

The following tables contain a list of upcoming retroactive, nonretroactive, and recently enacted enforcement dates for NIST Handbook 44 code requirements, which may require action by device manufacturers, owners/operators, or regulatory officials. This information is provided to alert interested parties on upcoming Handbook 44 requirements. Requirements in the tables are paraphrased; therefore, it is recommended that the latest edition of Handbook 44 be consulted for the complete text. Codes that were amended to provide greater clarity or make other editorial changes are not included in this information. A complete report of changes to the handbook is published annually in the Report of the National Conference on Weights and Measures. It is recommended that you contact the statutory authority in your weights and measures jurisdiction for specific details on the enforcement of these code requirements.

Retroactive requirements apply to *all* equipment in commercial service prior to, and in use at any time on or after, the enforcement date. Nonretroactive requirements are enforceable for equipment: (1) manufactured, (2) new and used brought into a jurisdiction, and (3) previously in noncommercial use, then placed into commercial use *after* the effective date. Note: Paragraphs designated with the number ¹ include multiple requirements with various enforcement dates.

Upcoming NIST Handbook 44 Code Enforcement Dates (Retroactive and Nonretroactive)			
Code Section	Paragraph	Enforcement Date	Requirement
1.10. General	G-S.1.1. Location of Marking Information for Not Built-For-Purpose, Software-Based Devices	Nonretroactive as of January 1, 2004	<p>The required marking information on not built-for-purpose, software-based devices shall be:</p> <ul style="list-style-type: none"> (a) the manufacturer or distributor and the model designation continuously displayed or marked on the device, or (b) Certificate of Conformance (CC) Number continuously displayed or marked on the device, or (c) information in G-S.1. Identification. (a), (b), (c), (e), and (h) continuously displayed. Alternately, a clearly identified “view only” System Identification, G-S 1. Identification, or Weights and Measures Identification shall be accessible through the “Help” menu. Required information includes information necessary to identify that the device’s software is the same type that was evaluated. <p>Note: Clear instructions for accessing the remaining required G-S.1. information shall be listed on the CC. Required information includes information necessary to identify that the device’s software is the same type that was evaluated.</p>
2.21. Belt-Conveyor Scale Systems	S.1.4.1.: Recording Results Zero Load Tests	Nonretroactive as of January 1, 2004	The belt-conveyor scale system shall be capable of recording the results of automatic or semi-automatic zero load tests.

**Upcoming NIST Handbook 44 Code Enforcement Dates
(Retroactive and Nonretroactive)**

Code Section	Paragraph	Enforcement Date	Requirement
2.21. Belt-Conveyor Scale Continued	S.3.1. ¹ Design of Zero-Setting Mechanism	Nonretroactive as of January 1, 2004	Except for systems that do not record the zero load reference at the beginning and end of a delivery, the range of the zero-setting mechanism shall not be greater than ± 2 % of the rated capacity of the scale without breaking the security means. For systems that record the zero load reference at the beginning and end of a delivery, the range of zero-setting mechanism shall not be greater than ± 5 % without breaking the security means.
3.30. Liquid-Measuring Devices	Table S.2.2. Categories of Device and Methods of Sealing	Nonretroactive as of January 1, 2005	Manufacture of a Category 2 device is permissible up to January 1, 2005; <i>after</i> January 1, 2005 all <u>new</u> devices with remote communication capability must meet sealing requirements for Category 3.
3.37. Mass Flow Meters	Table S.3.5. Categories of Device and Methods of Sealing	Nonretroactive as of January 1, 2005	Manufacture of a Category 2 device is permissible up to January 1, 2005; <i>after</i> January 1, 2005 all <u>new</u> devices with remote communication capability must meet sealing requirements for Category 3.
5.56.(a) Grain Moisture Meters	S.2.6. ¹ Determination of Quantity and Temperature	Nonretroactive as of January 1, 2004	If a grain moisture meter is capable of measuring test weight per bushel, sample volume and weight for this measurement shall be fully automatic and measurements of test weight per bushel are not allowed to be displayed or printed when insufficient sample volume is available.
5.57. Near-Infrared Grain Analyzers	S.1.2. Selecting Grain Class and Constituent	Nonretroactive as of January 1, 2004	If more than one calibration is included for a given grain type, (i.e., specialty crop calibrations), the calibrations must be clearly distinguished from one another.

