



Variable properties of Kızılkaya ignimbrite used in some historical monuments of Cappadocia, Turkey

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Cappadocia is an important region in Turkey with its ancient monuments and historical buildings. Ash-flow tuffs (ignimbrites) were dwelled and used for the construction of church, caravanserai and other old and new structures. Kızılkaya ignimbrite (Lower Pliocene) is a welded tuff with different and variable physical and mechanical properties in different locations. It is red, grey, and pink, colored and exhibits a columnar structure with red-coloured pumice, volcanic pumice and volcanic fragments. Tepesidelik caravanserai and dwellings in İhlara valley are the places where Kızılkaya ignimbrite was used.

In this study, Sevinçli quarry where the Kızılkaya ignimbrite crops out was examined. The Sevinçli quarry was located 8 km east of the Aksaray. The Kızılkaya ignimbrite has two different colored ignimbrite levels in this quarry due to the spreading out of the ash-flow material. This study investigates the properties of the unit at two different levels of the ignimbrite from both field observations and laboratory tests. The laboratory tests revealed that wetting-drying, freezing-thawing, and salt crystallization reduce the strength of the ignimbrite. Dark pink-red colored ignimbrite used in İhlara Valley is found to be more resistant to the ageing tests than the light gray ignimbrite used in the Tepesidelik caravanserai.