

## Effect of Testing Device Calibration on Liquid Limit Assessment

**Authors :** M. O. Bayram, H. B. Gencdal, N. O. Fercan, B. Basbug

**Abstract :** Liquid limit, which is used as a measure of soil strength, can be detected by Casagrande and fall-cone testing methods. The two methods majorly diverge from each other in terms of operator dependency. The Casagrande method that is applied according to ASTM D4318-17 standards may give misleading results, especially if the calibration process is not performed well. To reveal the effect of calibration for drop height and amount of soil paste placement in the Casagrande cup, a series of tests were carried out by multipoint method as it is specified in the ASTM standards. The tests include the combination of 6 mm, 8 mm, 10 mm, and 12 mm drop heights and under-filled, half-filled, and full-filled Casagrande cups by kaolinite samples. It was observed that during successive tests, the drop height of the cup deteriorated; hence the device was recalibrated before and after each test to provide the accuracy of the results. Besides, the tests by under-filled and full-filled samples for higher drop heights revealed lower liquid limit values than the lower drop heights revealed. For the half-filled samples, it was clearly seen that the liquid limit values didn't change at all as the drop height increased, and this explains the function of standard specifications.

**Keywords :** calibration, casagrande cup method, drop height, kaolinite, liquid limit, placing form

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