

# **MECHANICAL PROPERTIES OF RICE HUSK ASH AS A MINERAL ADDITION IN CONCRETE**



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**LAPORAN AKHIR PENYELIDIKAN “MECHANICAL PROPERTIES OF RICE  
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Merujuk kepada perkara di atas, dengan segala hormatnya bersama-sama ini disertakan **tiga (3)** naskhah Laporan Akhir Penyelidikan bertajuk “Mechanical Properties of Rice Husk Ash as a Mineral Addition in Concrete” oleh kumpulan Penyelidik berkenaan dari Fakulti Kejuruteraan Awam (FKA), Universiti Teknologi MARA (UiTM), Shah Alam, untuk makluman pihak Y. Bhg. Prof.

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## ABSTRACT

Substituting basic materials in construction is well known for conservation of dwindling resources and preventing environmental and ecologist damages caused by quarrying and depletion of raw materials. Many researchers had shown that some of these wastes have properties that would improve the quality of concrete produced. One such waste material is agricultural waste rice husk, which constitutes about one-fifth of 600 million tones of rice produced annually in the world. The use of this supplementary cementing material is expected to meet the increase in demand of cement, as the current world cement production of approximately 1.2 billion tones is expected to grow exponentially to about 3.5 billion tones per year by 2015.

This report is a study conducted on the performance of normal strength concrete of grade 30 N/mm<sup>2</sup>, containing RHA with and without superplasticiser. The parameters on the performance were based on the compressive strength, flexural and tensile splitting strength of RHA concrete containing 20% and 30% RHA. The results show that the optimum replacement level of RHA was 20% and with the addition of superplasticiser the replacement of RHA was taken as 30%. The results of the study also show that the performance in term of flexural strength and tensile splitting strength does not significantly improved with the replacement of cement with RHA at the age of 28 days. However, prolong of the test duration would be expected to increased as RHA being pozzolanic material, strength increased occurred at a slower rate.

**Keywords :** Rice Husk Ash (RHA), superplasticiser, Ordinary Portland Cement, compressive strength, flexural strength, tensile splitting strength