

# Physico-mechanical and mineralogical characterization of ceramics obtained from diatomite earth

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## Abstract

In this work, it is intended that diatomaceous earth be used as a material for the production of ceramics. Taking in consideration that the DE is mined from geological deposits, it may contain certain impurities such as metal oxides and organic matter, which may have particular effects towards its application properties. The chemical composition of diatomaceous earth is predominantly silica (SiO<sub>2</sub>). One way to improve the properties of DE is through the sintering process. During the sintering process, the impurities are removed followed by mineralogical changes that results in the enhancement on the characteristics of diatomite. For the purpose of sintering, the DE was first crushed and ball-milled for a period of 2.5 h. After the pulverization of the material, the samples were sintered at 1000°C temperature, for a period of 1h, 2h and 3h. After the thermal treatment, physico-mechanical and mineralogical analyzes will be performed to analyze the influence of temperature and treatment time on the ceramic samples. Concretely, the bulk density will be determined, then the topography or surface homogeneity of the samples will be studied by means of optical microscopy. Furthermore, the mechanical properties of the samples such as hardness and commpressive strength are studied in dependence of sintering time and temepature.

*Keywords: Diatomaceous earth; Characterization; Sintering, temperature*

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