CHARACTERIZATION AND EVALUATION OF ALKALINE ACTIVATED MORTARS SYNTHESIZED FROM BINARY AND TERNARY BLENDS OF PALM OIL FUEL ASH, GROUND GRANULATED BLAST FURNACE SLAG AND FLY ASH

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by

OTHMAN MOSBAH MOHAMED ELBASIR

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In the Name of Allah, the Most Beneficent, the Most Merciful

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>ii</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xiii</td>
</tr>
<tr>
<td>LIST OF SYMBOLS</td>
<td>xx</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>xxi</td>
</tr>
<tr>
<td>ABSTRAK</td>
<td>xxii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>xxiv</td>
</tr>
</tbody>
</table>

## CHAPTER ONE:-- INTRODUCTION

1.1 Research background 1
1.2 Problem statement 3
1.3 Objectives 5
1.4 Scope of Research 5
1.5 Outline of the Thesis 7

## CHAPTER TWO:-- LITERATURE REVIEW

2.1 Background and history of important events about alkali-activated binders 9
2.2 Synthesis and performance of alkaline activated binder or geopolymer 13
2.3 Common source materials used in alkaline activate binders/ geopolymers 14
2.4 Different base materials used in alkaline activated binders/geopolymers 17
  2.4.1 Palm Oil Fuel Ash 17
    2.4.1.(a) Properties of POFA 20
    2.4.1.(b) Performance of palm-oil fuel ash as base materials in AAB 23
  2.4.2 Fly-ash as a base material in the synthesis of geopolymer 23
    2.4.2.(a) Fly ash utilization 24
  2.4.3 Slag as a raw materials in the synthesis of alkaline activated binder 27
    2.4.3.(a) Slag Requirements as Alkali Activated Binder 28
    2.4.3.(b) Description of alkali activated slag formation 31
  2.4.4 Sand proportioning in alkali activated mortar 32
  2.4.5 Other materials used for the development of alkaline activated binder 32
  2.4.6 Design of mixtures by taguchi method 33
  2.4.7 Reaction mechanism and hydration products 35

2.5 Factors affecting the performance of alkaline activated binders 38
  2.5.1 Alkaline activators 38
  2.5.2 Effects of NaOH concentration 39
  2.5.3 Effect of alkaline ratio (silica modulus) on the AAB products 40
  2.5.4 Composition of alkaline activators 40
  2.5.5 Methods of curing of the AAB products 44

2.6 Durability of alkali activated or geopolymer binders in aggressive chemical environments 47
  2.6.1 Alkali activated or geopolymer mortar performance under sulfate attack 47
  2.6.2 Alkali activated or geopolymer mortar performance in acid exposure 49
  2.6.3 Thermal resistance variations of alkaline activated mortars 50

2.7 Summary 51
CHAPTER THREE: MATERIALS AND METHODOLOGY  53

3.1 Introduction  53

3.2 Flow Chart of Methodology  54

3.3 Materials  58

3.3.1 Solid materials  58

3.3.2 Raw Materials  63

3.3.2.(a) Fly Ash  63

3.3.2.(b) Ground granulated blast furnace slag  64

3.3.3 Fine Aggregates  64

3.3.4 Alkaline Activators  65

3.4 Materials Characterization  67

3.4.1 Physical Properties  67

3.4.2 Characterization of raw materials and structural analysis of the samples  69

3.4.2.(a) X-ray fluorescence (XRF)  69

3.4.2.(b) Identification of the phase compositions  70

3.4.2.(c) Morphology with Chemical Compositions  70

3.4.2.(d) Fourier Transform Infra-Red (FTIR)  71

3.4.2.(e) Differential Thermal Analysis  72

3.5 Stage I: Synthesis and Evaluation of Performance of POFA-based Alkali Activated Mortars using POFA of Different Fineness.  73