**New or Modified 2004 NIST Handbook 44 Specifications, Tolerances, and Other Technical Requirements
for Weighing and Measuring Devices**

Code Section	Paragraph	Enforcement Date	Requirement
1.10. General	G-S.1.¹ Identification (d); Serial Number	Applies to all equipment on January 1, 2004	Subparagraph (d) adds not-built-for-purpose, software-based devices to the equipment exempted from the marking requirement for a nonrepetitive serial number.
	G-S.1. ¹ Identification (e); Not Built for Purpose, Software Based Devices	Applies to all equipment on January 1, 2004	Subparagraph (e) requires marking not-built-for-purpose, software-based devices with the current software version.
2.20. Scales	S.1.2.3. Prescription Scale with a Counting Feature	Applies to all equipment on January 1, 2004	Class I and Class II prescription scales with a counting feature shall not calculate a piece weight or total count unless the minimum individual piece weight is greater than or equal to 3e and the minimum sample size is greater than or equal to 10 pieces.
	S.2.5.3. Class I and Class II Prescription Scales with a Counting Feature	Applies to all equipment on January 1, 2004	Class I and Class II prescription scales must indicate to the operator when the piece weight computation is complete by a stable display of the number of pieces on the load-receiving element.
	Table 3. Parameters for Accuracy Classes, Footnote 2	Applies to all equipment on January 1, 2004	A scale marked “For prescription weighing only” may have a verification scale division(e) not less than 0.01 g.
	Table S.6.3.b. Notes For Table S.6.3.a. Marking Requirements, Note 13	Applies to all equipment on January 1, 2004	Note 13 was amended to permit use of an operational counting feature on Class I and Class II prescription scales that comply with all Handbook 44 requirements.
	Table S.6.3.b. Notes for Table S.6.3.a. Marking Requirements, Note 22	Applies to all equipment on January 1, 2004	Combination vehicle/livestock scales must be marked with both the CLC for vehicle weighing and the section capacity for livestock weighing. The marked section capacity for livestock weighing may be less than the marked CLC for vehicle weighing.

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	S.6.6. Counting Feature, Minimum Individual Piece Weight and Minimum Sample Piece Count	Applies to all equipment on January 1, 2004	Class I and Class II prescription scales with an operational counting feature must be marked with the minimum individual piece weight and minimum number of pieces used in the sample to establish an individual piece weight.
2.20. Scales Continued	N.1.3.4.1. Vehicle Scales, Axle-Load Scales and Combination Vehicle/Livestock Scales (a) Minimum Shift Test	Applies to all equipment on January 1, 2004	This subsection specifies the minimum test load for shift tests and permits such tests to be performed anywhere on the load-receiving element using prescribed test patterns and defined maximum test loads. Prescribed test patterns and test loads for livestock scales with more than 2 sections and combination vehicle/livestock scales shall also be tested consistent with N.1.3.4.2.
	N.1.3.4.1. Vehicle Scales, Axle-Load Scales and Combination Vehicle/Livestock Scales (b) Prescribed Test Pattern and Loading	Applies to all equipment on January 1, 2004	This subsection defines the normal prescribed test pattern for shift tests and permits the use of multiple test patterns when loading.
	N.1.3.4.2. Prescribed Test Pattern and Test Loads for Livestock Scales with More than Two Sections and Combination Vehicle/Livestock Scales	Applies to all equipment on January 1, 2004	This paragraph and associated diagram prescribes the shift test load and test load pattern for livestock scales having more than two sections and combination vehicle/livestock scales.
	N.1.3.8. All Other Scales Except Crane Scales, Hanging Scales, Hopper Scales, Wheel-Load Weighers, and Portable Axle-Load Weighers	Applies to all equipment on January 1, 2004	Prescribes the test load and the test load patterns for shift tests on other types of scales not specifically addressed by any other N.1.3. subparagraph.
	N.1.10. Counting Feature Test	Applies to all equipment on January 1, 2004	A test of the counting feature shall be conducted on all Class I and Class II prescription scales having and active counting feature and when used in “legal for trade” applications. The test should verify that the scale will not accept a sample with less than either the minimum sample piece count or the minimum sample weight of 30 e. The accuracy of the counting feature should be

