Appendix F

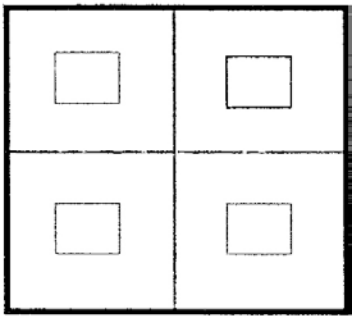
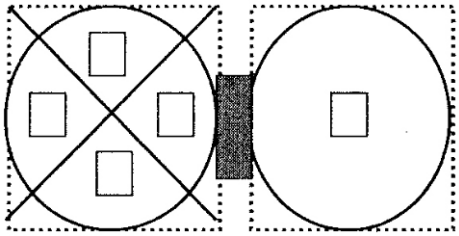
Handbook 133, 2011
Checking the Net Contents of Packaged Goods

The following table lists the amendments and editorial changes that were considered and voted on by the membership of the NCWM. As appropriate, the text on the cited pages indicates the changes to the section or paragraph as indicated in bold ~~**strikeout**~~ for deletions and bold **underscore** for insertions.

Note: The page numbers correspond to the text in L&R Appendix G.

Section No. & Page No.	Title	Action	Comments
All		Reformatted and indexed text in complete document.	Editorial
Chapter 1. General Information			
1.1. Scope			
1.1. G9	Scope	Those manufacturers whose products are sold in such packages have the right to expect that their competitors will be required to adhere to the same ~~**standards**~~ **laws and regulations.**	
1.1.a. G9	a. When and where to use checking procedures?	a. ~~**Where and when**~~ **When** and **where** to use **package** checking procedures	
1.1.a.(3) G9	(3) Retail	Amend sentence 2. It is acceptable **and** practical ~~**means**~~ for ~~**State, county and city**~~ **weights and measures** jurisdictions to monitor packaging procedures and to detect present or potential problems.	
1.2. Package Requirements			
1.2.(1) G10	(1) Inspection Lot	Replaced ~~**this collection**~~ with **the lot** for clarification.	
1.2.(3) G11	(3) Individual Package Requirements	Change the end of the last sentence. This handbook does not specify limits of overfilling **(with the exception of textiles)**, which is usually controlled by the packer **for economic, compliance and other reasons.**	
1.2.(4) G11	(4) Maximum Allowable Variation	The limit of **the** "reasonable **minus** variation" for an ~~**individual**~~ **underweight** package is called a "Maximum Allowable Variation" (MAV). An MAV is a deviation from the labeled weight, measure, or count of an individual package beyond which the deficiency is considered **an** unreasonable **minus error**.	

Section No. & Page No.	Title	Action	Comments
1.2.a. G11	a. Why **and when** do we allow for moisture loss or gain?	(Revise the first paragraph, second sentence.) The amount of ~~**lost**~~ moisture **loss** depends upon the nature of the product, the packaging material, the length of time it is in distribution, environmental conditions, and other factors. (Revised the first paragraph, last sentence.) For loss or gain of moisture~~, apply~~ the moisture allowances **may be applied before or after the package errors are determined**.	
1.2.a. G11 – G12	a. Why **and when** do we allow for moisture loss or gain?	**To apply a moisture allowance before determining package errors, adjust the Nominal Gross Weight (see Section 2.3. "Basic Test Procedure") – Determine Nominal Gross Weight and Package Errors for Tare Sample, so the package errors are increased by an amount equal to the moisture allowance. This approach is used to account for moisture loss in both the average and individual package errors.** **It is also permissible to apply the moisture allowances after individual package errors and average errors are determined. For example, a sample of a product that could be subject to moisture loss might fail because the average error is minus or the error in several of the sample packages are found to be unreasonable errors (i.e., the package error is greater than the Maximum Allowable Variation permitted for the package's labeled quantity).** ~~**to both the maximum allowable variations permitted for individual packages and the average net quantity of contents before determining the conformance of a lot**~~ **You can apply an allowance after determining the errors by adding an amount equal to the moisture allowance to adjust the average error** ~~**so the adjusted average error**~~ **and individual package errors.** ~~**provide for loss of moisture from the sample packages.**~~	Amended Added a paragraph explaining that moisture allowances can be made before or after determining package errors.
1.7. Good Measurement Practices			
1.7.(2) G15	(2) Certification Requirements for Standards and Test Equipment	This must be done according to the **calibration procedures and other instructions found on NIST's Laboratory Metrology and Calibration Procedures website at** http://www.nist.gov/pml/wmd/labmetrology/calibration.cfm ~~**in NIST Handbook 145, "Handbook for the Quality Assurance of Metrological Measurements,"**~~or **using** other recognized procedures (e.g., those adopted for use by a state weights and measures laboratory).	Editorial Many of those on the website supersede those in NIST Handbook 145 which is cited in current text. The information presented at this URL is regularly updated by the Weights and Measures Division Metrology Group. State laboratories use this as a primary source for calibration information.