3.5.1 Design of Mixtures  73

3.5.2 Preparation of Sample  74

3.5.3 Curing method  75

3.5.3.(a) Delay time  75

3.5.3.(b) Curing temperature and heating period  75

3.5.4 Testing and analysis of samples  75
3.6 Stage II: Synthesis and Evaluation of Performance of Single Binder Alkali Activated Mortars using u-POFA, FA and GGBFS

3.6.1 Design of mixture by Taguchi method

3.6.2 Preparation, mixing, and casting of designed mixtures

3.6.3 Curing Method

3.6.4 Testing and Analysis of Samples

3.7 Stage III: Evaluation of strength, thermal and microstructural properties of binary blended alkali activated mortars

3.7.1 Design of mixtures

3.7.2 Preparation of Alkali Activated Binary Blended Mortars and Testing

3.7.3 Method of curing

3.7.3.(a) Testing and analysis of samples

3.8 Stage IV: Evaluation of strength and microstructural properties of ternary blended alkali activated mortars

3.8.1 Design of mixtures

3.8.2 Preparation of ternary blended alkali activated mortar and testing

3.8.3 Method of Curing

3.8.3.(a) Testing and Analysis of Samples

3.9 Stage IV: Durability performance of single and ternary blended alkali activated mortars exposed to various aggressive environments and elevated temperatures

3.9.1 Design and preparation, mixing, and casting of mixtures

3.9.2 Method of curing

3.9.3 Durability performance of single and ternary blended based alkali activated mortars under various aggressive environment.

3.9.3.(a) Test procedure

3.9.3.(b) Test Specimens

3.9.3.(c) Preparation of sulfate solutions

3.9.3.(d) Preparation of acid solutions

3.9.3.(e) Specimen analysis
3.9.4 Thermal stability of single and ternary blended (u-POFA, FA and GGBFS) based alkali activated mortars after being exposed to elevated temperatures

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9.4(a) Test Procedure</td>
<td>94</td>
</tr>
<tr>
<td>3.9.4(b) Specimen Analysis</td>
<td>95</td>
</tr>
</tbody>
</table>

**CHAPTER FOUR:- RESULTS AND DISCUSSION**

4.1 Introduction

Stage II: Synthesis and Evaluation of Performance of Single Binder Alkali Activated Mortars using u-POFA, FA and GGBFS.

4.2 Characterization of Base Materials

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.1 Chemical Compositions of Base Materials</td>
<td>97</td>
</tr>
<tr>
<td>4.2.2 XRD Analysis of the Base Materials</td>
<td>97</td>
</tr>
<tr>
<td>4.2.3 Physical Properties of Base Materials</td>
<td>98</td>
</tr>
<tr>
<td>4.2.4 Particle morphology of the POFA base materials</td>
<td>99</td>
</tr>
<tr>
<td>4.2.5 Thermogravimetric Analysis (TGA)</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3 Compressive Strength of Alkaline Activated Mortar

4.4 Fourier Transform Infra-Red (FTIR)

4.5 X-Ray diffraction of POFA based alkaline activated mortar

4.6 Effect of POFA fineness on microstructures of the alkaline activated mortar

4.7 Synthesis of alkali activated binder using single base material

<table>
<thead>
<tr>
<th>Subsubsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.7.1 Experimental data analysis of mixtures designed by Taguchi method</td>
<td>109</td>
</tr>
<tr>
<td>4.7.1.(a) Effect of Na₂SiO₃ to NaOH weight ratio (Factor A)</td>
<td>112</td>
</tr>
<tr>
<td>4.7.1.(b) Effect of NaOH concentration of (factor B)</td>
<td>114</td>
</tr>
<tr>
<td>4.7.1.(c) Effect of initial silica modulus of Na₂SiO₃ (Factor C)</td>
<td>116</td>
</tr>
<tr>
<td>4.7.1.(d) Optimum level of key components of u-POFA, FA, and GGBFS based alkali activated mortars</td>
<td>118</td>
</tr>
<tr>
<td>4.7.1.(e) Chemical bond development analysis using FTIR</td>
<td>120</td>
</tr>
</tbody>
</table>
4.7.1.(f) Mineralogical analysis 121
4.7.1.(g) FESEM and EDX analyses 123

