

Mass Standards Handbook — Regulations and Standards

ASTM E 617-97 (2003): Standard Specification for Laboratory Weights and Precision Mass Standards - This specification covers various classes of weights and mass standards used in laboratories ranging from Class 0 to Class 7. Tolerances and design restrictions for each class are described in order that both individual weights and weight sets can be chosen for the appropriate applications. This specification also recognizes International Recommendation R 111 that describes classes E_1 , E_2 , F_1 , F_2 , M_1 , M_2 , and M_3 .

OIML R 111: Weights of Classes E_1 , E_2 , F_1 , F_2 , M_1 , M_2 , M_3 – This international document describes the physical characteristics and metrological requirements of reference standard weights with recommendations for seven classes of weights (Classes E_1 , E_2 , F_1 , F_2 , M_1 , M_2 , M_3) in tiers of uncertainty.

NVLAP Handbook 150: Procedures and General Requirements - Outlines the quality system and all of the procedures required in order to be NVLAP accredited. NVLAP Handbook 150 also contains all requirements specified in ISO/IEC 17025.

ISO/IEC 17025 (formerly ISO Guide 25): General Requirements for the Competency of Testing and Calibration Laboratories – This guide sets out the general provisions which a laboratory must address to carry out specific calibrations or tests. ISO/IEC 17025 provides the laboratory direction for the development and implementation of a fundamental quality management system.

ANSI/NCSL-Z540-1-1994: Calibration Laboratories and Measuring and Test Equipment-General Requirement (ANSI/NCSL) - This standard provides a mechanism for promoting confidence in calibration laboratories and measuring and test equipment when it can be shown that they are operated in compliance with its

requirements. Calibration certificates received by NVLAP-accredited testing and calibration laboratories with new or recalibrated equipment shall meet the requirements of ISO/IEC Guide 17025 augmented by ANSI/NCSL Z540-1-1994. The certificates must include appropriate statements of uncertainty.

NIST Handbook 105-1: Specifications and Tolerances for Field Standard Weights – These specifications and tolerances are specific for reference and field standard weights (NIST Class F). This document sets minimum requirements for standards used primarily to test commercial or legal for trade weighing devices for compliance with NIST Handbook 44. These devices include but are not limited to delicatessen scales, jewelry scales, postal and parcel post scales and dairy product test scales. This specification permits the use of a weight at its nominal value in normal testing operations, where the tolerance on the item under test is at least three times as great as the tolerance of the weight. This specification also specifies the design, marking, adjusting cavities, and density of these weights. Any variation in design from Handbook 105-1 must be submitted to NIST for approval.

NIST Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices - This publication sets forth the specifications, tolerances, and other technical requirements for weighing and measuring devices. Handbook 44 is published in its entirety each year following the Annual Meeting of the National Conference on Weights and Measures. All of the specifications, tolerances, and other technical requirements of this booklet are recommended by the National Conference on Weights and Measures for official promulgation and use by the states in exercising their control of commercial weighing apparatus.

