E2-09: Achchimalai clay as a pozzolanic material

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Pozzolanas are usually defined as materials which are not cementitious by themselves but contain constituents which will combine with lime at ordinary

temperature, in the presence of water, to form stable compounds possessing cementing properties. There are two types of pozzolanas *viz.* natural pozzolana and artificial pozzolana.

This paper deals with the technique of preparing a Portland pozzolana cement using burnt Achchimalai clay as a pozzolana. Burnt clay can be considered as an artificial pozzolana. Clay collected from the above area was burnt at various temperatures ranging from 600° to 1000°C and pH values of the aqueous solutions were monitored. The resultant product was mixed with various percentages of cement clinker ranging from 97% to 67% and about 3% of gypsum ground in a laboratory ball mill. Physical and chemical properties of ground products were detemined.

pH value varied from 6.5 to 9.2 and clay burnt in the range 700° - 800°C gave the highest pH value and also the product obtained in this range showed favourable hydraulic properties when compared to the results for other temperatures. All the physical test results were compared with Indian specification for Portland Pozzolana Cement (I.S. 1489: 1991). The product obtained at above temperature range, when mixed with about 70% of cement clinker, gave satisfactory results.

The main advantage in this process is, that the burning temperature of pozzolana is only 700° - 800°C whereas the burning temperature for ordinary portland cement clinker is 1400°C and the % of clinker required is only 70% compared to 98% in the case of ordinary portland cement.