4.8 Evaluation of strength, thermal and microstructural properties of binary blended alkali activated mortars 125

4.8.1 Characterization of raw materials 126
4.8.1.(a) Chemical compositions and physical properties of raw materials 126
4.8.1.(b) XRD analysis of base materials 126
4.8.1.(c) Particle morphology of the base materials 128

4.8.2 Compressive strength 129
4.8.2.(a) Effect of FA on the compressive strength of u-POFA based mortar 129
4.8.2.(b) Effect of GGBFS on the compressive strength of u-POFA based mortar 130
4.8.2.(c) Effect of GGBFS ash on the compressive strength of FA based mortar 131

4.8.3 Characterization of binary blended alkali activated mortar mixture 133
4.8.3.(a) Mineralogical analysis 133
4.8.3.(b) Fourier Transform Infra-Red (FTIR) 135
4.8.3.(c) FESEM and EDX analyses 137
4.8.3.(d) Thermogravimetric analysis TGA 141
4.8.3.(e) Differential thermal analysis (DTA) 142

4.9 Stage IV: Evaluation of strength and microstructural properties of ternary blended alkali activated mortars 143

4.9.1 Compressive strength 143
4.9.2 Effects of GGBFS on ternary blended alkaline activated mortar (FTIR) 145
4.9.3 Effect of GGBFS on the amorphousity of the products (XRD) 146
4.9.4 FESEM analyses 147
4.10 Durability performance of single and ternary blended alkali activated mortars exposed to various aggressive environments and elevated temperatures

4.10.1 Durability performance of single and ternary blended alkali activated mortars in aggressive environments

4.10.1.(a) Reduction in compressive strength in sodium and magnesium sulfate exposures

4.10.1.(b) Reduction in compressive load in sulfuric and acetic acid exposures

4.10.1.(c) Visual Appearance

4.10.1.(d) Mineralogical analysis

4.10.1.(d) Field emission scanning electron microscopy analysis

4.10.2 Thermal stability of single and ternary blended alkaline activated mortars containing u-POFA, FA, and GGBFS

4.10.2.(a) Visual observation

4.10.2.(b) Compressive strength

4.10.2.(c) Mineralogical analysis

4.10.2.(d) Field emission scanning electron microscopy analysis

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE WORK

5.1 Conclusions

REFERENCES

APPENDICES

APPENDIX A: CALCULATION OF MIX PROPORTION OF TRIAL MIX OF GEOPOLYMER AND ALKALINE ACTIVATED MORTARS

LIST OF PUBLICATIONS
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table 2.1</th>
<th>List of Researchers and their Contributions to Further Development of AAB</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.2</td>
<td>The chemical compositions of the most commonly used source materials for geopolymer synthesis</td>
<td>16</td>
</tr>
<tr>
<td>Table 2.3</td>
<td>Chemical compositions of palm oil fuel ash</td>
<td>22</td>
</tr>
<tr>
<td>Table 2.4</td>
<td>Chemical Requirements of Fly Ash Classes (ASTM C618)</td>
<td>24</td>
</tr>
<tr>
<td>Table 2.5: Chemical Composition of Fly Ash (Ivan Diaz-Loya et al., 2011)</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Table 2.6: Typical chemical composition of GGBFS (Özbay et al., 2016)</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Table 2.7: Composition of slag used by different researchers</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Table 2.8: Summary of the effect of sand with different source materials</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Table 2.9: Summary of alkaline composition of alkaline activators in several source materials used to produce geopolymer mortar</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Table 2.10: The summary of the curing method with different source materials for the synthesis of geopolymer mortar</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Table 3.1: Total (%) of NaOH flakes to give various molarities</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Table 3.2: The mixture proportions of the POFA based alkali activated mortars</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Table 3.3: The introduced levels for each factor in Taguchi experimental design</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Table 3.4: Taguchi method of orthogonal arrays [L09 (3*3)] of the experimental design for alkali activated u-POFA, FA, GGBFS.</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.5: Mix proportions of alkali activated mortar based u-POFA used for Taguchi optimization 80

