

UTILIZATION OF HOLLOW GLASS MICROSPHERE AND SILICON CARBIDE IN CERAMIC TILE PRODUCTION

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ABSTRACT

It is known that increasing pore volume of a ceramic material will, under most circumstances; result in reduction of thermal conductivity. In this study, hollow glass microspheres (soda lime borosilicate glass) and silicon carbide (SiC) particles were added to ceramic tile composition in order to obtain the body which has high closed porosity and low thermal conductivity. The technological properties were characterized by firing shrinkage (%), water absorption (%), breaking strength and colour values after firing. Results of porosity, phase distribution, microstructural characterization and thermal properties were determined by He picnometer, X ray diffraction (XRD), scanning electron microscopy (SEM) and thermal conductivity measurement instrument, respectively.

It was found that hollow glass microspheres formed spherical pores homogenously contributed to decreasing density and thermal conductivity.

KEYWORDS: Thermal conductivity, hollow glass microspheres, porosity