Designation: ~~F2342/F2342M – 09~~ F2342/F2342M – 15

Standard Specification for Design and Construction of Composition or Quality Constituent Measuring Devices or Systems[1]

This standard is issued under the fixed designation F2342/F2342M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the requirements for design and construction of ~~electronic~~evaluation devices or systems for measuring composition or quality constituents of live animals, livestock and poultry carcasses, and individual cuts of meat, or a combination thereof. Examples include, but are not limited, to half and whole carcasses, primals, subprimals, and boxed meat.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

F2463 Terminology for Livestock, Meat, and Poultry Evaluation Systems

3. Terminology

3.1 For definitions relating to livestock, meat, and poultry evaluation systems, see Terminology F2463.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 ~~*electronic*~~*evaluation device, n*—~~device operating by the principles of electronics, which may consist of one or more~~equipment designed to measure composition or quality constituents used to determine the value of live animals, carcasses, and individual cuts of meat (see Terminology F2463~~subassemblies and perform a specific function.~~).

[1] This specification is under the jurisdiction of ASTM Committee F10 on Livestock, Meat, and Poultry Evaluation Systems and is the direct responsibility of Subcommittee F10.10 on Design Specification.

Current edition approved ~~March 1, 2009~~Nov. 1, 2015. Published ~~April 2009~~December 2015. Originally approved in 2003. Last previous edition approved in ~~2006~~2009 as ~~F2342 – 06.~~F2342/F2342M – 09. DOI: ~~10.1520/F2342_F2342M-09.~~10.1520/F2342_F2342M-15.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

~~3.2.1.1 *Discussion*—~~

~~Electronic devices may be complete measuring instruments (for example, pH meter, composition measuring device) or part of a measuring instrument (for example, measuring element, indicator).~~

3.2.2 ~~*electronic*~~*evaluation system, n*—~~electronic~~ device or group of ~~electronic~~ devices used to measure and record composition or quality ~~constituents.~~constituents used to determine the value of live animals, carcasses, and individual cuts of meat (see Terminology F2463).

3.2.3 *fault condition, n*—abnormal condition that may cause a reduction in, or loss of the capability of, a functional unit to perform a required function.

3.2.3.1 *Discussion*—

Principally, a fault is the result of an error in the data contained in or flowing through ~~an electronic~~ a measuring device or system.

3.2.4 *inch-pound unit, n*—in ASTM standards, unit based on the inch and pound, commonly used in the United States of America and defined by the National Institute of Standards and Technology, including certain other units accepted for use with the units.

3.2.4.1 *Discussion*—

Inch-pound, also known as US Customary Units, are one type of non-SI units. Another example of non-SI units is the centimetre gram second (cgs) system.

3.2.5 *indicating element, n*—element incorporated in a measuring device or system by means of which its output, relative to quantity or quality measurement, is displayed or "read" from the device itself as, for example, a digital indicator.

3.2.6 *meat, n*—~~all edible products and by-products~~ edible product(s) harvested by the ~~meat-packing industry.~~livestock or poultry packing industries (see Terminology F2463).

3.2.7 *National Type Evaluation Program (NTEP), n*—program administered by the National Conference on Weights and Measures, Inc. (NCWM) in cooperation with the National Institute of Standards and Technology (NIST), state and local governments, and the private sector for determining, on a uniform basis, conformance of a type, with an applicable standard.

3.2.8 *recording element, n*—element incorporated in a measuring device by means of which its output, relative to quantity or quality measurement, is permanently recorded on a tape, ticket, card, electronic storage medium, or the like, in the form of a printed, stamped, punched, perforated representation, or a retrievable electronic record.

3.2.9 *reference material, n*—physical object used as a basis for comparison or calibration.

3.2.10 *SI unit, n*—in ASTM standards, unit of the International System of Units (SI) and other units specifically approved in IEEE/ASTM SI 10 as a unit for use with SI.

3.2.11 *units of measure, n*—for the purpose of this specification, the units of measure shall be the International System of Units (SI).

3.2.11.1 *Discussion*—

SI units are divided into three classes: base units, derived units, and supplementary units.

4. Materials and Manufacture

4.1 *Indicators and Recording Elements*—All ~~measuring devices or~~ evaluation systems or devices shall be provided with an indicating element, and all systems must include a recording element appropriate in design and adequate in amount for purposes of measuring, training, calibrating, and testing. The recording of measurements may be an electronic record. Primary indications and recorded representations shall be clear, definite, accurate, and easy to read during normal use and testing of the device.

4.2 The minimum character size of all indications necessary to the measurement process shall be not less than 4 mm and easy to read under any ambient condition.

4.3 Any measuring or evaluation device or system without a built-in recording element shall be provided with a communication interface that permits interfacing with a recording element.

4.4 All measuring or evaluation devices or systems must either (*1*) automatically maintain a ready-to-measure or evaluate condition, (*2*) automatically display a visual indication and record a fault condition, or (*3*) provide no indication of measurement or evaluation.

5. Physical Properties

5.1 *Units of Measure:*

5.1.1 All measuring devices or evaluation systems shall indicate, or record in the appropriate unit of measure for the technology applied.

5.1.1.1 The value of the smallest unit indicated or recorded shall not exceed 0.05 in. or 1.0 mm for devices providing a linear measurement, or 0.1 % of ~~capacity for units measuring mass.~~capacity.

5.2 *Operating Temperature:*

5.2.1 All measuring devices or systems shall operate within applicable tolerance requirements over the normal ambient temperature range of –10 to 40°C [14 to 104°F] unless marked with a restricted temperature range. If the temperature range is narrower than –10 to 40°C [14 to 104°F], the ambient temperature at the time of device calibration shall be posted on the device. If a measuring device or system is marked with a restricted operating temperature range, the minimum operating temperature range shall be not less than 30°C [54°F].

5.2.2 A device or system shall not display or record any usable values until the operating temperature necessary for accurate measurements and a stable ready to measure reference point has been attained.