



Designation: D7759/D7759M – 21

Standard Guide for Nuclear Surface Moisture and Density Gauge Calibration¹

This standard is issued under the fixed designation D7759/D7759M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 *Procedure A*—This guide describes the process and objective of formulating the mathematical relationship between the density system count of a nuclear surface moisture and density gauge and the corresponding wet density value of the density standard upon which the density system response was observed.

1.2 *Procedure B*—This guide describes the process and objective of comparing the wet density measured by a nuclear surface moisture and density gauge and the corresponding density value of the density standard upon which the density system response was observed.

1.3 This guide describes the process and objective of the verification of the measurements of a nuclear surface moisture and density gauge.

1.4 *Procedure A*—This guide describes the process and objective of formulating the mathematical relationship between the water content system count of a nuclear surface moisture and density gauge and the corresponding water mass per unit volume value of the water content standard upon which the water content system response was observed.

1.5 *Procedure B*—This guide describes the process and objective of comparing the water mass per unit volume measured by a nuclear surface moisture and density gauge and the corresponding water mass per unit volume of the corresponding water content standard upon which the water content system response was observed.

1.6 This guide describes the process and objective of the verification of the measurements of a nuclear surface moisture and density gauge.

1.7 This guide describes two mathematical processes by which the gauge measurement precision may be computed or measured.

1.8 This guide offers guidance for developing and reporting estimates of uncertainties in measurements made with gauges that have undergone calibration and verification.

1.9 All observed and calculated values shall conform to the guide for significant digits and rounding established in Practice **D6026**.

1.10 *Units*—The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined. Within the text of this standard, SI units appear first followed by the inch-pound (or other non-SI) units in brackets.

1.10.1 Reporting of test results in units other than SI shall not be regarded as nonconformance with this guide.

1.11 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.12 This guide offers an organized collection of information or a series of options and does not recommend specific course of action. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this guide may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.

¹ This practice is under the jurisdiction of ASTM Committee **D18** on Soil and Rock and is the direct responsibility of Subcommittee **D18.08** on Special and Construction Control Tests.

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