant et all worked on, "partial substitute of cement with glass powder retrospect ". In the following paper he explained usage of partial glass powder replacement on the cement so as to mitigate the provision, affordability, quality and pollution problem. He worked on M20 mixed concrete. He conclude that we mixed glass powder n the mixed concrete the strength, thermal insulation increased and good economic and eco friendly condition.
- 3) S. Srikant et al worked on , " trail exam on partial replacement of cement with glass powder in M20 grade concrete". In this paper he focused on the strength and economic fundamental of glass powder mixed M20 concrete mix,he conclude after compressive strength, tensile strength and flexural strength test that the strength of the mixture is increase after 10% replacement of cement with glass powder.
- 4) Rajathi et al studied on, "experimental study on self-compacting concrete using glass powder". in this experimental study he worked on the possibility of using waste material in the preparation of innovation concrete. He take the mix proportion of M20 concrete. He concluded in the experimental study that the self-compatibility characteristics reduced, compressive strength is improved.
- 5) Silpa Raju et al, "effect of using glass powder in concrete". In this paper, an attempt has been made to find out the strength of concrete containing waste glass powder as a partial replacement of cement for concrete. He worked on compressive strength test, flexural strength, alkalinity test, workability test and concluded that 20% admixture of glass powder increase the compressive strength and quality of mixed concrete increased.
- 6) Shetty Ashish Vishwnath et al worked on, "experimental investigation of sugarcane bagasse ash and glass powder as partial replacement cement in concrete". this report aims to study the present scenario of sugar cane and SCBA production all over the world and in India to understand the partial of SCBA and its use in cementation system. He performed various test such as

compressive test , workability test , setting time of cement paste, standard consistency test, split tensile test and conclude on the basis of these test that the strength and mixture quality is improved with add mixture of glass powder and sugar bagasse.

- 7) Gunalaan vashudevan et al worked on, “performance of using waste glass powder in concrete as replacement of cement”. In this experimental study he worked on the using of glass powder in concrete and perform following test such as workability test, tensile test and compressive test, after performing the test he concluded that the mix glass powder increase the structural quality of concrete admixture.
- 8) Aniket s. Aphale et al reviewed on , “ effect of particle size of recycled glass on concrete properties-A review” this review paper based on the effect of particle size of recycled glass on the properties of concrete. He explain various effect of particle size of glass powder on properties of concrete and summarised his all studies in various concrete mix such as M20,M25,M30 and M40. He summarised his technical paper that when cement is replaced with 20% glass powder then give a adequate performance as required in the structural demand.
- 9) Rakesh Sakale et all worked on, “experimental investigation on strength of glass powder replacement by cement in concrete with different dosages”. In this experimental paper he focused on the effect of partial replacing of glass powder in concrete with 10%,20%,30% and 40% respectively after performing various fundamental test, such as flexural test , split tensile test he concluded that we get maximum structural quality of concrete with 20% glass powder admixture.
- 10) Sameer sheikh et al worked on, “effective utilization of waste glass in concrete”. In this research paper he focused on the various attempts have been made to partially replace the cement as well as sand by waste glass powder and crust glass particles with equal combination by 5% interval up to 20% replacement. And observed its effect on the strength of concrete after 7 days, 14 days and 28 days of curing. After performed various test he conclude that GLP and CGP show a compressive strength 32.88 N/mm², 3.94 N/mm² flexural strength and 1.92N/mm² split tensile strength.

IV. CONCLUSION

After learning various paper on self-compacting concrete and glass powder mixed concrete I found one thing that if the admixture of glass powder in self-compacting concrete is 20% to 30% is giving better result for the construction. So we can say that the self-compacting concrete play an important role in the construction. The quality of self-compacting plays an important role. The fineness of material which is used in self-compacting concrete give a adequate surface finishing and lesser settlement time. So self-compacting concrete is better than normal concrete.

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