

THE INVESTIGATION OF PHYSICAL AND MECHANICAL PROPERTIES OF MORTARS USED IN HISTORICAL BUILDINGS IN HARRAN (SANLIURFA, TURKEY)

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ABSTRACT

In this study, a physical and mechanical property of mortar used in historical buildings in the region in Harran is investigated. The mortar samples were taken in accordance with the standards from Şanlıurfa Castle, Harran Mound, Harran University, Harran City Walls, Harran Castle and Harran Grand Mosque which are located in the Harran region. Mass and volume of water absorption rates, mass per unit volume, specific gravity and porosity had been found in order to specify the physical properties of mortar samples. In addition, grading of aggregates which is forming mortar is calculated. To specify the mechanical properties of mortar specimens also compressive strength had been found by 40x40x40 mm cube-shaped cut. The values that found in the tests carried out on mortar specimens was similar to results reported in the literature. It was observed that components of mortar samples were made according to a specific design. The values that found in the results of physical and mechanical analysis are very close to the specified value in TSE (Turkish Standard). The average value of water absorption of mortar samples is the rate of 16.66% by mass and 23.17% by volume. Mortar visible sample density values is equivalent to plaster and lime plaster mortar visible intensity value and the average of porosity is 25%. The largest grain size of aggregates that forming mortar had been found as 8 mm. According the mechanical analysis results average compressive strength of mortar samples had been found as 5.42 MPa. These values are closer to founded values in studies on Khorasan mortars.

Keywords: Harran; Historic Building; Mortar; Physical and Mechanical Properties.