Section No. & Page No.	Title	Action	Comments
Chapter 2. Basic Test Procedure – Gravimetric Testing			
2.2 Measurement Standards and Test Equipment			
2.2.f.(3) G19	f. Which performance tests should be conducted to ensure the accuracy of a scale? (3) Shift Test	**Bench Scales or Balances** use a test load equal to one-~~**half**~~ **third** of the "maximum test load: used for the "increasing-load test." For bench scales (see Diagram 1. **"Bench Scales or Balances"), ~~place~~ apply** the test load **as nearly as possible at the center of each quadrant of the load receiving element as shown in Diagram 1. "Bench Scale or Balances."** ~~**in the center of four separate quadrants, equidistant between the center and edge of the load receiving element and ….**~~ **For Equal Arm Balances use a test load equal to one-half capacity centered successively at four points positioned equidistance between the center and the front, left, back, and right edges of each pan as shown** ~~**determine the accuracy in each quadrant for**~~ **(see Diagram 2.** "**Equal-Arm Balance)**." For example, where the load-receiving element is a rectangular or circular shape, place the test load in the center of the area represented by the shaded boxes ~~**in the following diagrams**~~.	Editorial Amended this section to reflect the changes made in 2007 to the shift test procedures in NIST HB 44, Section 2.20. Scales under N.1.3.7. All Other Scales…. The change in HB 44 reduced the test-load to $^1/_3$ maximum nominal capacity and amended the requirement on placement of the test load on the load receiving element. The test pattern in Diagram 1 has been changed to reflect the new requirement.
Diagram 1. Bench Scales or Balances 		**Diagram 2. Equal-Arm Balance** 	
2.2.g. G20	Which standards apply to other test equipment?	These publications may be obtained from the Weights and Measures Division **(http://www.nist.gov/pml/wmd)** or the U.S. Government Printing Office.	Editorial
2.3. Basic Test Procedure			
2.3. G20	Basic Test Procedure	If **encased-in-ice or ice** glazed ~~**or frozen food**~~ is tested, refer to Section 2.6. "~~**Drained Weight for Glazed or Frozen Foods.**~~ **Determining the Net Weight of Encased-in-Ice and Ice Glazed Products**."	Editorial To match change in Sec. 2.6 title.
2.3.3.b. G23	Where are Maximum Allowable Variations found?	Added a missing bullet • packages bearing a USDA seal of inspection – Meat and Poultry "See Table 2-9."	Editorial

Section No. & Page No.	Title	Action	Comments
2.3.3.d. G23	How many MAVs are permitted in a sample?	d. How many ~~**MAVs**~~ **unreasonable minus errors (UMEs)** are permitted in a sample? To find out how many minus package errors are permitted to exceed the MAV, **(errors known as unreasonable minus errors or UME's),** ~~**(refer to Appendix A)**~~ see Column 4 in either Table 2-1. Sampling Plans for Category A or Table 2-2. Sampling Plans for Category B **(refer to Appendix A).** Record this number in Box 8.	
2.3.5. Tare Procedures			
2.3.5.a.(1) G24	What types of tare may be used to determine the net weight of packaged goods? –Used Dry Tare	**Note:** When testing frozen foods with **the** Used Dry Tare **approach**, the frost found inside frozen food packages is included as part of the net contents**, except in instances in which glazed or frozen foods are tested according to Section 2.6. "Determining the Net Weight of Encased-in-Ice and Ice Glazed Products**."	Editorial
2.3.5.(3) G25	What types of tare may be used to determine the net weight of packaged goods? –Wet Tare	**Wet tare procedures must not be used to verify the labeled net weight of packages of meat and poultry packed at an official United States Department of Agriculture (USDA) facility and bearing a USDA seal of inspection. The USDA - Food Safety and Inspection Service (FSIS) adopted specific sections of the 2005 4th Edition of NIST HB 133 by reference in 2008 but not the "wet tare" method for determining net weight compliance. FSIS considers the free-flowing liquids in packages of meat and poultry products, including single-ingredient, raw poultry products, to be integral components of these products (see Federal Register, September 9, 2008 [Volume 73, Number 175] [Final Rule – pages 52189-52193]).** Paragraph 2, sentence 2 – change the following: If Wet Tare is used to verify the net weight of the packages ~~**of fresh poultry, hot dogs, and franks that are subject to the USDA regulations**~~, the inspector must allow for moisture loss.	
2.3.5.d. G26	How are the tare sample and the tare weight of the package material determined?	Step 2 For sample sizes of 12 or more, subtract the individual tare weights from the **respective package** gross weights (Block a, minus Block b, on the report form) to obtain the net weight for each package and record ~~**these**~~ each value~~s~~ in Block c, "Net Wt.," on the report form.	
2.3.5.e. & 2.3.5.f. G26 – G27	How are the tare sample and the tare weight of the packing material determined?	e. Does the inspection of aerosol containers require special procedures? f. How is the tare of vacuum-packed coffee determined?	Editorial (moved to another location within Chapter)

