

KHORAT CLAYS AS RAW MATERIALS FOR LIGHTWEIGHT AGGREGATES

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Abstract

This study assesses the possible use of Khorat clays, deposited at Suranaree University of Technology (SUT), for the production of lightweight aggregates. The SUT clays were collected and divided into 2 groups, i.e. white clay and reddish brown clay, to study their heat-treatment behavior. The SUT clay mixtures in various ratios were investigated to find the suitable compositions and heat-treatment (between 1000 and 1250°C) for the production of lightweight aggregates. After firing at 1250°C, the SUT clays expanded 21.05 and 5.70% for the white and reddish brown clays, respectively. Firing expansion was mainly dependent on the amount of SiO₂, fluxing oxides and water of the raw materials. These aggregates are highly impervious to water and exhibit considerable firing expansion, low bulk density (1.29-1.76 g/cm³) and fair technical properties (unit weight and bending strength) for light weight concrete. These results encourage the use of these clays for the production of lightweight aggregates.

Keywords: Khorat clays, SUT clays, lightweight aggregates, lightweight concrete.

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