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### **In-situ kaolinitic raw materials within the quartz-sericite/muscovite schists of Doğanhisar (Konya, Central Turkey): its mineralogic and technological characteristics with the possible use in ceramic tile industry**

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The in-situ kaolinitic clay occurrence of Doğanhisar region is in the quartz sericite-muscovite schists/phyllites and quartzites of the late Devonian aged Engilli formation of Sultandağı unit. These rocks are white colored, likely to talc, very soft and loosely cemented in nature. It hard to see its metamorphic nature in outcrops. Geological data revealed that these rocks were formed by the hydrothermal alteration of metamorphic rocks. The raw materials were characterized by the petrographic (optical microscopy), mineralogically (X-ray diffraction) and chemically (XRF). Petrographic studies show that they have perfectly slaty foliation together with the fine grains of quartz (upto %40 modally), muscovite/sericite (%39), kaolinite (%19), rutile (%1) and feldspars (%1).

Firing and some technological tests were carried out on the Doğanhisar kaolinitic quartz sericite-muscovite schists. It fired under 1130 and 1185°C conditions, and then colour, firing shrinkage and water absorption values obtained. Comparing with the standart body formulation, the water absorption values are higher and firing shrinkages lower. L\* values are for the two temperature conditions are 83.53-86.38, a\*: 2.89-3.6, and b\*: 14.27-17.62. These data indicate that the Doğanhisar kaolinitic raw materials can be used as whitener of dark colored bodies in ceramic wall and floor tile production in different rates. Based on these findings the new recipes, incorporation with these kaolinitic raw materials in different rates, designed and fired in various temperature conditions. Then, these were analyzed in terms of the mineral/amorphous phases (DTA-TG, XRD), microstructures (SEM) and other technological features such as mechanical strength, colour, sintering aspects etc.

In the light of the data and findings from this study it is found out the Doğanhisar kaolinitic quartz sericite-muscovite schists/phyllites are found as suitable and usable in different rates for the conventional wall and floor, and porcelain tile productions.

Keywords: Quartz sericite schist, Kaolinite, Characterization, Technologic properties