

**MECHANICAL BEHAVIOUR OF SPECIAL MORTAR MADE WITH  
PALM OIL FUEL ASH (POFA) AS SAND REPLACEMENT UNDER  
POST FIRE CONDITION**

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## ABSTRACT

### **MECHANICAL BEHAVIOUR OF SPECIAL MORTAR MADE WITH PALM OIL FUEL ASH (POFA) AS SAND REPLACEMENT UNDER POST FIRE CONDITION.**

Since many years ago, Malaysia is having a serious environmental issues in disposing Palm Oil Fuel Ash (POFA) which is a waste produced by the process of extracting the palm oil in palm oil mills. POFA is usually end up by being disposed in the landfill. With the increasing of the palm oil production, the amount of this waste in expected to increase gradually. In this project, the objective of the study is to investigate the effect of Palm Oil Fuel Ash (POFA) on the mechanical behaviour of mortar. The main objective of this study is to determine the relationship between compressive strength with different percentage of POFA as a sand replacement. Detailed study was conducted throughout the project. The experiment was conducted by replacing 1%, 2%, 3%, 4% and 5% of POFA by the weight of sand and compared with control mortar 0% POFA. The mortar paste was poured into specific cube mould and left to be dried for 24 hours. After that, the mortar then immersed in a tank that full of water for 7 days to let the curing process begin before subjected to heating process and compressive strength testing. The result of the compressive strength are recorded and analysed. In conclusion, mortar with 1% POFA reached higher strength at 200 °C compared to normal temperature. Moreover, compressive strength of mortar with 4% POFA and 5% POFA slightly increase from 200 °C to 600 °C . Mortar with 2% to 3% POFA achieved highest compressive strength at 600 °C compared with the strength of mortar at normal temperature.