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Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices

as adopted by the
110th National Council on Weights and Measures

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This handbook conforms to the concept of primary use of SI (metric) measurements recommended in the Omnibus Trade and Competitiveness Act of 1988 by citing SI units before U.S. customary units where both units appear together and placing separate sections containing requirements in SI units before corresponding sections containing requirements in U.S. customary units. In some cases, however, trade practice is currently restricted to the use of U.S. customary units; therefore, some requirements in this handbook will continue to specify only U.S. customary units until a broad consensus is achieved on the permitted SI units.

In accord with NIST policy, the "meter" and "liter" spellings are used in this document. However, the "metre" and "litre" spellings are acceptable.

It should be noted that a space has been inserted instead of commas in all numerical values having four digits or more in this document. This follows a growing practice, originating in tabular work, to use spaces to separate large numbers into groups of three digits. This avoids conflict with the practice in many countries to use the comma as a decimal marker.

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Abstract

NIST Handbook 44 includes specifications, tolerances, and other technical requirements for weighing and measuring devices. These requirements are intended to encourage the design, installation, testing, and use of weighing and measuring devices that provide for accurate, repeatable measurements; facilitate clear and transparent transactions for buyer and seller; and do not facilitate fraud.

NIST Handbook 44 is adopted by many state, local, and some federal weights and measures authorities to apply to commercial weighing and measuring equipment and associated equipment and for use in applications for law enforcement and the collection of statistical information by government agencies.

NIST has a statutory responsibility for "cooperation with the states in securing uniformity of weights and measures laws and methods of inspection" and publishes this and other NIST Handbooks in partial fulfillment of this responsibility. NIST Handbook 44 was first published in 1949, having been preceded by similar handbooks of various designations and in several forms, beginning in 1918; the handbook is now typically published on an annual basis.

This 2026 edition includes amendments made through the Committee on Specifications and Tolerances of the National Council on Weights and Measures (NCWM) with technical guidance from the Office of Weights and Measures (OWM) of the National Institute of Standards and Technology (NIST) and input from weights and measures officials and industry representatives. These amendments were adopted by the NCWM at its 110th Annual Meeting in July 2025.

Keywords

devices; dry measures; electric vehicle fueling systems; grain analyzers; grain moisture meters; hydrogen gas-measuring devices; liquid-measuring devices; LPG and anhydrous ammonia liquid-measuring; mass flow meters; measure-containers; measuring; measuring systems; meters; multiple dimension measuring devices; odometers; scales; taximeters; timing devices; transportation network measuring systems; vehicle tanks; weighing; weighing systems.

Foreword

NIST Handbook 44 was first published in 1949, having been preceded by similar handbooks of various designations and in several forms, beginning in 1918.

NIST Handbook 44 is typically published in its entirety each year following the Annual Meeting of the National Council on Weights and Measures (NCWM) formerly the National Conference on Weights and Measures. This handbook includes amendments endorsed by the 110th National Council on Weights and Measures during its Annual Meetings in 2025.

This handbook conforms to the concept of primary use of SI (metric) measurements recommended in the Omnibus Trade and Competitiveness Act of 1988 by citing SI units before U.S. customary units where both units appear together and placing separate sections containing requirements in SI units before corresponding sections containing requirements in U.S. customary units. In some cases, however, trade practice is currently restricted to the use of U.S. customary units; therefore, some requirements in this handbook will continue to specify only U.S. customary units until a broad consensus is achieved on the permitted SI units.

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It should be noted that a space has been inserted instead of commas in all numerical values greater than 999 in this document, following a growing practice, originating in tabular work, to use spaces to separate large numbers into groups of three digits. This avoids conflict with the practice in many countries to use the comma as a decimal marker.

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