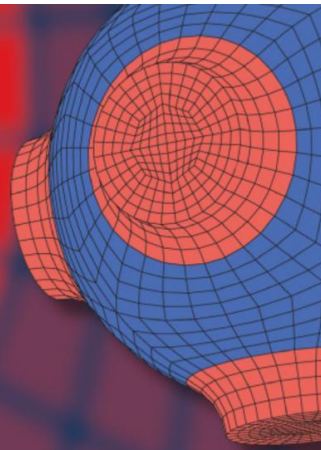


Advanced Structured Materials

Azman Ismail  
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# Advanced Structured Materials

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# Advanced Transdisciplinary Engineering and Technology

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# Preface

This book is a prestigious platform for sharing and writing the research findings from various engineering and technological disciplines related to quality engineering, sustainable green energy, sustainable nanomaterials, instrumentation and control, facilities maintenance, industrial logistic technology, and application of Internet of things.

The aim of the discussion in the chapters is to give the opportunity to explore new conceptual, theoretical, methodological, translational innovations, and novel knowledges in order to respond to the rapid changes in the lifeworld requests and demands that require more responsive knowledges and findings.

These chapters were written and compiled from numerous researchers, practitioners, and academicians from Universiti Kuala Lumpur, Malaysia, as part of the effort to promote the research activities and to contribute the knowledge sharing for better research world.

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# Physical and Mechanical Properties of Waste Red-Gypsum Based Concrete Composites

[Mohd Amirul Hakim Sidek](#), [Rosli Mohd Yunus](#), [Muhammad Remanul Islam](#)  & [Amin Firouzi](#)

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## Abstract

Red gypsum (RG) was used as a cement replacement material for brick in order to evaluate the performance of this waste material as a filler. A constant quantity of cement (10%) and w/c ratio of 0.45 was used in order to study the effect of replacement of sand by RG. The increase of compressive strength with replacement of sand by RG up to 25% and later showing a decreasing trend of compressive strength when further increase of replacement percentage was related to the particle size modification of the solid mix. Sieve analysis showed between 0 to 25% replacement, the percentage of fineness increases in the same grading zone. Within this region, the hardness value of the solid mix was altered, resulting in an increase in the compression and consolidation index. The increase in the compression and consolidation index is reflected from the thickness of the bricks produced from the solid mix pressing, in which the thickness of the 25% onwards sand replacement showed slightly thinner bricks with denser appearance. The findings were further strengthened with the results from the UPV analysis showing a higher velocity of doppler wave passing through the dense RG cement bricks.

## Keywords

Red gypsum

Sand

Mortar

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Cement

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