

Mass Standards Handbook — Terminology

Austenitic - Pertaining to or describing a solid solution in iron of carbon and sometimes other solutes that occurs as a component of steel under certain conditions. Austenitic stainless steels usually offer many advantages such as increased strength, corrosion resistance, lower magnetic susceptibility, and desirable mechanical and magnetic properties.

Calibration - The act of determining the mass difference between a standard of a known mass value and an “unknown” test weight or set of weights. The process uses a comparison method and a series of calculations to establish the mass value and conventional mass value of the “unknown” and determines a quantitative estimate of the uncertainty to be assigned to the measurement process as well as the mass or conventional mass value for the “unknown.”

Conventional Mass - The conventional value of the result of weighing in air, in accordance to International Recommendation OIML R 33. For a weight taken at 20° C, the conventional mass is the mass of a reference weight of a density of 8000 kg/m³, which it balances in air density of 1.2 kg/m³.

Correction - Mass values are traditionally expressed by two numbers, one being the nominal mass of the weight and the second being a correction. The mass of the weight is the assigned nominal value plus the assigned correction. Positive corrections indicate that the weight embodies more mass than is indicated by the assigned nominal value.



International Prototype Kilogram - The platinum-iridium cylinder maintained at the International Bureau of Weights and Measures (BIPM), at Sevres, France with an internationally accepted defined mass of 1 kg with zero uncertainty.

Mass in a Vacuum - The mass of a weight as if it were measured in a vacuum. Also known as True Mass.

Nominal Mass - The mass value as marked on a weight.

Reference Standard - A standard, generally of the highest metrological quality available at a given location, from which measurements made at that location are derived.



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Tolerance (Adjustment Tolerance or Maximum Permissible Error) - The maximum amount by which the conventional mass of the weight is allowed to deviate from the assigned nominal value.

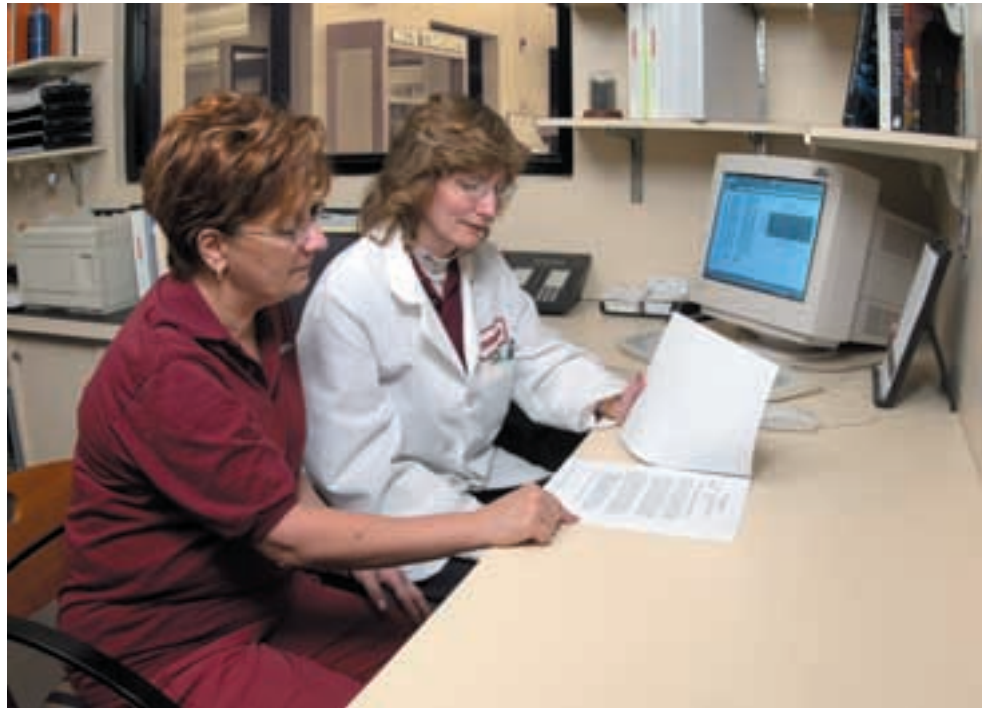
Traceability - Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties. In other words, in order to establish traceability there must be an unbroken and

valid relationship to some nationally or internationally recognized standard. A standard itself can not really be traceable, but the value assigned to it can.

Uncertainty - Parameter associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurement. This is the range of values within which the true value is estimated to lie. In other words, the uncertainty is a measure of how confident you are in the accuracy of the results resulting from a measurement.

U.S. National Prototype Standard - Platinum-iridium kilogram identified as K20, maintained at the National Institute of Standards and Technology (NIST), with a value assigned relative to the International Prototype Kilogram.

Weight (Mass standard) - An object representing a specific mass, regulated in regard to its physical and metrological characteristics: shape, dimension, material, surface quality, nominal value, and maximum permissible error.



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