Table 3.6: Mix proportions of alkali activated mortar based FA used for Taguchi optimization 81

Table 3.7: Mix proportions of alkali activated mortar based GGBFS used for Taguchi optimization 81

Table 3.8: Optimization of the factors combination of u-POFA, FA, and GGBFS alkali activated mortar 82

Table 3.9: The mixture proportions of the binary blended based alkali activated mortars 85

Table 3.10: The mixture proportions of the Ternary blended based alkali activated mortars. 88

Table 4.1: Chemical Compositions of t-POFA, f-POFA and u-POFA Using XRF 97

Table 4.2: Physical properties of the POFA base materials 99

Table 4.3: Changes of compressive strength of the trial mixes of u-POFA at 3, 7, 14, and 28 days 110

Table 4.4: Changes of compressive strength of the trial mixes of fly ash at 3, 7, 14, and 28 days 111

Table 4.5: Changes of compressive strength of the trial mixes of GGBFS at 3, 7, 14, and 28 days 111

Table 4.6: Optimization of the factors combination of u-POFA, FA, and GGBFS alkali activated mortar mixture at different curing ages 119

Table 4.7: Chemical compositions of u-POFA, FA, and GGBFS analyzed by XRF 127

Table 4.8: Physical properties of u-POFA, FA and GGBFS Error! Bookmark not defined.

Table 4.9: Composition of some oxides of the alkali activated mortar 127
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2.1</td>
<td>K, Ca — cyclo — ortho(sialate — di — siloxonate hydrate</td>
<td>31</td>
</tr>
<tr>
<td>Figure 2.2</td>
<td>Conceptual model for geopolymerisation (Duxson et al., 2007)</td>
<td>36</td>
</tr>
<tr>
<td>Figure 2.3</td>
<td>Typical reaction mechanism of geopolymerisation reaction (Pacheco-Torgal et al., 2008a)</td>
<td>37</td>
</tr>
<tr>
<td>Figure 3.1</td>
<td>Factors affecting the geopolymer mortar synthesis</td>
<td>55</td>
</tr>
<tr>
<td>Figure 3.2</td>
<td>a and b: Flow chart of the methodology carried out in this research</td>
<td>Error! Bookmark not defined.</td>
</tr>
<tr>
<td>Figure 3.3</td>
<td>Palm oil fuel ash in waste repository near palm oil mill</td>
<td>59</td>
</tr>
<tr>
<td>Figure 3.4</td>
<td>The stage of drying the POFA in the oven</td>
<td>59</td>
</tr>
<tr>
<td>Figure 3.5:</td>
<td>The stage of sieving the POFA at 300 μm</td>
<td>60</td>
</tr>
<tr>
<td>Figure 3.6:</td>
<td>The stage of grinding the POFA in the ball mill machine</td>
<td>60</td>
</tr>
<tr>
<td>Figure 3.7:</td>
<td>G-POFA</td>
<td>60</td>
</tr>
<tr>
<td>Figure 3.8:</td>
<td>t-POFA</td>
<td>61</td>
</tr>
<tr>
<td>Figure 3.9:</td>
<td>Different types of POFA grades</td>
<td>62</td>
</tr>
<tr>
<td>Figure 3.10:</td>
<td>Fly Ash</td>
<td>63</td>
</tr>
<tr>
<td>Figure 3.11:</td>
<td>GGBFS</td>
<td>64</td>
</tr>
<tr>
<td>Figure 3.12:</td>
<td>Fine aggregate</td>
<td>65</td>
</tr>
<tr>
<td>Figure 3.13:</td>
<td>Raw materials for alkaline activator</td>
<td>67</td>
</tr>
<tr>
<td>Figure 3.14:</td>
<td>Types of sodium silicate (Na₂SiO₃) with initial silica modulus</td>
<td>67</td>
</tr>
<tr>
<td>Figure 3.15:</td>
<td>Malvern 3000 laser diffraction particle size analyse</td>
<td>68</td>
</tr>
<tr>
<td>Figure 3.16:</td>
<td>Micromeritics accupyc 1330 helium autopycnometer</td>
<td>68</td>
</tr>
</tbody>
</table>
Figure 3.17: XRF Device used in chemical compositions analysis 69

