

DIFFRACTOMETRIC X-RAY AND INFRARED STUDY OF A PORCELAIN-BENTONITE MIXTURE

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ABSTRACT

Porcelain is a material produced by a process kaolinite clay, quartz and feldspar mixtures thereof. This material, usually used in tableware, parts for electrical system insulation, and also as removable prostheses and dental crowns, is endowed with high technology properties such as low water absorption, high flexural strength and excellent chemical resistance. Nevertheless, there is a rarity of high quality research focused on the effect of mullite growth in the technological properties of traditional porcelains. Four formulations of the porcelaine tableware were prepared in different percentage, from 0 to 15wt. % of calcic bentonite. Infrared (IR) analyzes are consistent with X-ray diffraction (XRD) results. They demonstrate the presence of vibration bands associated with the different phases detected in DRX. An evolution spectrograms profile is observed when the intensity of the laser radiation increases; it is probably related to a structural evolution and / or to the decomposition of the phases present in the sample analyzed. The intensity of the Al - OH and Si - O bond peaks in the IR which characterizes the 10wt. % bentonite mixture corresponds to the bands which designate the mullite phase, which is technically important.

KEYWORDS: Traditional Porcelains, Suspensions, Mineralogical Analysis, Bonds, Bentonite