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			verified at a minimum of two test loads and verification of the count calculations shall be based upon the weight indication of the test load.
2.20. Scales Continued	N.1.11. Substitution Test	Applies to all equipment on January 1, 2004	In the substitution test procedure, material or objects are substituted for known test weights, or a combination of known test weights and previously quantified material or objects, using the scale under test as a comparator. Additional test weights or other known test loads may be added to the known test load to evaluate higher weight ranges on the scale.
	N.1.12. Strain-Load Test	Applies to all equipment on January 1, 2004	In the strain load test procedure, an unknown quantity of material or objects are used to establish a reference load or tare to which test weights or substitution test loads are added.
	T.N.3.10. Prescription Scale with a Counting Feature and Table T.N.3.10. Maintenance and Acceptance Tolerances in Excess and in Deficiency for Count	Applies to all equipment on January 1, 2004	Provides the maintenance and acceptance tolerances in excess and deficiency for the computed count value on a prescription scale.
	T.N.3.11. Tolerances for Substitution Test	Applies to all equipment on January 1, 2004	Tolerances are applied to the scale based on the substitution test load.
	T.N.3.12. Tolerances for Strain-Load Test	Applies to all equipment on January 1, 2004	Tolerances apply only to the test weights or substitution test loads.
	T.N.8.3.1.(a) Power Supply, Voltage and Frequency	Applies to all equipment on January 1, 2004	Clarifies the voltage range and frequency value where a device must perform within requirements.
	UR.3.5. Special Designs, Footnote 5; Related Requirements for Quantity Declarations	Applies to all equipment on January 1, 2004	A scale designed and marked for a special application (such as a prepackaging scale or prescription scale with a counting feature) shall not be used for other than its intended purpose. Prepackaging scales and prescription scales with a counting feature (and other commercial devices) used for putting up packages in advance of sale are acceptable for use in commerce only if all appropriate provisions of Handbook 44 are met. Users of

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			such devices must be alert to the legal requirements relating to the declaration of quantity on a package. Such requirements are to the effect that, on the average, the contents of the individual packages of a particular commodity comprising a lot, shipment, or delivery must contain at least the quantity declared on the label. The fact that a prepackaging scale may overregister, but within established tolerances, and is approved for commercial service is not a legal justification for packages to contain, on the average, less than the labeled quantity.
2.20. Scales Continued	UR.3.11. Minimum Count	Applies to all equipment on January 1, 2004	A prescription scale with an operational counting feature shall not be used to count a quantity of less than 30 pieces (weighing a minimum of 30 e).
	UR.3.12. Correct Stored Piece Weight	Applies to all equipment on January 1, 2004	For prescription scales with a counting feature, the user is responsible for maintaining the correct stored piece weight. This is especially critical when a medicine has been reformulated or comes from different lots.
3.30. Liquid-Measuring Devices (LMD)	S.4.4.1. Discharge Rates	Applies to all equipment on January 1, 2004	A retail device shall be marked in accordance with S.4.4.2. with the maximum and minimum discharge rates. Paragraph provides an example for how to calculate allowable discharge rates. The example is cross referenced in the marking requirements for discharge rates for corresponding measuring device codes as follows: 3.31 Vehicle-Tank Meters S.5.2. Discharge Rates 3.32 LPG and Anhydrous Ammonia LMD S.4.2. Discharge Rates 3.35 Milk Meters S.4.2. Discharge Rates 3.38 Carbon Dioxide LMD S.4.2 Discharge Rates