Section No. & Page No.	Title	Action	Comments
2.3.6. Determine Nominal Gross Weight and Package Errors for Tare Sample			
2.3.6.a. G27	**a. What is nominal gross weight?**	a. ~~**What is**~~ **How do I compute** a nominal gross weight? A nominal gross weight is used to ~~**simplify the calculation**~~ calculate ~~**of**~~ package errors. To compute the nominal gross weight, add the average tare weight (recorded in Box 13) to the labeled weight (recorded in Box 1).~~ To obtain the package error, subtract a package's gross weight from the nominal gross weight.~~	
2.3.6.b. G27	~~**What is nominal gross weight?**~~ **b. How do I compute package error?**	**b. How do I compute package error?** **To obtain the package error, subtract the nominal gross weight from each package's gross weight. The package error is represented by the formula:** ***Package error = gross weight – nominal gross weight***	
2.3.6.e. G28	e. How is the total package error computed?	Add all the package errors for the packages in the sample. Be sure to subtract the minus package errors from the plus package errors and to record the total net error in Box 15**, indicating the positive or negative value of the error.**	
2.8. Moisture Allowance			
2.3.8. G30	Moisture Allowance	**Moisture loss must be considered even when no formal allowance for the specific product is found in HB 133.**	
2.3.8.b. G30	b. What are the moisture allowances for flour and dry pet food?	b. What ~~**is**~~ are the moisture allowance**s** for flour, ~~**and**~~ dry pet food**, and other products?** (See Table 2-3. Moisture Allowances) ~~**The moisture allowance for flour and dry pet food is 3 % of the labeled net weight.**~~ ~~**Note: Dry pet food means all extruded dog and cat foods and baked treat products packaged in Kraft paper bags and/or cardboard boxes with a moisture content of 13 % or less at the time of pack.**~~	
2.3.8.b. G30	Table 2-3. Moisture Allowances	**Table 2-3. Moisture Allowances for Product in Distribution** Corrected a misprint in moisture allowances for packages of fresh poultry to read 3 %.	

TABLE 2-3. Moisture Allowance for Procduct in Distribution
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Table 2-3.
Moisture Allowances

If you are verifying the labeled net weight of packages of:	The Moisture Allowance is:	Notes
Flour	3 %	
Dry pet food	3 %	Dry pet food means all extruded dog and cat foods and baked treats packaged in Kraft paper bags and/or cardboard boxes with a moisture content of 13 % or less at time of pack.
Borax	See Section 2.4.	
Wet Tare Only		
If you are using Wet Tare in verifying the net weight of packages of one of the products listed below:	The Moisture Allowance is:	Note: Wet tare procedures must not be used to verify the labeled net weight of packages of meat and poultry packed at an official United States Department of Agriculture facility and bearing a USDA seal of inspection. The Food Safety and Inspection Service (FSIS) adopted specific sections of the 2005 4th Edition of NIST HB 133 by reference in 2008 but not the "wet tare" method for determining net weight compliance. FSIS considers the free-flowing liquids in packages of meat and poultry products, including single-ingredient, raw poultry products, to be integral components of these products (see Federal Register, September 9, 2008 [Volume 73, Number 175] [Final Rule – pages 52189-52193]).
Fresh poultry	3 ~~5~~%	Fresh poultry is defined as poultry at a temperature of − 3 °C (26 °F) that yields or gives when pushed with the t□umb.
Franks or hot dogs	2.5 %	
Bacon, fresh sausage, and luncheon meats	0 %	For packages of bacon, fresh sausage, and luncheon meats, there is no moisture allowance if there is no free-flowing liquid or absorbent material in contact with the product and the package is cleaned of clinging material. Luncheon meats are any cooked sausage product, loaves, jellied products, cured products, and any sliced sandwich-style meat. This does not include whole hams, briskets, roasts, turkeys, or chickens requiring further preparation to be made into ready-to-eat sliced product. When there is no free-flowing liquid inside the package and there are no absorbent materials in contact with the product, Wet Tare and Used Dry Tare are equivalent.

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2.3.8.d. G32	d. What moisture allowance is used with wet tare when testing packages bearing the USDA seal of inspection?	d. What moisture allowance is used with wet tare**?** ~~**when testing packages bearing a USDA seal of inspection?**~~ **Wet tare procedures must not be used to verify the labeled net weight of packages of meat and poultry packed at an official United States Department of Agriculture (USDA) facility and bearing a USDA seal of inspection. The Food Safety and Inspection Service (FSIS) adopted specific sections of the 2005 4th Edition of NIST HB 133 by reference in 2008 but not the "wet tare" method for determining net weight compliance. FSIS considers the free-flowing liquids in packages of meat and poultry products, including single-ingredient, raw poultry products, to be integral components of these products (see Federal Register, September 9, 2008 [Volume 73, Number 175] [Final Rule – pages 52189-52193]).** **See Table 2-3 Moisture Allowances - Wet Tare Only**. • ~~**Use the following guideline when testing meat and poultry from any USDA inspected plant using Wet Tare and a Category A sampling plan.**~~ • ~~**For packages of fresh poultry that bear a USDA seal of inspection, the moisture allowance is 3 5 of the labeled net weight. For net weight determinations, only, fresh poultry is defined as poultry above –3 ºC (26 ºF). This is a product that yields or gives when pushed with the thumb.**~~ • ~~**For packages of franks or hotdogs that bear a USDA seal of inspection, the moisture allowance is 2.5 % of the labeled net weight.**~~ • ~~**For packages of bacon, fresh sausage, and luncheon meats that bear a USDA seal of inspection, there is no moisture allowance if there is no free-flowing liquid or absorbent materials in contact with the product and the package is cleaned of clinging material. Luncheon meats are any cooked sausage product, loaves, jellied products, cured products, and any sliced sandwich-style meat. This does not include whole hams, briskets, roasts, turkeys, or chickens requiring further preparation to be made into ready-to-eat sliced product. When there is no free-flowing liquid inside the package and there are no absorbent materials in contact with the product, Wet Tare and Dried Used Tare are equivalent.**~~ When there is free-flowing liquid **and liquid** ~~or absorbent~~ **absorbed by** packing materials in contact with the products, all free liquid **and the absorbed liquid** is part of the wet tare.	

