PERFORMANCE OF HIGH STRENGTH BINARY AND TERNARY BLENDED CEMENT PASTE AND CONCRETE CONTAINING PALM OIL FUEL ASH AND METAKAOLIN IN AGGRESSIVE ENVIRONMENT

by

MOHD HANIF BIN ISMAIL

Thesis submitted in fulfillment of the requirements
for the degree of
Doctor of Philosophy

March 2016

ACKNOWLEDGEMENT

In the name of Allah, Most Gracious, Most Merciful. My heartiest appreciation to the supervisor who is highly respected Associate Professor Dr Megat Azmi Bin Megat Johari in his dedication in completing this study. My Heart felt appreciation is also given to the co-supervisor Associate Professor Dr. Kamar Shah Bin Ariffin for contributing ideas and opinions in this thesis.

My thanks also go to the Universiti Sains Malaysia and Kementerian Pendidikan Malaysia for providing the financial assistance. Appreciation to the technical staff at Concrete Laboratory, School of Civil Engineering, USM, Mr Shahril Izham, Mr Mohd Fauzi, Mr Abdullah and Mr Mad Fadzil on their cooperation in carrying out experiments. Whole fellow graduates and friends of colleagues, too many to list here, the support and encouragement of you all are very much appreciated and commendable.

Finally, to my beloved parents who are being the backbone of my life and to all my success in this world. To my respected beloved wife, Noor Syuhaili Binti Mohd Rusly and to my beloved son Ammar Hanif Bin Mohd Hanif your flushing loving affection is needed in this life. May Allah bless all of you.

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LIST OF ABBREVIATIONS

ASTM	American society for testing and materials
BBC	Binary blended concrete
BBCP	Binary blended cement paste
BS	British standard
CAH	Calcium aluminate hydrate
CH	Calcium hydroxide
CIMA	Cement Industries of Malaysia Berhad
CSAH	Calcium sulfoaluminate hydrate
CSH	Calcium silicate hydrate
ETT	Ettringite
FESEM	Field emission scanning electron microscope
Gyp	Gypsum
K	Kaolin
LOI	Loss of ignition
MK	Metakaolin
POFA	Palm oil fuel ash
ppm	Part per million
ppt	Part per thousand
Q	Quartz
RCPT	Rapid chloride penetration test
RMT	Rapid migration test
SEM	Scanning electron microscope
SP	Superplasticizer
TBC	Ternary blended concrete
TBCP	Ternary blended cement paste
W/B	Water/binder ratio
W/C	Water/cement ratio
XRD	X-ray Diffraction
XRF	X-ray fluorescence

LIST OF SYMBOLS

η	Viscosity coefficient of nitrogen gas
π	Pi = 3.142
ν	Water porosity
ρ	Water density
A	Surface area
B	The diameter of the sample
D	The diameter of tube
d	Depth of permeability
H	Tubes readings
h	Pressure
K	Gas permeability coefficient
K_w	Water permeability coefficient
L	Height
m	Mass of sample
P	Porosity of concrete
P_1	Gas pressure
P_2	Atmosphere pressure
T,t	Time
V	Fluid velocity
W_d	Dry weight
W_{ssd}	Saturated weight
W_{ssw}	Saturated weight in water