Figure 3.18: Bruker, D8 X-ray diffraction (XRD) instrument 70

Figure 3.19: Scanning electron microscopy in combination with energy dispersive X-ray spectroscopy (FESEM/EDX) device 71

Figure 3.20: Fourier Transform Infra-Red (FTIR) Instrument 72

Figure 3.21: Thermal analysis apparatus 72

Figure 3.22: Preparation of specimens (a) mixing, (b) vibration, and (c) casting 76

Figure 3.23: Curing of samples in oven curing wrapped with heat resistant vinyl bags 76

Figure 3.24: Room curing at ambient temperature 77

Figure 3.25: Compressive strength machine test 77

Figure 3.26: Samples exposure to sulfate and acid 93

Figure 3.27: Samples placed inside the electrical furnace after heating 94

Figure 4.1: Stages of POFA treatment  Error! Bookmark not defined.

Figure 4.2: XRD patterns of the base materials (t-POFA, f-POFA and u-POFA) 98

Figure 4.3: Particle size distribution curves of the POFA base materials. 99

Figure 4.4: Particle morphology of the base materials 100

Figure 4.5: TGA of base materials (o-POFA, u-POFA) 101

Figure 4.6: Compressive strength of alkali activated POFA based mortar at 7, 14, and 28 days. 102

Figure 4.7: FTIR Spectra for Alkali Activated POFA Mortar for M1, M2 and M3 at 28 days 105

Figure 4.8: XRD for Alkaline Activated Mortar Samples M1, M2, and M3 at 28 Days 107

Figure 4.9: (a) FESM+EDX result of alkaline activated mortar M1. (b) FESM+EDX result of alkaline activated mortar M2. (c) FESM+EDX result of alkaline activated mortar M3. 109
Figure 4.10: Effect of Na$_2$SiO$_3$-to-NaOH weight ratio on each response of compressive strength at different curing ages (a) u-POFA, (b) FA and (c) GGBFS 113

Figure 4.11: Effect of NaOH concentration on compressive strength at different curing ages (a) u-POFA, (b) FA and (c) GGBFS 116

Figure 4.12: Effect of silica modulus weight ratio on each response of compressive strength at different curing ages (a) u-POFA, (b) FA and (c) GGBFS 118

Figure 4.13: Optimization of the factors combination of (A) u-POFA, (B) FA, and (C) GGBFS-based alkali activated mortars 119

Figure 4.14: FTIR spectra for alkali activated mortar for samples (A) u-POFA, (B) FA, and (C) GGBFS at 28 days 121

Figure 4.15: XRD for alkaline activated mortar samples (A) u-POFA, (B) FA, and (C) GGBFS at 28 days 123

Figure 4.16: FESEM/EDX result of alkaline activated mortar of u-POFA (A), FA (B) and GGBFS (C) 125

Figure 4.17: Particle size distribution curves of base materials 128

Figure 4.18: XRD patterns of the base materials (u-POFA, FA and GGBFS) 128

Figure 4.19: Particle morphology of the raw materials (a) u-POFA, (b) FA and (c) GGBFS 129

Figure 4.20: Thermogravimetric analysis (TGA) of base materials (u-POFA, FA and GGBFS) Error! Bookmark not defined.