Section No. & Page No.	Title	Action	Comments
2.3.8.e.	**e. How is moisture loss handled for products not listed in NIST Handbook 133?**	**e. How is moisture loss handled for products not listed in NIST Handbook 133?** **Officials can test products for which no moisture loss guidance has been provided. If studies are a necessity they should be a collaborative effort between officials and industry. Because of the potential impact on interstate commerce, studies should be completed on a nationwide basis and not by individual jurisdictions unless circumstances justify only local consideration.** **The amount of moisture loss from a package is a function of many factors, not the least of which is the product itself (e.g., moisture content, texture and density), packaging, storage conditions (e.g., temperature, humidity, and air flow), time, handling and others. If a packaged product is subject to moisture loss, officials must allow for "reasonable" variations caused by moisture either evaporating or draining from the product. Officials cannot set arbitrary moisture allowances based solely on their experience or intuition. Moisture allowances must be based on scientific data and must be "reasonable." Reasonable does not mean that all of the weight loss caused by moisture evaporation or draining from the product must be allowed. As a result of product and moisture variability, the approach used by an official must be developed on a case-by-case basis depending on many factors to include, but not be limited to, the manufacturing process, packaging materials, distribution, environmental influence and the anticipated shelf life of the product.** **NIST Handbook 130 provides a starting point for developing a workable procedure in the Interpretation and Guideline Section 2.5.6. regarding "Resolution for Requests for Recognition of Moisture Loss in Other Packaged Products." Most studies involving nationally distributed products will require that products be tested during different seasons of the year and in different geographic locations to develop a nationally recognized moisture allowance. Some studies may require the development of laboratory tests used for inter-laboratory comparisons to establish moisture content in products at time of pack or at the time of inspection.** **Moisture loss or gain is critical consideration for any net content enforcement effort and one that, in most cases, cannot be addressed solely by a field official. If moisture loss issues are to be deliberated, it is the regulatory official's responsibility to resolve the packer's concern uti8lizing available resources and due process procedures. To full fill this obligation the official may be required to utilize specialized test equipment and specific laboratory procedures. Additionally, the collection of adequate test data may require product examination over a broad geographical area and consideration of a wide range of environmental factors.**	NOT ACCEPTED To be returned to the Moisture Loss Work Group (MLWG).

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		If a national effort is required, a coordinated effort involving industry, trade associations, weights and measures officials, and federal agencies may be required. NIST will provide technical support upon request. If studies are a necessity they should be collaborative efforts between officials and industry and can be very time consuming depending on the product. Because of the potential impact on interstate commerce, studies must be completed on a nationwide basis and not by individual jurisdictions unless circumstances justify only local consideration.	
2.3.9. Calculations			
2.3.9.a. G32	a. How is moisture allowance computed and applied to the average error?	a. How is moisture allowance computed and applied ~~**to the average error**~~?	
2.3.9.b.	**b. How is a Moisture Allowance made prior to determining package error?**	**b. How is a Moisture Allowance made prior to determining package errors?** **If the Moisture Allowance is known in advance (e.g., flour and dry pet food) it can be applied by adjusting the Nominal Gross Weight (NGW) used to determine the sample package errors. The Moisture Allowance (MA) in Box 13a is subtracted from the NGW. The NGW which is the sum of the Labeled Net Quantity of Contents (LNQC e.g., 907 g) and the Average Tare Weight from Box 13 (for this example use an ATW of 14 g (0.03 lb)) to obtain an Adjusted Nominal Gross Weight (ANGW) which is entered in Box 14.** **The calculation is:** ***Labeled Net Quantity of Contents 907 g (2 lb) + Average Tare Weight 14 g (0.03 lb) = 921 g (2.03 lb) – Moisture Allowance 27 g (0.06 lb) = Adjusted Nominal Gross Weight of 894 g (1.97 lb)*** **which is entered in Box 14.** **Package errors are determined by subtracting the Adjusted Nominal Gross Weight from the Gross Weights of the Sample Packages (GWSP).** **The calculation is:** ***Gross Weight of Samples Packages – Adjusted Nominal Gross Weight = Package Error*** **Note: When the Nominal Gross Weight is adjusted by subtracting the Moisture Allowance value(s) the Maximum Allowable Variation(s) is not changed. This is because the errors that will be found in the sample packages have been adjusted by subtracting the**	Amended

