Thesis Title	A Development of Disposed Fly Ashes and Bottom Ash as Pozzolanic Materials
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Abstract

This research was to study the potential of using disposed fly ashes and bottom ash from Mae Moh power plant as pozzolanic materials. Disposed fly ashes and bottom ash were improved their quality by grinding until the particle size retained on sieve No. 325 less than 5 percent by weight. Physical properties and chemical composition of disposed fly ashes and bottom ash were investigated. Compressive strengths of mortar with a replacement of Portland cement by disposed fly ashes or bottom ash at the rate of 10, 20 and 30 percent by weight of cementitious material were also carried out. In addition, compressive strengths of concrete with a replacement of Portland cement by ground disposed fly ashes or ground bottom ash at the rate of 20 percent by weight of cementitious material were investigated. The compressive strengths of mortar and concrete were tested at the ages of 3, 7, 14, 28, 60 and 90 days.

From this study, it was found that the disposed fly ashes of 6, 12 and 24 months had large particles with solid, spherical and irregular shape. The particles of bottom ash were also large and irregular shape. CaO and LOI contents of disposed fly ashes had were much higher than that of fly ash. The compressive strengths of mortar at the ages of 7 or 28 days with replacement of Portland cement by disposed fly ashes and bottom ash at 20 percent by weight of cementitious material were about 75 percent or less as compared to that of the standard mortar. This suggested that the disposed fly ashes and bottom ash should not be used as pozzolanic materials. However, the compressive strengths of mortars with ground disposed fly ashes and

ground bottom ash were more than 75 percent at the ages of 7 or 28 days and increased to be higher than 100 percent after 60 days.

The ground disposed fly ashes and ground bottom ash concretes gave almost the same compressive strengths although the ages of disposal fly ashes were different. With high cement content in concrete mixture, the percentage compressive strength and development rate were more than the low cement content. When the cement content in concrete was 430 kg/m^3, the compressive strength of concrete could increase to be higher than that of concrete without pozzolan after 14 days, and it took 60 days for concrete with cement content of 260 kg/m^3. As the results of the compressive strengths, it can be concluded that ground disposed fly ashes and ground bottom ash can be used as pozzolanic materials.

Keywords : Disposed Fly Ashes / Bottom Ash / Compressive Strength / Percentage Compressive Strength / Mortar / Concrete / Pozzolanic Material