World Academy of Science, Engineering and Technology
International Journal of Geotechnical and Geological Engineering
Vol:16, No:07, 2022

# Shear Strength of Unsaturated Clayey Soils Using Laboratory Vane Shear Test

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**Abstract :** The shear strength of soils is a significant parameter in the design of clay structures, depots, clay gables, and freeways. Most research has addressed the shear strength of saturated soils. However, soils can become partially saturated with changes in weather, changes in groundwater levels, and the absorption of water by plant roots. Hence, it is necessary to study the strength behavior of partially saturated soils. The shear vane test is an experiment that determines the undrained shear strength of clay soils. This test may be performed in the laboratory or at the site. The present research investigates the effect of liquidity index (LI), plasticity index (PI), and saturation degree of the soil on its undrained shear strength obtained from the shear vane test. According to the results, an increase in the LI and a decrease in the PL of the soil decrease its undrained shear strength. Furthermore, studies show that a rise in the degree of saturation decreases the shear strength obtained from the shear vane test.

**Keywords :** liquidity index, plasticity index, shear strength, unsaturated soil
**Conference Title :** ICGAGT 2022 : International Conference on Geomechanical Analysis and Geomechanical Tests
**Conference Location :** Istanbul, Türkiye
**Conference Dates :** July 28-29, 2022