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		Moisture Allowance (e.g., 3 %) from the Nominal Gross Weight. That increases the individual package errors by the amount of the moisture allowance (e.g., 3 %). If the value(s) of the MAV(s) were also adjusted it would result in doubling the allowance. MAV is always based on the labeled net quantity.	
2.3.9.c. G33	c. How is a Moisture Allowance made after determining package error?	c. How is a Moisture Allowance made after determining package errors? **You can make adjustments when the value of the Moisture Allowance is determined following the test (e.g., after the sample fails or if a packer provides a reasonable moisture allowance based on data obtained using a scientific method) using the following approach:** **If the sample failed the Average and/or the Individual Package Requirements both of the following steps are applied.** **If the sample failed the Average Requirement but has no unreasonable package errors, only step 1 is used. If the sample passes the Average Requirement but fails because the sample included one or more Unreasonable Minus Errors (UMEs), only step 2 is used.** **Step:** **1. Use the following approach to apply a Moisture Allowance to the sample after the test is completed. The Moisture Allowance (MA) is computed (e.g., 3 % x 907 g (2 lb) = 27 g (0.06 lb) and added to the Sample Error Limit (SEL) (e.g., if the SEL is 0.023 add 0.06 to obtain an Adjusted SEL of 0.083). The Adjusted Sample Error Limit (ASEL) is then compared to the Average Error of the Sample and:** • **If the average error (disregarding sign) in Box 18 is smaller than the Adjusted Sample Error Limit, the sample passes.** **HOWEVER,** • **If the average error (disregarding sign) in Box 18 is larger than the Adjusted Sample Error Limit, the sample fails.** **2. If a Moisture Allowance is to be applied to**	

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		the Maximum Allowable Variation(s), the following method is recommended: **The Moisture Allowance (MA) is computed (e.g., 3 % x 907 g (2 lb) = 27 g (0.06 lb) and added to the value of the Maximum Allowable Variation(s) for the labeled net quantity of the package (e.g., MAV for 907 g (2 lb) is 31.7 g (0.07 lb) + 27 g (0.06 lb) = Adjusted Maximum Allowable Variation(s) (AMAV) of 58.7 g). Compare each minus package error to the AMAV. Mark package errors that exceed the AMAV and record the number of unreasonable minus errors found in the sample. If this number exceeds the number of unreasonable errors allowed, the sample fails.** ~~**How is the Maximum Allowable Variation corrected for the moisture allowance?**~~ • ~~**Adjust the MAV by adding the moisture allowance to the MAV.**~~ ~~**Example: 907 g (2 lb) package of flour: moisture allowance added to the MAV = 31.7 g (0.07 lb) (MAV for 907 g [2 lb] package) + 27 g (0.06 lb) moisture allowance = a corrected MAV of 58.7 g (0.13 lb)**~~ • ~~**Correct MAV in dimensionless units by converting the moisture allowance to dimensionless units = 0.06 lb ÷ 0.001 lb = 60. Go to Box 4 and add the moisture allowance in dimensionless units to the MAV in dimensionless units.**~~ ~~**Example: MAV = 70 (MAV for 2 lb where the unit of measure = 0.001 lb) + 60 (moisture allowance in dimensionless units) = 130. Minus package errors must exceed the MAV ± gray area before they are declared "unreasonable errors."**~~ • ~~**If the number of unreasonable errors exceeds the allowed number (recorded in Box 8), the inspection lot fails.**~~	

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		~~**How is the average error for the moisture allowance corrected?**~~ ~~**If the minus average error (Box 18) is larger (disregarding the sign) than the SEL (Box 23) and moisture loss applies, compare the difference between Box 18 and Box 23 with the moisture allowance recorded in Box 13a. (Make sure that all the values are in units of weight or in dimensionless units before making this comparison.) If Box 13a is larger than the difference between Box 18 and 23, then the lot is considered to be in the gray area.**~~ ~~**Example: Box 13a for 2 lb flour is 60 (dimensionless units); Box 18 is 2 (dimensionless units); Box 23 is 0.550 (dimensionless units). The difference between Box 18 and Box 23 is 1.450 (dimensionless units). Since Box 13a is 60 (dimensionless units), Box 13a is larger than the difference between Box 18 and Box 23, the lot is considered to be in the gray area and further investigation is necessary before ruling out moisture loss as the reason for shortweight.**~~
2.3.9.d. G35	**d. What should you do when a sample is in the moisture allowance (gray) area?**	**d. What should you do when a sample is in the moisture allowance (gray) area?** When the average error of a lot of fresh poultry, franks, or hot dogs ~~**from a USDA inspected plant**~~ is minus, but does not exceed the established "moisture allowance" or "gray area," contact the ~~**appropriate USDA official and/or**~~ **packer or** plant management personnel to determine what information is available on the lot in question. Questions to the ~~**USDA official and/or**~~ plant management representative may include: Change the note to read: **Note:** If ~~**USDA or**~~ the plant management has data on the lot, such data may help to substantiate that the "lot" **had** met **the** net content requirements at the point of manufacture.	
2.3.9.d. G35	**d. What should you do when a sample is in the moisture allowance (gray) area?**	**Reasonable deviations** from net quantity of contents caused by the loss or gain of moisture from the package are permitted when caused by ordinary and customary exposure to conditions that occur under good distribution practices.	