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3.30. Liquid-Measuring Devices (LMD) Continued	UR.3.6.3. Period of Use	Applies to all equipment on January 1, 2004	When fuel is bought or sold on an automatic or nonautomatic temperature-compensated basis, it shall be bought or sold using this method over at least a consecutive 12-month period, unless otherwise agreed to by both the buyer and seller in writing.
3.31. Vehicle-Tank Meters	UR.1.4. Liquid Measured	Applies to all equipment on January 1, 2004	A vehicle-tank meter shall continue to be used to measure the same liquid or one with the same general physical properties as that used for calibration and weights and measures approval unless the meter is recalibrated and tested with a different product.
3.32. LPG and Anhydrous Ammonia Liquid-Measuring Devices	T.2. Tolerance Values and Table T.2. Accuracy Classes and Tolerances for LPG and Anhydrous Ammonia Liquid-Measuring Devices	Applies to all equipment on January 1, 2004	The maintenance and acceptance tolerances for normal and special tests are based on the device's accuracy class.
3.33 Hydrocarbon Gas Vapor- Measuring Devices	T.1.Tolerances Values on Normal Tests and on Special Tests Other Than Low- Flame Tests. Table T.1. Accuracy Classes and Tolerances for Hydrocarbon Gas Vapor-Measuring Devices.	Applies to all equipment on January 1, 2004	The maintenance and acceptance tolerances for normal and special tests are based on the device's accuracy class.
3.34. Cryogenic Liquid-Measuring Devices	T.2. Tolerance Values and Table T.2. Accuracy Classes and Tolerances for Cryogenic Liquid- Measuring Devices	Applies to all equipment on January 1, 2004	The maintenance and acceptance tolerances for normal and special tests are based on the device's accuracy class.
3.36. Water Meters	N.4.1. Normal Tests and Table N.4.1. Flow Rate and Draft Size for Water Meters Normal Tests	Applies to all equipment on January 1, 2004	Paragraph and accompanying new Table specify only the flow rates and draft sizes for normal tests and moves the tolerances to Table T.1.
	N.4.2. Special Tests and Table N.4.2. Flow Rate and Draft Size for Water Meters Special Tests	Applies to all equipment on January 1, 2004	The table specifies flow rates and draft sizes for special tests and moves the tolerances to Table T.1.
	T.1. Tolerance Values and Table T.1. Accuracy Classes and Tolerances for Water Meters	Applies to all equipment on January 1, 2004	The maintenance and acceptance tolerances for water and multi-jet water meters are based on the device's accuracy class.

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3.36. Water Meters Continued	S.2.3. Multi-Jet Meter Identification	Applies to all equipment on January 1, 2004	Multi-Jet water meters shall be clearly and permanently marked as such on the device or identified on the Certificate of Conformance.
3.38. Carbon Dioxide Liquid-Measuring Devices	T.2. Tolerance Values and Table T.2 Accuracy Classes and Tolerances for Carbon Dioxide Liquid-Measuring Devices	Applies to all equipment on January 1, 2004	The maintenance and acceptance tolerances for normal and special tests are based on the devices accuracy class.
5.56. (a) Grain Moisture Meters	A.1. Application; Applicable Moisture Meters	Applies to all equipment on January 1, 2004	Paragraph has been modified to include devices equipped with an automatic test weight per bushel measuring feature.
	S.1.1. Digital Indications and Recording Elements (c); Communication Interface	Applies to all equipment on January 1, 2004	Meters shall be equipped with a communication interface that permits interfacing with a recording element and transmitting the date, grain type, grain moisture results, test weight per volume results, and calibration version identification.
	S.1.1. Digital Indications and Recording Elements (d); Measurement Cycle	Applies to all equipment on January 1, 2004	A digital indicating element shall not display, and a recording element shall not record, any moisture content values or test weight per volume values before the end of the measurement cycle.
	S.1.1. Digital Indications and Recording Elements (e); Moisture Content and Test Weight Per Bushel	Applies to all equipment on January 1, 2004	Moisture content results shall be displayed and recorded as percent moisture content, wet basis. Test weight per bushel results shall be displayed and recorded as pounds per bushel.
	S.1.1. Digital Indications and Recording Elements (f); Operating Range of Device	Applies to all equipment on January 1, 2004	A meter shall not display or record any moisture content or test weight per volume values when the moisture content of the grain sample is beyond the operating range of the device, unless the moisture and test weight representations include a clear error indication (and recorded error message with the recorded representation).

