

Thesis Title: An Appreciation of Some Possible Applications
of Mixed Aggregates Concrete as Insulator for
External Building Components.

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Abstract

The objective of this study was to make the feasibility of the concrete-foam and concrete-coconut husks mixtures for their applications as wallpanels and rooftiles, to reduce their weights and improve their insulation against heat.

The study was carried out with scientific tests. At first, the proportion of water which would give maximum strength to the concrete composites was determined from bending test of concrete composites using water at 0.5, 0.7, 0.9 and 1.1 respectively. Finally, the concrete composites at the ratio of 1:2:2, 1:2:2 and 1:2:3 with the proportion of water 0.9 which give maximum strength were tested on compression, flexible, transverse breaking, permeability, water absorption, bending and heat

conduction test. Costs of production were calculated from the prices of materials and wages. Value-added of the composites were calculated from the decreasing of their heat conduction.

It was found from the results of the study that the various properties of concrete-foam mixtures at the ratios of 1:2:1 and 1:2:2 were conformable with the standard criteria and the heat prevention was better. The concrete-coconut husks mixtures at 1:2:1 passed all standard criteria except for water absorption and permeability which exceeded the standard values to a small extent. As for the bending strength, both types of concrete mixtures were lower than the standard values. As for the costs of production, it was found that the production of tiles by ordinary molding, the cost nearly as much as the selling price of CPAC MONIER tiles. The Value added of the composites were 81-297 and 236-449 baht/cu.meter respectively. Both types of composites were feasible for production as concrete tiles, especially at the ratios of 1:2:1 and 1:2:2 if they were produced by compressing the composites, reduce water absorption and the permeability, it would accelerate the rate of production and, finally, reduce the costs of production.