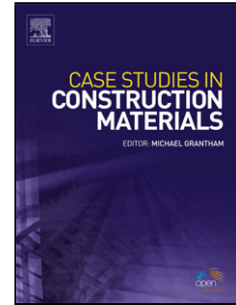


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Complete characterization of Berrechid clays (Morocco) and manufacturing of new ceramic using minimal amounts of feldspars: economic implication

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Abstract

This work proposes the mixing of two varieties of Moroccan clay (C1 and C2) with silica sand in order to minimize the amount of the feldspar used. The raw materials were previously characterized in terms of their composition and thermal behavior. Two formulations noted M1 and M2 were elaborated according to the experimental protocol and they were evaluated in terms of their mechanical and thermal characteristics. The addition of C2 clay in the formulation allows a reduction in the amounts of feldspar of the order of 5%, while improving the technological characteristics of this new ceramic (M2) compared to that obtained by the conventional formulation. Indeed, the obtained ceramic (M2) shows the following characteristics: porosity (11.65 %); density (2.71 g/cm³); shrinkage (4.91 %); flexural strength (30.05 N/mm²) and thermal conductivity (2.73 W/mK). Results of this study permit a reduction in the amount of the feldspar used, a relatively expensive raw material, and consequently reduces the cost of ceramics.

Keywords: Clays; mineralogy; geochemistry; ceramic properties, Morocco.

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