PREPARATION OF CLC BLOCK WITH ADDTION OF PLASTIC WASTE

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Abstract - This world is changing day by day. Technologies are also changed with time. Technological advancement leads business process in all new different dimensions. Country like India is growing rapidly. Infrastructure Development is in big bane. Development forms and methods are also changed due to change in technology. In case of a conventional construction of a building or any structure, the main source of raw material is Sand bricks or Stones or wooden sheets as a wall. The new concept for making wall has been developed that is Cellular Lightweight Concrete Bricks. It is a light weight, water resistant, fire- proof, sound proof and environment friendly. These can be extensively used in all building constructional activities similar to that of common burnt clay bricks. The CLC bricks are comparatively lighter in weight and stronger than common clay bricks in view of superior quality and eco-friendly nature, and government support the demand for CLC Bricks has picked up. Due to rapid urbanization, the amount of waste to be processed has increased enormously. The purpose of this article is to identify the potential for using recycled materials such as plastic waste in foams. Concrete as an alternative filler for fine river sand. A protein-based blowing agent is used in this study. The processability and strength of various mixtures made from engineered foams of different densities are investigated using plastic waste. In this foam concrete blocks will be manufactured according to the intended proportions to reach a maximum strength of 1900 kg/m3 . In this mixture of recycled plastic waste will be used as filler in foam concrete. The 7-14- and 28-day compressive strength, flexural strength, split tensile strength, and set density of each batch are examined and compared to the nominal strength obtained for the mixture.

Key Words: Cellular Lightweight Concrete, environment friendly, foams.

1.INTRODUCTION

Cellular lightweight concrete is also known as foamed concrete. The CLC is widely used for construction purposes as it has various advantages and usage than the tradition concrete block. CLC blocks are a cement-bonded material made by blending slurry to form foam . Cellular Light Weight Concrete is a version of light weight concrete that is produced like normal concrete under ambient conditions. CLC is conventional concrete where natural aggregates are exchanged for best isolation medium available namely air, embedded in organic and biodegradables foam that offers no chemical reaction but slowly serves as wrapping material for the air. Foaming agent for CLC blocks is to be diluted in water and then foam generator with compressed air. Is produced in concrete consequently CLC behaves, like conventional concrete, in particular concerning curing, hardening, ageing and increase in strength by hydration as long as exposed in the atmosphere, for structural (steel reinforced) application. CLC is used in densities of 1200 to 1400 kg/m3. Which is due to billions of micro sized and uniform air bubbled offer 500% more thermal insulation and higher fire rating than conventional concrete. CLC blocks will also replace clay bricks which is destroying agricultural top soil. CLC blocks being light weight the handling and transportation is easy. CLC blocks are excellent for thermal and sound insulation which keeps the house cool in summer and warm in winter saving energy/electricity for cooling and heating. The government of India has supported this effort of improving the environment through conversion of waste into useful building products, by providing some import concession. This has enabled even normal walling masonry using these cellular lightweight concrete blocks, to complete favorably with conventional block.

2. LITERATURE REVIEW

1) Trivedi Manoj (2015) He has carried out experimental studies on strength of CLC block in comparison with the conventional bricks. Their studies showed that the cellular light weight concrete block can be used as an alternative to conventional bricks to reduce environmental pollution and global warming , the energy consumed in production of CLC block is less compared to conventional bricks and emits no pollution. This study shows that the reduction in self weight of CLC blocks is 32% compared to conventional bricks and increase in compressive strength after 21 days of curing is 36% compared to conventional clay bricks.

2) Kaushal Kishore (2015) He has expressed that Foamed concrete, additionally called cellular light weight concrete is engendered by the mixing of Portland cement, sand including steam. Foamed light weight concrete in the form of bricks, blocks or poured in-situ is utilized in many ways such thermal insulation over flat roofs, cold storage walls, non-load bearing walls in RCC/Steel framed buildings, load bearing walls for low-rise buildings.