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2.4. Borax			
2.4.b. G37	b. How is the volume determined?	Step 3. Compare the net volume of the commodity in the package with the volume declared on the package. The volume declaration **must not ~~is not located~~ appear** on the principal display panel. **Instead, it will appear on the back or side of the package and may appear as: ~~The following example is how the declaration of volume should appear.~~**	
2.5. Determination of Drained Weight			
2.5. G38	The Determination of Drained Weight – Test Equipment	➢ **For canned tomatoes a U.S. Standard test sieve with 11.2 mm ($^{7}/_{16}$ in) openings must be used.**	
2.6. ~~Drained Weight for Glazed or Frozen Foods~~ Determining the Net Weight of Encased-in-Ice and Ice Glazed Products			
2.6. G39	Drained Weight for Glazed or Frozen Foods	**~~Drained Weight for Glazed or Frozen Foods~~ Determining the Net Weight of Encased-in-Ice and Ice Glazed Products.**	
2.6.a. G39	a. How is the drained weight of frozen shrimp and crabmeat determined?	**a.** How **~~is~~ should** the **~~drained~~ net** weight of frozen **~~shrimp (e.g., 2.27 kg (5 lb) block of shrimp) and crabmeat~~ seafood, meat, poultry or similar products encased-in-ice and frozen into blocks or solid masses be** determined? When determining the net weight of frozen **~~shrimp and crabmeat~~ seafood, meat, poultry and similar products**, use the test equipment and procedure provided below. **~~1. Immerse the product directly in water in a mesh basket or open container to thaw (e.g., it is not placed in a plastic bag). Direct immersion does not result in the product absorbing moisture because the freezing process causes the tissue to lose its ability to hold water.~~** **~~2. Maintain the water temperature between 23 °C to 29 °C (75 °F to 85 °F). This is accomplished by maintaining a constant flow of warm water into the container holding the product (e.g., place a bucket in a sink to catch the overflow, and feed warm water into the bottom of the bucket through a hose).~~** **~~3. After thawing, drain the product on a sieve for 2 minutes and then weigh it.~~**	

Section No. & Page No.	Title	Action	Comments
2.6.a. G39	a. How ~~is~~ **should** the ~~**drained**~~ **net** weight of frozen ~~**shrimp (e.g., 2.27 kg (5 lb) block of shrimp) and crabmeat**~~ **seafood, meat, poultry and similar products encased-in-ice and frozen into blocks or solid masses (i.e., not individually glazed) be** determined? –Test Equipment	• **Balance and weights (used to verify accuracy)** • Partial immersion thermometer or equivalent with 1 °C (2 °F) graduations and −a 35 °C to +50 °C (− 30 °F to + 120 °F) accurate to ± 1 °C (± 2 °F) • Water source and hose with a**n approximate flow rate of** 4 L to 15 L (1 gal to 4 gal) per minute **for thawing blocks and other products** ~~**flow rate**~~ • Sink or other receptacle [i.e., **bucket with a capacity of approximately** 15 L (4 gal) ~~**bucket**~~S] **for thawing blocks and other products** • A wire mesh basket **used for testing large frozen blocks of shrimp** or ~~**other**~~ **a** container that is large enough to hold the contents of **one** ~~**1**~~ package (e.g., 2.27 kg [5 lb] box of shrimp) and has openings small enough to retain all pieces of the product (e.g., an expanded metal test tube basket lined with standard 16-mesh screen).	
2.6.a. G40	a. How is the drained weight of frozen shrimp and crabmeat determined? – Test Procedure	Follow Section 2.3.**1** "~~**Basic Test Procedure –**~~ Define the Inspection Lot." 1. Place the unwrapped frozen ~~**shrimp or crabmeat**~~ **seafood, meat, poultry, or similar products** in the wire mesh basket **or an open container to thaw (e.g. it is not placed in a plastic bag)** and immerse in a 15 L (4 gal) or larger container of fresh water at a temperature between 23 °C to 29 °C (75 °F to 85 °F). Submerge the basket so that the top of the basket extends above the water level. 2. Maintain a continuous flow of water into the bottom of the container to keep the temperature within the specified range. **This is accomplished by maintaining a constant flow of warm water into the container holding the product (e.g., place a bucket in a sink to catch the overflow, and feed warm water into the bottom of the bucket through a hose). Direct immersion does not result in the product absorbing moisture because the freezing process causes the tissue to lose it ability to hold water.**	
2.6.b. G40	b. How is the net weight of **ice** glazed ~~**raw**~~ seafood**, meat, poultry or similar products** ~~**and fish**~~ determined?	b. How is the net weight of **ice glazed** ~~**raw**~~ seafood, **meat, poultry and similar products** ~~**and fish**~~ determined? For **iced** glazed seafood, meat**, poultry or similar products** ~~**and fish,**~~ determine the net weight after removing the glaze using the following procedure. Use this method for any frozen glazed food product.	

Section No. & Page No.	Title	Action	Comments
2.6.b. G40	b. How is the net weight of **ice** glazed ~~**raw**~~ seafood**, meat, poultry or similar products** ~~**and fish**~~ determined? – Test Equipment	~~**Use the equipment listed in Section 2.6.**~~ "~~**Drained Weight for Glazed or Frozen Foods**~~." • **Balance and weights (used to verify accuracy)** • **Continuous cold water source** • **Number 8 sieve and receiving pan, 20 cm (8 in)** • **for packages 453 g (1 lb) or less. A 30 cm (12 in) for packages more than 453 g (1 lb)** • **Means to determine a 17° to 20° angle** • **Stopwatch**	
2.6.b. G41	b. How is the net weight of **ice** glazed ~~**raw**~~ seafood**, meat, poultry or similar products** ~~**and fish**~~ determined? –Test Procedure	Step: 1. Fill out a **glazed seafood package** report form (**See Appendix E)** and select the random sample. A tare sample is not needed. 2. Weigh S~~**ieve and**~~ Sreceiving pan. Record this weight on a **glazed seafood package** worksheet **(See Appendix E)** as "S~~**ieve**~~S **receiving pan** weight." 3. Remove each package from low temperature storage; open it immediately and place the contents **in the sieve or other draining device (i.e. colander)** under a gentle spray of cold water**. Carefully agitate the product, handling the product with care** to avoid breaking the products. Continue the spray**ing process** until all ice glaze, that is seen or felt is removed. In general, the product should remain rigid; however, the ice glaze on certain products, usually smaller sized commodities, sometimes cannot be removed without S~~**defrosting**~~S **partial thawing of** the product. Nonetheless, remove **all S~~the~~S ice** glaze, because it **may be** S~~**is**~~ Sa substantial part of the package weight. 4. Transfer the product to the ~~**weighed**~~ sieve (if the product is not already in the sieve)S Without shifting the product, incline the sieve to an angle of 17°P Pto 20° to facilitate drainage and drain (into waste receptacle or sink) for ~~**exactly**~~ 2 minutes. 5. **At the end of the drain time immediately transfer the entire product to the tared receiving pan for weighing to determine the net weight.** Place the product and S~~**ieve**~~ **tared**	

