

RESUMEN N° 11
EFFECT OF CALCITE ADDITION ON SINTERING BEHAVIOUR
OF CERAMIC WALL TILE BODIES

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Abstract

In the production of ceramic tiles, composition of the body and firing conditions determine the phase transformations that affect the final properties of the product. So, raw materials selection and individual characteristics of them in sintering behaviour is getting important. In this study, effect of various amounts of calcite addition on sintering behaviour of ceramic tile formulations was investigated. In order to achieve this, firstly local raw material was clearly characterized using general techniques (XRD, XRF) and than several body formulations were developed by using local raw material with addition of different amounts of calcite. For observing thermal properties of body formulations, simultaneous TGA/DTG/DTA measurements were carried out. The sintering behaviour of the bodies was evaluated using a double-beam optical non-contact dilatometer. X-ray diffraction was used to analyse the phases formed after firing. Microstructural and microchemical characteristics of fired body were observed by using scanning electron microscopy (SEM) in combination with energy dispersive X-ray spectroscopy (EDS). And also the physical and mechanical properties of the formulated bodies such as water absorption, linear firing shrinkage, bulk density, whiteness and breaking strength were measured.

Keywords: A. Calcite, B. Sintering behaviour, C. Tile body.

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