3) Kumar (2016) He has stated that light weight cellular concrete is not a new technology . Its 1st use recorded in 1920s light weight cellular concrete is type of aerated concrete having cellular structure in it which makes it lighter, good thermal and sound insulator material . It is a green product and it requires least energy. It uses the industrial waste products which is good for environment.

4) D. Kavita (2018) In this paper states that the density of foamed concrete is inversely proportional to the percentage of foam added to the slurry and concrete is a type of porous concrete. The term foam concrete is containing no aggregate only sand, plastic, cement, water and stable foam to perform the concrete. This process comprises tiny enclosed air bubbles within the mortar there by making the concrete lighter. Their study has shown that the starting of strength gain for foamed concrete is on higher side than that of normal weight concrete and strength gained beyond 28days is faster than normal weight concrete.

5) P.S.Bhandari and Dr.K.M.Tajne In this research paper they have concluded that the compressive strength for cellular light weight concrete is low for lower density mixture. The performance of cellular lightweight concrete in term of density and compressive strength are investigated.

6) Hjh Kamsiah Mohd. Ismail, Mohamad Shazli Fathi and NorpadzlihatunbteManaf: In this study paper the main specialties of lightweight concrete are its low density and thermal conductivity. Its advantages, disadvantages and applications were studied thoroughly.

7) Satyendra Kumar Meena, Pushpendra Kumar Meena, Rakesh Kumar Meena, Rupayan Roy and Pawan Kumar Meena: It was studied that cellular lightweight concrete possesses high flow ability, low self-weight, minimal consumption of aggregate, controlled low strength and excellent thermal insulation properties. It has excellent resistance to water and frost, and provides a high level of both sound and thermal insulation.

8) Anik (2016) in his paper explained the successful use of cellular light weight concrete blocks and it has gained popularity due to its lower density and comparative strength than conventional bricks. Also, there studies have shown that the use of fly ash in foam concrete can greatly Improve its property. Most of the cleaner production efforts are required in India and hence CLC block can be used as a replacement of burnt clay bricks for construction purposes. Which is advantageous in many terms such as general construction properties, eco-friendliness.

9) Raj Vardhan Singh (2016). This paper states that the cellular light weight concrete is a multifarious material which is composed of cement ,sand and plastic and protein-based foam. They carried out studies on properties of cellular light weight concrete and also the utilization of quarry dust in the proportion of cellular light weight concrete . they found out that the dry density of CLC increased and water absorption of CLC decreases when quarry is partially replaced by sand and plastic content.

10)Tharakarama, (2017) He released that foam concrete is a versatile material which consists primarily of cement-based mortar mixed with at least 20-25% of volume air. The focus of this project was to decrease the density of concrete by using optimum content of foam. Foam concrete has a unique characteristic that can be exploited in civil engineering works. Based on test results it can be observed that 1200kg/m will be optimum density where up to 40% of density can be reduced compared to conventional concrete.

3. CONCLUSIONS

Based on a literature survey, its performance is clear. The use of aerated lightweight concrete depends on the type Blowing agents and fillers. The density of foam concrete is Inversely proportional to foam content. protein base A foaming agent is used to create stable foam. in this report compressive strength and porosity of recycled glass, Plastic is suitable as a filling material. glass filled foam It showed higher compressive strength than concrete Plastic filler foam concrete. Using fly ash for cellulite Weighted concrete can significantly improve its properties. The initial finding has shown that the lightweight concrete has a desirable strength to be an alternative construction material for the industrialized building system. The strength of aerated lightweight concrete is low for lower density mixture. The foamed lightweight concrete is not suitable to be used as non-load bearing wall as compressive strength is 27% less than recommended . never the less the compressive strength is accepted as non-load bearing structure. Foam concretes more cost efficacious beside eco amicable. The compressive strength of foamed concrete increases when there I increase in density. It can be concluded that lightweight concrete has the desirable strength and can be used as an industrialized building system. This CLC is even a better alternative mundane clay brick for walling masonry.

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