Figure 4.21: Compressive strength of alkali activated binary blended u-POFA+FA based mortar at 7, 14, and 28 days 132

Figure 4.22: Compressive strength of alkali activated binary blended FA+GGBFS based mortar at 7, 14, and 28 days 133

Figure 4.23: XRD for alkaline activated mortar samples Br6, Br13, and Br20 at 28 days 135

Figure 4.24: FTIR spectra for alkali activated mortar samples Br6, Br13, and Br20 at 28 days 137
Figure 4.26: FESEM/EDX result of alkaline activated mortars Br6, Br13, and Br20 at 28 days 140

Figure 4.27: Thermogravimetric analysis for Br6, Br13, and Br20 at 28 days 142

Figure 4.28: Differential thermal analysis for Br6, Br13, and Br20 at 28 days 143

Figure 4.29: Compressive strength of alkali activated ternary blended u-POFA +FA+GGBFS based mortar at 3, 7, 14, and 28 days 144

Figure 4.30: FTIR spectra analysis ternary blended for mixture T1 and T3 146

Figure 4.31: XRD for alkaline activated mortar ternary blended samples T1 and T3 at 28 days 147

Figure 4.32: FESEM result of alkaline activated mortar ternary blended (T1) 50% u-POFA, 20% GGBFS and 30% FA and (T3) 40% u-POFA, 40% GGBFS and 20% FA 148

Figure 4.33: Residual compressive load of u-POFA, FA, GGBFS, and ternary blended-based alkali activated mortars. Specimens before and after begin exposed to 5% Na2SO4 151

Figure 4.34: Relative residual compressive Load of u-POFA, FA, GGBFS, and ternary blended - based alkali activated mortars. Specimens before and after begin exposed to 5% Na2SO4 152

Figure 4.35: Residual compressive load of u-POFA, FA, GGBFS, and ternary blended - based alkali activated mortars. Specimens before and after begin exposed to 5% Mg2SO4 152

Figure 4.36: Relative residual compressive Load of u-POFA, FA, GGBFS, and ternary blended - based alkali activated mortars. Specimens before and after begin exposed to 5% Mg2SO4 153

Figure 4.37: Residual compressive load of u-POFA, FA, GGBFS, and ternary blended - based alkali activated mortars. Specimens before and after begin exposed to 5% H2SO4 155

Figure 4.38: Relative residual compressive Load of u-POFA, FA, GGBFS, and ternary blended - based alkali activated mortars. Specimens before and after begin exposed to 5% H2SO4 155
Figure 4.39: Residual compressive load of u-POFA, FA, GGBFS, and ternary blended-based alkali activated mortars. Specimens before and after begin exposed to 5% C₂H₄O₂

Figure 4.40: Relative residual compressive Load of u-POFA, FA, GGBFS, and ternary blended-based alkali activated mortars. Specimens before and after begin exposed to 5% C₂H₄O₂

Figure 4.41: Visual appearance of (a) u-POFA, (b) FA, (c) GGBFS and (d) ternary blended-based alkali activated mortars. Specimens cured at ambient temperature after 28 days

Figure 4.42: Visual appearance of u-POFA (a), FA (b), GGBFS (c) and ternary blended (d) based alkali activated mortars. After being exposed to 5% NaSO₄ for 240 days

Figure 4.43: Visual appearance of u-POFA (a), FA (b), GGBFS (c) and ternary blended (d) based alkali activated mortars. Mixtures after being exposed to 5% MgSO₄ for 240 days

Figure 4.44: Visual appearance of u-POFA (a), FA (b), GGBFS (c) and ternary blended (d) based alkali activated mortars. Mixtures after being exposed to 3% H₂SO₄ for 240 days

