

**THE BEHAVIOUR OF ULTRA HIGH
PERFORMANCE FIBRE REINFORCED
CEMENTITIOUS COMPOSITE (UHPFRCC)
CLADDED REINFORCED CONCRETE
COLUMN UNDER THE EFFECT OF
ELEVATED TEMPERATURE**

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AUTHOR'S DECLARATION

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 indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree of qualification.

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

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ABSTRACT

Fire poses a serious threat to us. It can snatch away lives, perish buildings and infrastructures, pollutes air due to smoke it produces and lastly, incur cost due to aforementioned problems. Such extreme condition must be tackled properly in order to avoid the calamity that it may bring. Fire design in structure is compulsory as lined in Uniform Building By-Law (UBBL) and EN 1991-1-2 and EN 1992-1-2, which all designers must comply to for the purpose of design. This study is to determine the behaviour of insulated reinforced concrete structure that is exposed to elevated temperature and determine the optimum thickness of cladding to be applied in structure that has satisfactory fire endurance as lined in standards mentioned before. Finite element analysis is used to model the heat transfer and static analysis for the purpose of this study. Temperature development and stress – strain curve of the insulated RC column tested with fire under ASTM E119 condition are obtained. The optimum thickness of UHPFRCC cladding that is able to retain strength throughout the heating and load impact is cladding with thickness of 75mm.

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