Development of calcium silicate thermal insulator in Saudi Arabia

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Cement and Concrete Research
Vol. 20, Issue.5, 1990

Abstract: This paper presents an experimental study on the development of calcium silicate thermal insulator (CSTI) using the raw materials locally available in Saudi Arabia. Several parameters have been considered to optimize the synthetic conditions and batch composition of CSTI. These include autoclaving temperature and time, SiO2 content of sand, fineness of sand, lime to silica ratio, water to solid ratio and fiber reinforcement. The measured properties of the product include bulk density, bending strength, linear dimensional change and thermal conductivity. A CSTI with a bulk density of 400 kg/m3, bending strength of 3.92 MPa and thermal conductivity of 0.083 W/m.k has been developed, which is comparable to ASTM C-656 class A material.