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5.56. (a) Grain Moisture Meters Continued	S.1.3. Operating Range (c) Moisture Range of the Grain or Seed	Applies to all equipment on January 1, 2004	A meter shall automatically and clearly indicate when the operating range of the meter has been exceeded. The operating range shall specify the following: (c)The moisture range for each grain or seed for which the meter is to be used shall be specified. Moisture and test weight per bushel values may be displayed when the moisture range is exceeded if accompanied by a clear indication that the moisture range has been exceeded.
	S.1.4. Value of Smallest Unit	Applies to all equipment on January 1, 2004	The display shall permit moisture value determination to both 0.01 % and 0.1 % resolution. The 0.1 % resolution is for commercial transactions; the 0.01 % resolution is for type evaluation and calibration purposes only, not for commercial purposes. Test weight per bushel values shall be determined to the nearest 0.1 pound per bushel.
	S.2.4.1. Calibration Version	Applies to all equipment on January 1, 2004	A meter must be capable of displaying either calibration constants, a unique calibration name, or a unique calibration version number for use in verifying that the latest version of the calibration is being used to make moisture content and test weight per bushel determinations.
	S.2.6. ¹ Determination of Quantity and Temperature	*Applies to all equipment on January 1, 2004	The moisture meter system shall not require the operator to judge the precise volume or weight and temperature needed to make an accurate moisture determination. External grinding, weighing, and temperature measurement operations are not permitted. * If the meter is capable of measuring test weight per bushel, determination of sample volume and weight for this measurement shall be fully automatic and means shall be provided to ensure that measurements of test weight per bushel are not allowed to be displayed or printed when an insufficient sample volume is available to provide an accurate measurement.

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Code Section	Paragraph	Enforcement Date	Requirement
5.56. (a) Grain Moisture Meters Continued	S.4. (d) Operating Instructions and Use Limitations; Kinds or Classes of Grain or Seed	Applies to all equipment on January 1, 2004	Operating instructions shall include information on the kind or classes of grain or seed for which the device is designed to measure moisture content and test weight per bushel.
	N.1.1. Air Oven Reference Method Transfer Standards	Applies to all equipment on January 1, 2004	Official grain samples shall be used as the official transfer standards with moisture content and test weight per bushel values assigned by the reference methods. The reference methods for moisture shall be the oven drying methods as specified by the USDA GIPSA. The test weight per bushel value assigned to a test weight transfer standard shall be the average of 10 test weight per bushel determinations using the quart kettle test weight per bushel apparatus as specified by the USDA GIPSA. Tolerances shall be applied to the average of at least three measurements on each official grain sample. Official grain samples shall be clean and naturally moist, but not tempered (i.e., water not added).
	N.1.2. Minimum Test	Applies to all equipment on January 1, 2004	A minimum test of a grain moisture meter shall consist of tests using samples (need not exceed three) of each grain or seed type for which the device is used, and for each grain or seed type shall include the following: a. tests of moisture indications, using samples having at least two different moisture content values within the operating range of the device; and b. if applicable, tests of test weight per bushel indications, with at least the lowest moisture samples used in (a).
	T.3. For Test Weight Per Bushel Indications or Recorded Representations and Table T.3 Acceptance and Maintenance Tolerances Test Weight per Bushel	Applies to all equipment on January 1, 2004	The maintenance and acceptance tolerances on test weight per bushel indications and recorded representations are specified in Table T.3.

