CHARACTERISATION OF SOME KAOLINS USED FOR PRODUCING ELECTRIC INSULATOR CERAMIC

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The various types of kaolins as representative raw materials for electric insulator ceramics were investigated in order to establish their influence on ceramics properties, defects and microstructure.

The raw samples were tested by X-ray diffraction (XRD), differential thermal analysis (DTA), and infrared spectroscopy (IR) in order to define their mineralogical composition and structural characteristics.

The thermal treatment of ceramic mixture and raw material was carried out at 1300°C temperature for one hour. The microstructure resulted by firing was studied by optical and electron microscopy. The chemical composition of the crystalline and amorphous phases of the ceramic body was studied by EDAX methods. The processing of the data acquired revealed some inhomogeneity in the microstructure of ceramic body.

It is concluded that the final microstructure, defects and properties of ceramic products are influenced by chemical and mineralogical composition of raw materials. The present impurities (Fe and Ti bearing phases) have great influence on electric properties of the ceramics. The mineral phases present in kaolin deposits have significant role in wet preparing (the presence of smectites increases the plasticity, but also increases the fired shrinkage) of ceramic masses and crystalline phase formation during thermal treatment (poor or well crystallised mullite and cristobalite).