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ANSI Z540 SPEC

American National Standards Institute, or ANSI, standard Z540-1 is the general requirements for calibration laboratories and measuring and test equipment. This standard is also called ANSI standard Z540.1. ANSI Z540-1 was made the American National Standard in 1994. The ANSI standard was originally created by the National Conference of Standards Laboratories International.

Requirements: Equipment can be calibrated in house or by certified third-party technicians. Equipment must be labeled with a sticker that indicates when it was last calibrated and by whom. The equipment must be calibrated to meet ANSI standards or international standards. The standard to which it is calibrated must be marked on the sticker. Certification and training of calibration technicians must also be documented. Environmental conditions in the lab cannot affect the equipment calibration. If environmental conditions do affect the measurements, lab conditions such as temperature and humidity must be documented at the time of measurement.

Allowable uncertainty: Because equipment cannot be calibrated perfectly, ANSI Z540-1 allows for uncertainty in measurement to be within 25 percent of the acceptable tolerance. For example, if a scale must be accurate to within .10 of a pound, the equipment after calibration can have an uncertainty of up to .025 of a pound. "Test and Measurement" by Jon S. Wilson and Stuart Ball says "ANSI Z540-1 and ISO 17025 require that uncertainty analysis for verifying the measurement process be documented and defined."

Relationship between Standards

ANSI Z540-1-1994 essentially combines MIL-STD-45662A, the consensus national standard for the U.S. and the ISO Guide 25, the primary document recognized by the international community to ensure calibration laboratory competence.

ISO Guide 25, on which ANSI Z540-1 was based, has been superseded by ISO standard 17025. Labs that meet ANSI standard Z540.1 are in accordance with Military Standard or MIL-STD-45662A. Organizations can meet both ISO standard 17025 and ANSI Z540-1 for equipment calibration.

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For more information on our standards that adhere to these strict guidelines, visit us at
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