

Mineral Admixtures and Lime as Stabilizer in the Manufacture of Soil Cement Bricks

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Abstract – Soil Cement Bricks (SCB) is cost effective and energy efficient alternative materials to the normal burnt clay bricks used for construction of buildings. Soil cement blocks are also known as stabilized mud bricks (SMB) or stabilized compressed earth bricks (SCEB). Soil cement bricks are used for load bearing masonry. The objective of these project is to public awareness about low cost housing society. In this project we prepare the SCB of size (19*9*9)cm with the varying percentage of lime as a soil stabilizer adding with the cement. The cement is used for partial replacement for soil to get the strength than regular red brick.

1. INTRODUCTION

Soil Cement Bricks (SCB) is cost effective and energy efficient alternative materials to the normal burnt clay bricks used for construction of buildings. Soil cement blocks are also known as stabilized mud bricks (SMB) or stabilized compressed earth bricks (SCEB). Soil cement bricks are used for load bearing masonry. The paper focuses the study of various characteristics of soil-cement bricks using suitable clay soils. Soil is the result of the transformation of the underlying rock under the influence of physical, chemical and biological processes related to biological and climatic conditions. Construction could get low and the amount of clay c It is found deposited on the surface of the earth and may consists of many different types. The variation in the soils present at the surface can be attributed to a series of natural effects working on the area over time. In India, the use of clay brick is very common. But with the use of clay bricks, the fertility of land is getting affected because during excavation process the top layer of minerals gets excavated. The huge land required for manufacturing of clay bricks and also during burning process, the problem of pollution is generated. On the other hand, the production of foundry sand and fly ash is also huge so the waste management is becoming a serious issue in now days. With the use of these two wastes in bricks,

reduces the cost of bricks and also reduce the disposing cost of the wastes, so the overall cost of old be reduced.

1.1 OBJECTIVES

1. The Main objective of the project is to bring the usage of mineral admixture and lime in present construction as building materials and also to obtain the performance of soil cement bricks.
2. To study the theoretical and practical methods by which soil and cement are select, classified and tested for SCB.
3. To test the various material which are used in preparation of SCB.
4. To examine the compressive properties of SCB with varying percentage of lime.
5. To compare the compressive properties of SCB with 5% of addition of lime, 10% of addition of lime, 15% addition of lime.

2. METHODOLOGY

Preparation of Sample

The preparation of brick mix done by following:

1. First, we collect the materials and weight it.
2. We mix the material properly in dry state and then add sufficient amount of water in dry mix and mixed both properly.
3. The prepared mix for varying percentage of lime and cement (5, 10, and 15) is then poured into brick mold of size 19 cm x 9 cm x 9cm.
4. During pouring, we tamped it time to time to prevent the formation of void and then finally, we placed the mold.
5. After this process, we left the sample for a day in exposed environment for sun drying. And then remove the brick sample from the mold.
6. After this we placed the brick for curing for 7 days

by Sprinkler method

7. Then for 7 days, we cured the sample and then perform the compressive strength test on it.

3. TESTING OF MATERIAL

➤ CEMENT-

- **Type of cement:**

Ordinary Portland cement

- **Grade of cement:**

53 grade.

- **Initial setting time:** Initial setting time for cement used was 90min.

- **Specific gravity:**

The Sp. gravity of cement used was 2.6.

➤ CLAY-

- **Size of clay used:**

Less than 0.002mm.

➤ 3. FLAY ASH-

It is by-product or waste generated for thermal power plants after the coal combustion



FIG 1. Regular Bricks



FIG 2. Soil Cement Block

4. Future Scope

Housing is one of the three basic necessities of human life. Demand for housing is always far exceeds the supply. There is bound to be good scope for projects of this nature. Traditionally, the burnt clay brick has been the common form of building construction material. There are other alternative construction materials like natural stone, cement concrete hollow blocks, etc. Soil cement blocks are the ideal construction materials for low cost housing projects undertaken by the government under various housing schemes for upbringing of the common man. Public awareness about the low cost housing using alternative building materials is more pronounced in urban areas rather than in rural areas where it is more required to be promoted. There is a need for suitable mechanism by which 3 more and more rural housing schemes using low cost building materials are encouraged.

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