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# A REVIEW REPORT COMPRESSIVE EARTH BLOCK BY USING GGBS AND ALCCOFINE 1203

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## ABSTRACT

The indiscriminate infrastructural growth is leading to rapid environmental degradation. Sand, cement, coarse aggregate for manufacturing of bricks and used for large construction activities are energy intensive as well as causing environmental pollution during their entire life cycle. To quantify the energy and savings potential by applying best available technologies like Stabilized mud blocks for engineering applications. Even though the strength of SMB is less compared to cement blocks, we can use the SMB by stabilizing it by using cement, lime. But in this project, we are trying to stabilize the blocks by using waste materials like GGBS and Alccofines. In this study we are utilizing the behaviour of Stabilized Mud Block with alccofines and GGBS by conducting various tests like the compressive, water absorption and weathering test. We can use the stabilized mud blocks for non-structural elements as it meets the strength requirements as per IS codes. And these blocks are purely eco-friendly as it is made up of waste materials.

**Key Words**: Stabilized mud blocks, compression strength, GGBS, Alccofines, Eco Friendly Materials.

## I. INTRODUCTION

Earth as mud bricks has been used in the construction of shelters for thousands of years. Approximately 30% of the world's population still lives in earthen structures. Compressed soil masonry blocks formed using moist soil compacted mechanically to improve physical characteristics have aimed popularity recently. Benefits of earth in this manner include improved strength and durability as compared to adobe while maintaining significantly low embodied energy levels than alternative materials. However, problems arise from the material's low tensile strength, brittle behaviour and deterioration in the presence of water. Stabilization by a hydraulic binder such as cement or lime or a combination of the two can significantly improve water resistance and strength to some extent. Also waste materials can be used as a stabilizer in the stabilized mud blocks. We have used materials like GGBS and alccofines as a stabilizer in this project. Theoretical models were also developed on composite soil blocks with these stabilizers subjected to shear. GGBS is a waste produced in blast furnace by quenching molten iron blast furnace slag immediately in water or stream to produce a glassy product that is then dried and grounded into product. It is a waste that is produced in blast furnace and its disposal is a very big problem in recent days because in these days lot of land is getting waste due to disposal. When we use this as a binder in concrete construction, we can produce high performance concrete and cement. So, we are trying to use this waste in production of stabilized mud blocks and so we can reduce the pollution causing by it into atmosphere. Alccofine 1203 is a slag based supplementary cementitious materials having ultra-fineness, low calcium silicate product with optimized particle size distribution. Due to ultra fineness, it penetrates tight joints, fissures and pore spaces which impart greater water tightness.

## II. COMPRESSIVE EARH BLOCKS USING GGBS AND ALCCOFINE 1203

Much research is attempted to stabilized soil with the use of industrial by-products and Cementous material as a combination. The brief description on literature studies are as follows.

- K Kariyawasam, C Jayasingle – construction and building materials , 2016 – Elsevier In a world where the exploitation of natural resources by the construction industry has become a serve problem , earth can represent an ideal building material that has the potential to reduce the carbon foot print when a damage to the environment since once day in future , earth obtain can be returned, but could be in a singly modified

form . However, it is very important to consider ways to eliminate the undesirable properties of soil and convert it.

- FR Arooz, RU Halwatura – case studies in construction materials, 2018 –Elsevier Mud – Concrete was to incorporate both thw strength and durability of load bearing wall system with easy construction to introduce a low cost, indoor comfort while minimising the impact on the environment. Here the fraction of soil is fulfilling the role if segregate in the material.
- PJ Walker – Cement and concrete composites, 1995- Elsevier The paper outlines results of a comprehensive investigation undertaken to assess the influence of soil characteristics and cement content on the physical properties of stabilized soil blocks. The dry density, compressive and flexural strength, durability and drying shrinkage of over 1500 blocks tests are outline in the paper. Experimental results are compared with current specifications and used to develop empirical guidelines for cement content requirements for a range of soil plasticity characteristics. An empirical relationship
- ability of cement- soil mortar on direct tensile strength of masonry couplets has been explored. Major findings of the study.
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- JE Oti, JM Kinuthia, J Bai – Engineering geology, 2009- Elsevier The shortage of low cost and affordable housing in the UK has led to many investigations into new building masonry materials. Fired clay bricks for masonry mainstream masonry wall construction but suffer from the rising price of energy plus other related environmental problems such as high energy and carbon dioxide emission. The use of stabilized unfired clay masonry bricks is conventionally use for mainstream masonry wall construction but suffer from the rising price of energy plus other related environmental problems such as high energy usage and carbon dioxide emission. The use of stabilised unfired clay bricks for masonry construction may solve these problems. This paper reports on the engineering properties of unfired clay bricks produced during the.
- B Nagraj, MV Sravan TG Arun... - Interntional Journal of ...,2014 – Elsevier Abstract Compressed Stabilized Earth Blocks are manufactured using stabilizers to supply adequate compressive strength and durability, to make them suitable as building blocks. Though cement is a popular stabilizer to supply adequate compressive strength and a popular stabilizer used in manufacture of CSEBBs, no study has been reported utilizing lime in combination of cement. This experimental study has clearly study on CSEBs prepared using lime as s replacement to cement in certain proportions has clearly bought out the effectiveness of lime with cement in improving the long- term build- up.
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## III. CONCLUSION

The strength of the GGBS stabilized SMB is very good and when compared to the alccofine. This is shown in the graph. Considering recent global warming issues caused by increased CO2 gas in atmosphere, a need for eco-friendly material is essential. We have seen in the experiment that the blocks have good water-resistant ability also. Alccofine and GGBS stabilized blocks can be used in compound wall construction and any other low application construction. Alccofine and GGBS stabilized blocks can be used instead of fired bricks, so it reduces global warming issues.

## IV. SCOPE FOR FUTURE

This study will focus on wall building materials that can offer better quality structures and faster construction solutions that will be economical. These aspects need to be clarified through literature of building materials properties and wall building systems. Thus, it will investigate traditional and innovative techniques that have been used successfully in the Republic of Yemen. It will focus on techniques that have relevance to climatic, technical and cultural reasons. Different stabilizers such as Alccofine and GGBS can be used. Proportions of stabilizers can be varied to prepare the mud blocks. Split tensile strength test can also be performed.

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