Patent Search

Invention Title	Eco-Friendly Cement Substitute: Ternary Concrete with Fly Ash and Ground Granulated Blast Furnace Slag for Superior Strength and D
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Inventor

Name	Address	Country
Dr. Davuluri Syam Babu	Assistant Professor, Biotechnology Department School of Biotechnology and Pharmaceutical Sciences, Vignan's Foundation for Science, Technology and Research, Guntur-Tenali Rd, Vadlamudi, Andhra Pradesh 522213.	India
Dr. Kunamineni Vijay	Associate Professor, Department of Civil Engineering , Vishnu Institute of Technology, Bhimavaram, Andhra Pradesh – 534202.	India

Applicant

Name	Address	Country
Vignan's Foundation for Science, Technology and Research	Vignan's Foundation for Science, Technology and Research, Guntur-Tenali Rd, Vadlamudi, Andhra Pradesh 522213.	India

Abstract:

Concrete is a blend of aggregate, water, and cement along with admixtures that are generally employed in the construction of structures all around the world. In this plays a major role as a binder in concrete. The cement manufacturing process liberates enormous amounts of greenhouse gasses into the atmosphere. Researchers developed various alternative materials to cement. However, limitations are there for their higher utilization. The strength and durability are reduced if we use higher GGBS or fly ash as an additional material for cement. In this regard, there is a need to develop a ternary blended concrete by using GGBS and fly ash. In this study, th using fly ash and GGBS as substitute materials for cement is evaluated. The combination of these materials to produce a binder opens up new opportunities for impr pozzolanic activities, which enhances concrete performance. The effect of several percentages of these two materials on the mechanical characteristics of the concre examined. There was an improved performance of the material so formed out of which replacing cement with an equal amount of fly ash and GGBS at 40% weight e better performance. Further, the compressive strength prediction was assessed by using regression analysis. Applying the response surface method to the relationsh response variables and input parameters led to the regression equation. This strategy helps to predict the outcomes of experiments with a reasonable margin of erro results of this study show that combining fly ash and GGBS as substitutes for cement enhances the performance of concrete.

Complete Specification

Description:FIELD OF INVENTION
[0001] This Invention show that combining fly ash and GGBS as substitutes for cement enhances the performance of concrete.

BACKGROUND
[0002] This invention is to investigate and explain the review of cement processing and its impact on cement manufacturing emissions on the environment. For inst the cement industry is contributing in global warming and climate change in the world. The processes of cement manufacturing are extremely energy intensive whi utilize high fuel consumption and finally it results in the emissions. The cement industry is major cause of global warming and it stands at the third biggest industria of pollution. It emits more than 500,000 tons per year of sulfur dioxide, nitrogen oxide, and carbon monoxide. The paper highlights the overview of cement process contribution of cement industry in causing the emissions and their impact on the environment and health.

[0003] The pursuit of sustainable construction practices has led to a growing interest in the utilization of recycled materials in concrete production. To enhance the utilization of recycled aggregate concrete, its performance in terms of mechanical characteristics need to be optimized. This invention investigates the effect of fly a ground granulated blast furnace slag (GGBS) as cementitious materials on the mechanical characteristics of recycled aggregate concrete. In this research, various combinations of recycled aggregate concrete were prepared with partial replacement cement by GGBS and fly ash. The mechanical characteristics including compre strength, split tensile strength, and flexural strength tests are conducted on all concrete mixes and the results are compared to the control mix.

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