

Bhumibhat Sammor 2010: Resistance to Chloride Penetration of Fly Ash Based Geopolymer. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Associate Professor Prasert Suwanvitaya, Ph.D. 126 pages.

The objective of this study was to determine resistance to chloride ingress of fly ash based geopolymer. The study chloride penetration, compressive strength, microstructure, pore volume and pore size distribution. The mixtures used class C and class F fly ash, alkaline liquid to fly ash ratio by mass of 55 and 65 percent, concentration of sodium hydroxide solution of 6, 10 and 14 Molar, sodium silicate solution to sodium hydroxide solution ratio by mass of 1:1, fly ash to sand ratio by mass of 1:0, 1:2 and 1:4. Steel bars were embedded in specimens with covering of 25 mm. Chloride penetration tests were made by immersing specimens in 3 percent sodium chloride solution. Penetration depths were measured at 3, 10, 20, 40 and 70 days.

The results revealed that high concentration of sodium hydroxide solution content increased the compressive strength and increased the resistance to chloride penetration. The geopolymers from class F fly ash were more resistant to chloride ingress than those from class C. It was also found that increase in fly ash content increased the resistance to chloride penetration.

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