

“DEVELOPMENT OF MASONRY BLOCKS USING SOIL, SUGARCANE PRESSMUD AND STABILISED WITH DIFFERENT ADDITIVES”

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ABSTRACT

India is witnessing a new phase in development with rapid economic growth and high rate of urbanization. Construction provides the direct means for the development, expansion, improvement and maintenance of human settlements in particular and economic growth in general. It also needs to be recognized that the construction industry adversely affects the environment, through physical disruption, the depletion of key renewable resources like fertile topsoil, forest cover and excessive consumption of energy. Therefore, there is a strong need to adopt environmentally appropriate materials by up-gradation of the conventional materials. Hence, the role of alternative and innovative options would come into sharp focus, considering the short supply, increasing cost and energy and environment considerations for traditional and conventional materials. The possibility of using innovative building materials and technologies, more so covering waste material like agricultural wastes and industrial wastes, which are generated at huge quantity have been considered as a need.

In the present study, Sugarcane Pressmud is an industrial waste generated in huge quantity in sugar industry during clarification process and is used as partial replacement for soil in various proportions of 0-25% by weight of soil. For the experimental studies the blocks are made using soil, Sugarcane Pressmud (0-25%), 7% cement, 5% lime and 3% RBI Grade-81 are cast and tested. Also M-Sand is used as partial replacement of soil in order to enhance the gradation of the soil. From the results and observations of the preliminary studies, blocks made using soil, Sugarcane Pressmud in combination with (i) RBI Grade-81 and (ii) cement and lime showed higher strength which is deployed in the detailed study to determine the mechanical properties like compressive strength, water absorption, impact resistance and sorptivity.

From the results and observations of the detailed study, it can be concluded that the block with 10% Sugarcane Pressmud, Cement and Lime has higher compressive strength compared to other combinations. The water absorption increased about 2.6 times with the addition of Sugarcane Pressmud to the blocks. The blocks showed comparatively very less impact resistance. The impact resistance of the blocks with RBI Grade-81 is lesser than the blocks with cement and Lime. The blocks with Sugarcane Pressmud shows lower density than the blocks without Sugarcane Pressmud, this is because of low density of Sugarcane Pressmud. With the addition of Sugarcane Pressmud to the blocks the least



density of about 1320 Kg/m^3 was achieved. Considering the results, an attempt can be made to increase strength of the blocks using Sugarcane Pressmud. Also to prevent the deterioration of blocks, the blocks can be treated with antifungal coating.