Figure 4.45: Visual appearance of u-POFA (a), FA (b), GGBFS (c) and ternary blended (d) blended-based alkali activated mortars. Mixtures after being exposed to 3% C₂H₄O₂ for 240 days

Figure 4.46: XRD diffractograms of u-POFA, FA, GGBFS, and ternary blended-based alkali activated mortars. Mixtures # (Der1, Der2, Der3, and Der4) after being exposed to 5% Na₂SO₄ for 240 days

Figure 4.47: XRD diffractograms of u-POFA, FA, GGBFS, and ternary blended-based alkali activated mortars. Mixtures # (Der1, Der2, Der3, and Der4) after being exposed to 5% MgSO₄ for 240 days

Figure 4.48: XRD diffractograms of u-POFA, FA, GGBFS, and ternary blended-based alkali activated mortars. Mixtures # (Der1, Der2, Der3, and Der4) after being exposed to 3% H₂SO₄ for 240 days

Figure 4.49: XRD diffractograms of u-POFA, FA, GGBFS, and ternary blended-based alkali activated mortars. Mixtures # (Der1,
Der2, Der3, and Der4) after being exposed to 3% $\text{C}_2\text{H}_4\text{O}_2$ for 240 days.

Figure 4.50: FESEM for mixtures u-POFA (a), FA (b), GGBFS (c) and ternary blended (d) based alkali activated mortars. Specimens after begin cured at room temperature

Figure 4.51: FESEM for mixtures u-POFA (a), FA (b), GGBFS (c) and ternary blended (d) based alkali activated mortars after begin exposed to 5% Na$_2$SO$_4$ for 240 days

Figure 4.52: FESEM for mixtures u-POFA (a), FA (b), GGBFS (c) and ternary blended (d) based alkali activated mortars after begin exposed to 5% MgSO$_4$ for 240 days

Figure 4.53: FESEM for mixtures u-POFA (a), FA (b), GGBFS (c) and ternary blended (d) based alkali activated mortars after begin exposed to 3% H$_2$SO$_4$ for 240 days

Figure 4.54: FESEM for mixture u-POFA (a), FA (b), GGBFS (c) and ternary blended (d) based alkali activated mortars after begin exposed to 3% $\text{C}_2\text{H}_4\text{O}_2$ for 240 days

Figure 4.55: (a, b, c and d): Photographs of hardened individual and ternary blended (u-POFA, FA and GGBS) based mortars mixtures Ter1, Ter2, Ter3, and Ter4, before and after being exposed to elevated temperature of (A) 28°C, (B) at 200°C, (C) at 400°C, (D) at 600°C, (E) at 800°C, (F) at 1000°C

Figure 4.56: Residual compressive load of alkaline activated individual and ternary blended (u-POFA, FA and GGBS) based mortars

Figure 4.57: Relative residual compressive Load of alkaline activated individual and ternary blended (u-POFA, FA and GGBS) based mortars

Figure 4.58: (a)XRD diffractograms of u-POFA based mortar before and after being exposed to elevated temperature of (A) 28°C, (B) at 200°C, (C) at 400°C, (D) at 600°C, (E) at 800°C, (F) at 1000°C

Figure 4.59: (b)XRD diffractograms of FA based mortar before and after being exposed to elevated temperature of (A) 28°C, (B) at 200°C, (C) at 400°C, (D) at 600°C, (E) at 800°C, (F) at 1000°C
Figure 4.60: (c)XRD diffractograms of GGBFS based mortar before and after being exposed to elevated temperature of (A) 28°C, (B) at 200°C, (C) at 400°C, (D) at 600°C, (E) at 800°C, (F) at 1000°C 179

Figure 4.61: (d)XRD diffractograms of ternary blended (u-POFA, FA and GGBFS) based mortar before and after being exposed to elevated temperature of (A) 28°C, (B) at 200°C, (C) at 400°C, (D) at 600°C, (E) at 800°C, (F) at 1000°C 180

