

UNIVERSITI TEKNOLOGI MARA

**DEVELOPMENT OF HYBRID
STRENGTH BRICK CONTAINING
BOTTOM ASH**

ANUAR BIN ABDL WAHAB

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ABSTRACT

The field of construction is now expanding widely. Hence, the use of a variety of building materials has greatly increased. One of the building materials involved was brick. Brick consists of a variety of brick commonly used in the construction industry. Sand cement brick was not the main focus of this study. This brick used sand as the main materials for production. This condition causes dependence on the use of materials such as a sand increase in the construction industry. Therefore, an innovation study in producing a new brick known as Hybrid Strength Brick (HSB) is to reduce the dependence of this sand. HSB is a new type and concept brick by three layers with two different strength grades and different materials. It was found that the dependence on sand caused a wide range of alarming environmental problems. Additionally, HSB also uses other wasted materials bottom ash from portion of the incombustible residue of combustion in an incinerator or furnace that burned coals which are usually for production of electric power which is largely generated annually resulting in a lot of storage space required. The manufacture of HSB bricks was layering method where it was the latest brick making method. Through this study, the mixing of the material is designed to obtain the brick that has the appropriate brick characteristics through the established laboratory test. The characteristics are compressive strength, modulus of elasticity, density, water absorption, porosity and initial rate of suction of this brick compared with sand cement brick and bottom ash bricks to identify the existence of factors that affect these characteristics. Then the resulting analysis of this comparison determined the optimum mix for HSB. The finding showed that the optimum mix for this study was the HSB M8, the bricks with different grades strength of bottom ash (BA). Grade 10N/mm² of BA used as an outer layer while grade 5N/mm² as an inner layer. HSB M8 had the whole acceptable brick characteristics.

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