



Standard Specification for Tenderness Marketing Claims Associated with Meat Cuts Derived from Beef¹

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1. Scope

1.1 This specification covers requirements for incorporating a tenderness marketing claim to finished labeling, advertisements, or promotions, or a combination thereof, associated with beef cuts to distinguish product value in the marketplace.

1.2 The marketing claim requirements in this specification can be used by all parties interested in highlighting production and marketing practices of tender beef muscles/cuts in finished labeling, advertisements, or promotions, or a combination thereof, to distinguish their products in the marketplace. A tenderness marketing claim standard for beef cuts facilitates communication by enhancing the understanding of finished product expectations among producers, processors, and consumers.

1.3 Beef cuts being considered for this tenderness marketing claim will be certified through third party auditing activities. Firms seeking these services must adhere to the standard practices associated with this specification as recognized by the certifying body.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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 limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

¹ This test method is under the jurisdiction of ASTM Committee F10 on Livestock, Meat, and Poultry Evaluation Systems and is the direct responsibility of Subcommittee F10.60 on Livestock, Meat and Poultry Marketing Claims.

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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.

F2463 Terminology for Livestock, Meat, and Poultry Evaluation Systems

3. Terminology

3.1 For additional definitions related to livestock, meat, and poultry, see Terminology F2463.

3.2 Definitions:

3.2.1 *beef, n*—flesh of an adult domestic bovine (as a steer or cow) used as food.

3.2.2 *Institutional Meat Purchase Specifications, IMPS, n*—set of purchase specifications maintained by the U.S. Department of Agriculture that addresses meat handling, refrigeration, and packaging; code referenced descriptions for beef, lamb, veal, pork, goat, variety meats, sausages, and cooked meat products; and quality assurance provisions recommended for use by any quality control activity.

3.2.3 *longissimus, n*—muscle that arises as the middle and largest entity of the sacrospinal muscles that is attached by some of its fibers to the lumbar vertebrae, inserted into all the thoracic vertebrae, and depresses the ribs and extends the spinal column and bends it to one side.

3.2.3.1 *Discussion*—Also called longissimus dorsi (LD).

3.2.4 *marketing claim, n*—proclamation that identifies a particular product feature or benefit to distinguish a product from others in the marketplace.

3.2.5 *shear force, n*—maximum load required to shear a specimen in such a manner that the resulting pieces are completely clear of each other.

3.2.6 *slice shear force, SSF, n*—mechanical device/methodology used to determine meat tenderness through shear force measurements taken from cross-sectional samples of a specimen (for example, steak).

3.2.7 *tenderness, n*—degree of yielding texture possessed by a specimen (for example, steak); ease of which a specimen (for example, steak) is torn, cut, or sheared.

3.2.8 *Warner-Bratzler shear force, WBSF, n*—mechanical device/methodology used to determine meat tenderness through shear force measurements taken from core samples of a specimen (for example, steak).

4. Claim Considerations

4.1 *Minimum Tenderness Threshold Value (MTTV)*—A MTTV for WBSF and SSF of 4.4 and 20.0 kg (43.1 and 196.1 [N], SI units of specification for force, Newton), respectively, is representative of instrumental and sensory research conducted with tender beef **(1-3)**.³ Moreover, a 0.5-kg (5.0-N) difference in WBSF (4.6 kg (46.0-N) for SSF) represents the difference in WBSF force that the average consumer can detect when consuming meat at home **(4)**. Additionally, surveys conducted with regard to tenderness indicate that this MTTV will accommodate many cattle in our current national population **(5)**.

4.1.1 *Relationship to LD:*

4.1.1.1 If the carcass LD is directly measured or predicted by a recognized methodology or technology or both and the LD meets the MTTV, then the tensor fascia latae, rectus femoris, vastus medialis, psoas major, infraspinatus, spinalis dorsi, teres major, and serratus ventralis muscles will also qualify as being tender without having to be measured.

