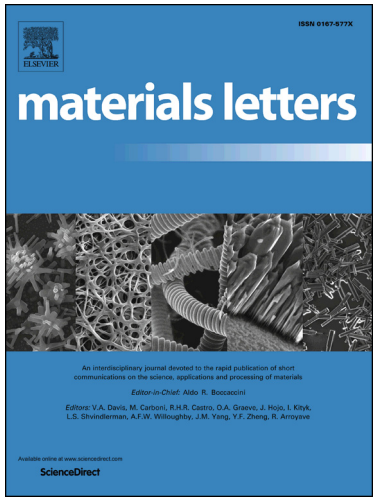

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EFFECT OF GRANITIC ROCK WASTES AND BASALT ON MICROSTRUCTURE AND PROPERTIES OF PORCELAIN STONEWARE

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Abstract: Porcelain stoneware tiles are materials with excellent technical properties processed by using high temperatures and fast firing cycles that requires high-quality fluxes. However, high cost and exhaustive reserves of traditional used feldspars limits their use. The study of the fluxing potential of granitic rock wastes and basalts and their effect on properties and microstructure of porcelain tiles was carried out. The addition of the basalt in the amount of 7.5 wt.% leads to the best densification behavior and near-zero water absorption of the samples. The properties of porcelain tiles with addition of basalt and granitic rock wastes show the possibility of their limit use as fluxes in ceramic tiles industry.

Keywords: ceramic fluxes, thermal behavior, sintering, water absorption, microstructure

Highlights

- the sintering behavior of basalts and granitic rock wastes was investigated
- the effect of basalt and granitic rock content on densification behavior of porcelain tile is shown.
- the sintering mechanism relies on reducing the viscosity of the liquid phase.

Introduction

Porcelain tiles are high-performance materials with excellent mechanical properties, frost and abrasion resistant and therefore serviceable for outdoor wall cladding in cold climate and flooring cladding in

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