APPENDIX A

Chemical Composition and Physical Properties of Cement and Fly Ashes Used in the Test on Autogenous Shrinkage of Cement Paste

Table A.1 Chemical composition and physical properties of cements

Chemical Composition (%)	Type 1	Type 3	Type 5
Silicon Dioxide (SiO_2)	20.99	20.45	21.22
Aluminium Oxide (Al_2O_3)	5.18	5.13	4.04
Ferric Oxide (Fe_2O_3)	3.20	3.32	4.98
Sulphur Trioxide (SO_3)	2.61	3.53	2.06
Calcium Oxide (CaO)	64.63	63.53	63.37
Magnesium Oxide (MgO)	1.30	1.22	2.37
Sodium Oxide (Na_2O)	0.04	Trace	Trace
Potassium Oxide (K_2O)	0.40	0.30	0.40
Loss of Ignition, %	1.17	2.01	1.09
Blaine Fineness (cm^2/g)	3190	4770	3760

Table A.2 Mineral composition of cements

Chemical Composition (%)	Type 1	Type 3	Type 5
Tricalcium Silicate (C_3S)	57	54	57
Dicalcium Silicate (C_2S)	17	18	18
Tricalcium Aluminate (C_3A)	8.3	8.0	2.3
Tetracalcium Aluminoferrite (C4AF)	10	10	15

Table A.3 Chemical composition of fly ashes

Chemical Composition (%)	FM1	FM2	FT
Silicon Dioxide (SiO_2)	43.03	45.88	55.19
Aluminium Oxide (Al_2O_3)	24.42	26.20	32.51
Sulphur Trioxide (SO_3)	1.58	1.04	0.15
Calcium Oxide (CaO)	13.65	8.28	1.60
Magnesium Oxide (MgO)	2.94	2.83	0.51
Sodium Oxide (Na_2O)	0.98	0.90	0.23
Loss of Ignition, %	0.11	0.17	1.95

Table A.4 Physical properties of fly ashes

Physical Properties	FM1	FM2	FT
Specific Gravity	2.04	2.04	2.04
Specific Surface Area ($cm.^2/g$)	2070	3460	1873