4.1.1.2 All other muscles should not qualify through measurement/prediction of the LD as being tender unless directly measured and meet the requirement on their own merits.

4.1.2 *Meat Cuts Derived from Qualifying Muscles:*

4.1.2.1 Meat cuts considered for the tender claim shall be fabricated in a manner such that the claim is substantiated by lean tissue derived from qualifying muscles being 90 % by weight of the total lean content of the meat cut. Moreover, guidelines for appropriate preparation and thermal process for each covered meat cut shall be made available to the end user.

4.1.2.2 *Examples:*

(1) IMPS Item No. 191A—Beef loin, tenderloin, butt, defatted.

(2) IMPS Item No. 1185B—Beef loin, bottom sirloin butt, ball tip steak.

4.1.3 *Inherently Tender*—Only inherently tender meat products shall qualify. Inherently tender meat is that which has not been subjected to further processes not typically used during the conversion of muscle to meat. Examples of these are enhancement through marination (injection and tumbling), mechanical tenderization (blade or needle), and chemical tenderization. Inherent processes include, but are not limited to, electrical stimulation (during harvest), carcass suspension techniques, and aging (carcass, primal, or subprimal, or a combination thereof).

5. Claim Requirements

5.1 *Certified Tender*—This claim applies to qualifying meat cuts **(4.1.2)** from the beef carcass that have not been enhanced or processed to be tender as described in **4.1.3**. The current recognized technologies for this measurement are the WBSF and SSF devices that meet the MTTV of 4.4 and 20.0 kg (43.1 and 196.1 N), respectively, on meat cooked to a targeted 71°C using American Meat Science Association (AMSA) research guidelines **(6)**. The number of days postmortem for this measurement will be documented for validation purposes.

5.2 *Certified Very Tender*—This claim applies to qualifying meat cuts **(4.1.2)** from the beef carcass that have not been enhanced or processed to be tender and exceeds the MTTV by at least 0.5 kg (5.0 N) for WBSF or 4.6 kg (46.0 N) for SSF.

6. Product Marking

6.1 When conducted in accordance with this practice, the products meeting the requirements can be claimed to be “certified tender” or “certified very tender” if reference to this practice is made and labeling approval is granted from the appropriate food regulatory authority(ies).

7. Keywords

7.1 beef; longissimus; marketing claim; shear force; slice shear force; tenderness; Warner-Bratzler shear force

³ The boldface numbers in parentheses refer to a list of references at the end of this standard.

REFERENCES

- (1)** Platter, W. J., Tatum, J. D., Belk, K. E., Koontz, S. R., Chapman, P. L., et al., “Effects of marbling and shear force on consumers’ willingness-to-pay for beef strip loin steaks,” *J. Anim. Sci.*, Vol. 83, 2005, pp. 2863–2868.
- (2)** Executive Summary—2005 National Beef Tenderness Survey, Cattle-men’s Beef Board and National Cattlemen’s Beef Association, 2006, www.beefresearch.org.
- (3)** Wheeler, T. L., Shackelford, S. D., and Koohmaraie, M., “The accuracy and repeatability of untrained laboratory consumer panelists in detecting differences in beef longissimus tenderness,” *J. Anim. Sci.*, Vol. 82, 2004, pp. 557–562.
- (4)** Miller, M. F., Hoover, L. C., Cook, A. L., Guerra, A. L., Huffman, K. L., et al., “Consumer acceptability of beef steak tenderness in home and restaurant,” *J. Food Sci.*, Vol. 60, 1995, pp. 963–965.
- (5)** Voges, K. L., Mason, C. L., Brooks, J. C., Delmore, R. J., Griffin, D. B., et al., “National beef tenderness survey—2006: Assessment of Warner-Bratzler shear and sensory panel ratings for beef from US retail and foodservice establishments,” *Meat Sci.*, Vol. 77, 2007, pp. 357–364.
- (6)** Research guidelines for cookery, sensory evaluation and instrumental tenderness measurements of fresh meat, American Meat Science Association, 1995, www.meatscience.org.

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