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Code Section	Paragraph	Enforcement Date	Requirement
5.56. (a) Grain Moisture Meters Continued	UR.1.1. Value of the Smallest Unit on Primary Indicating and Recording Elements	Applies to all equipment on January 1, 2004	The resolution of the moisture meter display shall be 0.1 percent moisture and 0.1 pounds per bushel test weight during commercial use.
	UR.3.4. (b) Printed Tickets	Applies to all equipment on January 1, 2004	The customer shall be given a printed ticket showing the date, grain type, grain moisture results, test weight per bushel and calibration version identification. The ticket shall be generated by the grain moisture meter system.
5.56.(b) Grain Moisture Meters	T.3. For Test Weight Per Bushel Devices; Information	Applies to all equipment on January 1, 2004	The maintenance and acceptance tolerances on separate test weight per bushel devices used to determine the test weight per bushel of grain samples for the purposes of making density corrections in moisture determination shall be 0.193 kg/hL or 0.15 lb/bu. The test methods used shall be those specified by the USDA GIPSA using a dockage-free sample of dry hard red winter wheat.
5.57. Near-Infrared Grain analyzers	S.1.1. (c) Digital Indications and Recording Elements; Communication Interface	Applies to all equipment on January 1, 2004	Analyzers shall be equipped with a communication interface that permits interfacing with a recording element and transmitting the date, grain type or class, constituent values, the moisture basis for each constituent value (except moisture), and calibration version identification. If the analyzer converts constituent results to a manually entered moisture basis, the “native” concentration and the “native” moisture basis must appear on the printed ticket in addition to the converted results and the manually entered moisture basis.
	S.1.1. (e) Digital Indications and Recording Elements	Applies to all equipment on January 1, 2004	Constituent content shall be recorded and displayed as percent of total mass at the specified moisture basis.
	S.1.1. (h) Digital Indications and Recording Elements; Information Consistency	Applies to all equipment on January 1, 2004	If the analyzer incorporates a built-in printer, or if a printer is available as an accessory to the analyzer, the information appearing on the printout shall be arranged in a consistent and

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Code Section	Paragraph	Enforcement Date	Requirement
			unambiguous manner.
5.57. Near-Infrared Grain analyzers continued	S.1.2.¹ Selecting Grain Class and Constituent	Applies to all equipment on January 1, 2004	Provision shall be made for selecting, and recording the type or class of grain and the constituent(s) to be measured. If more than one calibration is included for a given grain type, the calibrations must be clearly distinguished from one another.
Definitions Appendix D	built-for-purpose device	Applies to all equipment on January 1, 2004	Any main device or element which was manufactured with the intent that it be used as, or part of, a weighing or measuring device or system. [1.10]
Definitions Appendix D	concentrated load capacity (CLC) also referred to as Dual Tandem Axle Capacity (DTAC)	Applies to all equipment on January 1, 2004	A capacity rating of a vehicle or axle-load scale, specified by the manufacturer, defining the maximum load applied by a group of two axles with a centerline spaced 4 feet apart and an axle width of 8 feet for which the weighbridge is designed. The concentrated load capacity rating is for both test and use.[2.20]
Definitions-Appendix D	substitution test	Applies to all equipment on January 1, 2004	A scale testing process used to quantify the weight of material or objects for use as a known test load
Definitions-Appendix D	substitution test load	Applies to all equipment on January 1, 2004	The sum of the combination of field standard test weights and any other applied load used in the conduct of a test using substitution test methods.
Definitions-Appendix D	cryogenic liquid-measuring device	Applies to all equipment on January 1, 2004	A system including a liquid-measuring element designed to measure and deliver cryogenic liquids in the liquid state.[3.34]
Definitions-Appendix D	mult-jet water meter	Applies to all equipment on January 1, 2004	A water meter in which the moving element takes the form of a multiblade rotor mounted on a vertical spindle within a cylindrical measuring chamber. The liquid enters the measuring chamber through several tangential orifices around the circumference and leaves the measuring chamber through another set of

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			<p>tangential orifices placed at a different level in the measuring chamber. These meters register by recording the revolutions of a rotor set in motion by the force of flowing water striking the blades.[3.36]</p>