Section No. & Page No.	Title	Action	Comments
		receiving Span on the S~~receiving pan S~~**scale** and weigh. Record this weight on a **glazed seafood package** worksheet**.** ~~**as the "Ssieve + product weight."**~~ 6. The net weight of product is equal to the weight of the **receiving** pan S~~**plus the sieve** S~~plus the product (recorded in step 5) minus the "S~~**sieve receiving** S~~**pan** weight" (recorded in step 2). Record the product net weight on the **glazed seafood package** worksheet. The package error is equal to the net weight of the product as measured minus the labeled weight. Record the Record the package error on the **glazed seafood package** worksheet and transfer it to the report form. 7. Repeat steps ~~**3**~~ **2** through 6 for each package in the sample, cleaning ~~and drying~~ the sieve and **cleaning and drying** the receiving pan between package measurements.	
Chapter 3. Test Procedures – For Packages Labeled by Volume			
3.1. Scope			
3.1.f. G44	Table 3-1. Reference Temperature for Liquids	See modified table below.	

Table 3-1.
Reference Temperatures for Liquids

If the liquid commodity is:	Then the volume is determined at the reference temperature of:	Code of Federal Regulation Reference*
Beer	~~**3.9**~~ **4** °C (39.1°F)	**27 CFR, Part 7.10**
Distilled Spirits	15.**56** °C (60 °F)	**27 CFR, Part 5.11**
Frozen food - sold and consumed in the frozen state	At the frozen temperature	**21 CFR §101.105(b)(2)(i)**
Petroleum	15.**6** °C (60 °F)	**16 CFR §500.8(b)**
Refrigerated food (e.g., milk and other dairy products labeled "KEEP REFRIGERATED")	4~~**.4**~~ °C (40 °F)	**21 CFR §101.105(b)(2)(ii)**
Other liquids and wine (e.g., includes liquids sold in a refrigerated state for immediate customer consumption such as soft-drinks, bottled water and others that do not require refrigeration)	20 °C (68 °F)	**Food: 21 CFR §101.105(b)(2)(iii)** **Non-Food: 16 CFR §500.8(b)** **Wine: 27 CFR, Part 4.10 (b)**

*The Code of Federal Regulations can be accessed online at: ***http://www.gpoaccess.gov/***

Section No. & Page No.	Title	Action	Comments
3.2. Gravimetric Test Procedure for Liquids			
3.2. G46	Gravimetric Test Procedure for Liquids –Test Procedure	Step 3 Tilt the flask gradually so the flask walls are splashed as little as possible **as the flask** is emptied.	Editorial
3.4. Other Volumetric Test Procedures			
3.4.a. G49	a. What other methods can be used to determine the net contents of packages labeled by volume? – Test Equipment	Updated standards ➢ Class A 500 mL buret that conforms to ASTM E287~~94~~ **2(2007)**, "Standard Specification for Laboratory Glass Graduated Burets" ➢ Class A Pipets, calibrated "to deliver" that conform to ASTM E969~~-95~~-**02(2007)**, "Standard Specification for Glass Volumetric (Transfer) Pipets"	Editorial
3.4.b. G50	How is the volume of oils, syrups, and other viscous liquids that have smooth surfaces determined?	Step 2 3. Bring the temperature of both the liquid and the water to be used to measure the volume of the liquid to the reference temperature specified in Table 3-1. Reference Temperatures for Liquids. **Verify with a thermometer that product has maintained the reference termperature.**	Editorial
3.4.c. G50		**c. How is the volume of mayonnaise, salad dress, and other water immiscible products that do not have smooth and level surfaces determined?**	New
3.8. Test Viscous Materials – Such as Caulking Compounds and Pastes			
3.8.b. G61	b. What type of measurement equipment is needed to test packages of caulk, pastes, and glues?	Calibrate the density cup gravimetrically with respect to the contained volume using the procedure in ASTM E5~~4~~2-~~94~~**01(2007)**, "Standard Practice for Calibration of Laboratory Volumetric Apparatus."	Editorial
3.9. Peat Moss			
3.9.a. G62	a. How are packages of peat and peat moss labeled by compressed volume testing?	**Take three measurements (both ends and middle) of each dimension and calculate their average. Multiply the averages to obtain the compressed cubic volume.** (Modify the second sentence to add the double-underlined word and graphic:) **For each dimension (length, width, height) take three equidistant measurements, take the average of each respective dimension and multiply to determine the cubic measure as follows:** ***Average height x average width x average length = cubic measurement***	Amended