Figure 4.62: FESEM for mixture of u-POFA based mortar before and after being exposed to elevated temperature of 200°C, to 1000°C 182

Figure 4.63: FESEM for mixture of Fly ash based mortar before and after being exposed to elevated temperature of 200°C, to 1000°C 183

Figure 4.64: FESEM for mixture of GGBFS based mortar before and after being exposed to elevated temperature of 200°C, to 1000°C 185

Figure 4.65: FESEM for mixture of ternary blended (u-POFA, FA and GGBFS) based mortar before and after being exposed to elevated temperature of 200°C, to 1000°C 186
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG</td>
<td>green house gasses</td>
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<tr>
<td>SCM</td>
<td>supplementary cementitious materials</td>
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<tr>
<td>MDS</td>
<td>Maximum Distance Separable</td>
</tr>
<tr>
<td>Eq.</td>
<td>Equation</td>
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<tr>
<td>ECC</td>
<td>Error Correction Capability</td>
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<tr>
<td>CWT</td>
<td>Continuous Wavelet Transform</td>
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<tr>
<td>pdf</td>
<td>probability density function</td>
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<tr>
<td>QoS</td>
<td>Quality of Service</td>
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<tr>
<td>PR</td>
<td>Perfect Reconstruction</td>
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<tr>
<td>UEP</td>
<td>Unequal Error Protection</td>
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<tr>
<td>MRC</td>
<td>Maximum-Ratio Combining</td>
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</table>
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials</td>
</tr>
<tr>
<td>BS EN</td>
<td>British European Standards Specification</td>
</tr>
<tr>
<td>POFA</td>
<td>Palm oil fuel ash</td>
</tr>
<tr>
<td>G-POFA</td>
<td>Ground palm oil fuel ash</td>
</tr>
<tr>
<td>t-POFA</td>
<td>Treated palm oil fuel ash</td>
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<tr>
<td>f-POFA</td>
<td>Fine palm oil fuel ash</td>
</tr>
<tr>
<td>u-POFA</td>
<td>Ultrafine palm oil fuel ash</td>
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<tr>
<td>FA</td>
<td>Fly-ash</td>
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<tr>
<td>GGBFS</td>
<td>Ground Granulated blast furnace slag</td>
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<tr>
<td>MK</td>
<td>Metakaolin</td>
</tr>
<tr>
<td>OPC</td>
<td>Ordinary Portland cement</td>
</tr>
<tr>
<td>AAB</td>
<td>Alkaline activated binder</td>
</tr>
<tr>
<td>AAS</td>
<td>Alkali activated slag</td>
</tr>
<tr>
<td>XRF</td>
<td>X-Ray Fluorescence</td>
</tr>
<tr>
<td>XRD</td>
<td>X-Ray Diffraction</td>
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<tr>
<td>FTIR</td>
<td>Fourier transforms infrared spectroscopy</td>
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<tr>
<td>FESEM</td>
<td>Field Emission Scanning Electron Microscopy</td>
</tr>
<tr>
<td>EDX</td>
<td>Energy dispersive X-ray</td>
</tr>
<tr>
<td>DTA</td>
<td>Differential Thermal Analysis</td>
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<tr>
<td>TGA</td>
<td>Thermo-gravimetry Analysis</td>
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<tr>
<td>LOI</td>
<td>Loss on Ignition</td>
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<tr>
<td>MPa</td>
<td>Mega Pascal</td>
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<tr>
<td>C–S–H</td>
<td>Calcium silicate hydrate</td>
</tr>
<tr>
<td>N–A–S–H</td>
<td>Sodium aluminosilicate hydrates</td>
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<tr>
<td>C–A–S–H</td>
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ABSTRAK

kepadanya pelbagai persekitaran yang agresif dan menunjukkan kestabilan terma yang tinggi apabila terdedah kepada suhu tinggi sehingga 1000 °C.