

Investigation of Chemical and Thermal Properties of Avanos and Malatya Clays Used in Pottery Production

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Abstract

Avanos district of Nevşehir is one of the major handicraft centers of Cappadocia region as well as our country. Crafts have become an important sector for commercial purposes. The most important one of these sectors is pottery. The clay used in Avanos pottery body recipes, are taken of clay deposits in the region or brought from other provinces. Unfortunately, chemical analyzes of recipes are never performed and excess calcium oxide amount in the body arises various problems. In this research, the chemical and thermal properties of clays (Avanos clay and Malatya clay) used in Avanos pottery were analysed to improve the quality of pottery production by detecting the amount of calcium oxide and carbonate removal temperature from body. The clay used in the production of pottery affects; shaping of the final product, firing process, the physical and mechanical properties. XRF (x-ray fluorescence) was used to determine the chemical compositions and XRD (X-ray diffraction) was used to determine phases of Avanos and Malatya clays used in pottery making. TG-DTA device was used to examine mass losses and reaction temperatures of the clays. As a result, calcite phase was observed both clays but the amounts are different. Avanos clay contains more than two times higher calcite and the temperature of carbonate removal is higher compared to Malatya clay.

Key Words: Pottery, Clay, Avanos, Malatya, Chemical Analyses, Thermal Analyses