

**UTILISATION OF PALM OIL FUEL ASH (POFA)  
AS CEMENT REPLACEMENT BY USING  
POWDER AND LIQUIDATION METHOD**

**FATIN BINTI ZAINUDIN**

**Bachelor of Engineering (Hons) Civil (Infrastructure)  
UNIVERSITY TECHNOLOGY MARA  
JANUARY 2018**

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By

**FATIN BINTI ZAINUDIN**

This report is submitted as a partial requirement for the degree of  
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## DECLARATION BY THE CANDIDATE

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicate or acknowledged as referenced work. This topic has not been submit to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supply with the Academic Rules and Regulations for Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Candidate : Fatin Binti Zaiudin

Candidate I.D. No : 2015229098

Programmed : Bachelor of Engineering (Hons) Civil  
(Infrastructure)

Faculty : Civil Engineering

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Signature of Candidate : .....

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## ABSTRACT

This research intention to utilize of Palm Oil Fuel Ash (POFA) as cement replacement by using two different methods. POFA is a waste product obtained from burning of palm oil and palm kernel shell as a fuel in palm oil mill boilers that have been identifying as a good pozzolanic material. The using of partial replacement of cement by Palm Oil Fuel Ash (POFA) as a pozzolanic material in producing high strength of concrete compared with conventional concrete of grade M<sub>30</sub>. Moreover, the effective consumption of Palm Oil Fuel Ash (POFA) in concrete would help to cut down the cost of concrete production, also can reduce the environmental issue and can fix the landfill problem from the disposal of those wastage. In this study was discussed the strength properties of POFA in different partial replacement percentage and compares with the control mixtures. It used to replace Portland cement by 5% and 10% by weight of the cementitious material to make high strength concrete with the different method that is powder and liquidation method. The compressive and flexural strength of POFA concrete due to 3, 7 and 28 days of curing ages was investigated. In this study, found that 5% of partial replacement by using powder method can achieved high strength compare to another method and percentage. It shows that POFA is an outstanding pozzolanic material that can be use as another partial cement replacement concrete. Therefore, it can recommend that the optimal replacement for Palm Oil Fuel Ash (POFA) is 5% for good strength in compressive and flexural.