

Measurement Uncertainty of Nano Bionix Universal Testing System

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The main purpose of this research is to determine the uncertainties of force and displacement measurements for MTS Nano Bionix Universal Testing System (UTM). This article can be used as basis for calculating measurement uncertainty in performing material tests. Standard weights are used to calibrate the force of the testing system. In addition, an optical method is adopted to evaluate the displacement uncertainty of the system. We adopted the method suggested in ISO to calculate the uncertainty of this system. The relative expanded uncertainty of force measurement within the range of 10 to 200 mN is 2.07×10^{-3} with a 95% confidence level. The expanded uncertainty of displacement measurement within the range of 0 to 88 mm is 1.4×10^{-5} m with a 95% confidence level.

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