



Influence of Rice Husk Ash on Characteristics of Earth Cement Blocks

Vasanthan Seevaratnam, Dilukshan Uthayakumar,
Navaratnarajah Sathiparan

Department of Civil Engineering, University of Jaffna, Sri Lanka.

This paper presents an experimental study on the characteristics of earth cement blocks with Rice Husk Ash (RHA) as a partial replacement to cement. The replacement of RHA content is limited to 0%, 5%, 10%, 15% and 20% by mass of the total binder in the earth cement block. The experiments on earth cement blocks investigate the compressive strength and flexural tensile strength for mechanical properties and water absorption, sorption rate and erosion against water spray for its durability. Due to the high content of SiO₂ in RHA with great reactivity, a significant increase in the compressive and flexural tensile strength of earth cement blocks was observed up to 10% RHA content. However, the durability of earth cement blocks becomes adverse with the increasing percentage of RHA replacement, but within the allowable limit. The experimental results indicate that to some extent, RHA based earth cement blocks have a significant potential for reduction in cement used in the construction industry.

INTRODUCTION

Masonry is the oldest building material that is still currently used in housing and industrial construction. In Sri Lanka, many residential houses and building constructions used masonry as their main construction material. Construction of masonry is very economical for developing country and the requirement of material and technical skills is very less compared with other cases such as concrete or steel structures. In addition to its low cost and simple construction technology, masonry has other advantages, such as excellent thermal insulating and soundproof properties. In Sri Lanka, fired brick and cement sand blocks are the dominant construction materials for housing, and both have certain limitations in terms of environmental factors and lack of resources. Fired brick production has an issue of the use of agricultural soils and high emissions