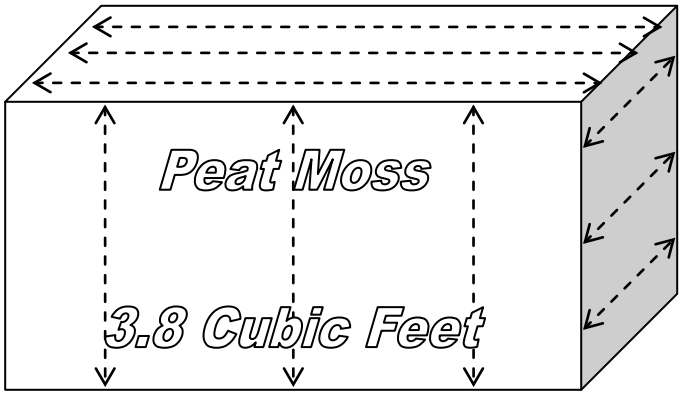
Section No. & Page No.	Title	Action	Comments
 **Peat Moss Illustration**			
3.10. Mulch and Soils Labeled by Volume			
3.10.b. G65	b. What type of measurement equipment is needed to test packages of mulch? – Table	Modify table 3-4. – The table format was simplified and the SI units were changed to millimeters.	Editorial

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Table 3-4.
Specifications for Test Measures for Mulch and Soils

Nominal Volume of Test Measure	Interior Wall Dimensions [1]			Marked Intervals on Interior Walls [3]	Volume Equivalent of Marked Intervals
	Length	Width	Height [2]		
30.2 L (1.07 ft^3) for testing packages that contain less than 28.3 L (1 ft^3 or 25.7 dry qt)	213.4 mm (8.**4** in)	203.2 mm (8 in)	736.6 mm (29 in)	12.7 mm (½ in)	524.3 mL (32 in^3)
28.3 L (1 ft^3)	304.8 mm (12 in)	**304.8 mm (12 in)**	**304.8 mm (12 in)**		1 179.8 mL (72 in^3)
56.6 L (2 ft^3)	**304.8 mm (12 in)**	**304.8 mm (12 in)**	**685.8 mm (27 in)**		
	406.4 mm (16 in)	**228.6 mm (9 in)**	**685.8 mm (27 in)**		
84.9 L (3 ft^3)	**304.8 mm (12 in)**	**304.8 mm (12 in)**	**990.6** mm (**~~48~~ 39** in)		
	406.4 mm (16 in)	228.6 mm (9 in)	**~~1219.2~~ 990.6** mm (**~~48~~ 39** in)		

Measures are typically constructed of 12.7 mm (½ in) marine plywood. A transparent sidewall is useful for determining the level of fill, but must be reinforced if it is not thick enough to resist distortion. If the measure has a clear front, place the level gage at the back (inside) of the measure so that the markings are read over the top of the mulch.

Notes:
[1] Other interior dimensions are acceptable if the test measure approximates the configuration of the package under test and does not exceed a base configuration of the package cross-section.
[2] The height of the test measure may be reduced, but this will limit the volume of the package that can be tested.
[3] When lines are marked in boxes, they should extend to all four sides of the measure if possible to improve readability. It is recommended that a line indicating the MAV level also be marked to reduce the possibility of reading errors when the level of the mulch is at or near the MAV.

3.10.d. G66	d. How are package errors determined?	*Package Error = Package Net Volume – Labeled Volume*	Editorial

Section No. & Page No.	Title	Action	Comments
3.11. Ice Cream Novelties			
3.11. G66	Ice Cream Novelties	**Note: The following procedure can be used to test packaged products that are solid or semisolid and that will not dissolve in, mix with, absorb, or be absorbed by the fluid into which the product will be immersed. For example, ice cream labeled by volume can be tested using ice water or kerosene as the immersion fluid.** **Exception: Pelletized ice cream is beads of ice cream which are quick frozen with liquid nitrogen. The beads are relatively small, but can vary in shape and size. On April 17, 2009, the FDA issued a letter stating that this product is considered semisolid food, in accordance with 21 CFR 101.105(a). The FDA also addresses that the appropriate net quantity of content declaration for pelletized ice cream products be in terms of net weight.**	
3.12. Fresh Oysters Labeled by Volume			
3.12.a. G71	a. What requirements apply to packages of fresh oysters labeled by volume? – Test Equipment	➢ Area: 1935 cm^2 (300 in^2) or more for each 3.78 L (1 gal) of oysters (**Note: Strainers of smaller area dimensions are permitted to facilitate testing smaller containers.)**	Editorial
3.13.1. Test Procedure for Cylinders Labeled by Weight			
3.13.2.a. G76	a. How is it determined if the containers meet the package requirements using the gravimetric test procedure?	Step 4 Using NIST Technical Note 1079 "Tables of Industrial Gas Container Contents and Density for Oxygen, Argon, Nitrogen, Helium, and Hydrogen" (available on-line at (**http://www.nist.gov/pml/wmd/pubs/nbs.cfm),** determine the value (SCF/CF) from the content tables at the temperature and pressure of the cylinder under test.	Editorial
3.13.2. Test Procedure for Cylinders Labeled by Volume			
3.13.2.a. G76	How is it determined if the containers meet the package requirements using the volumetric test procedure?	Follow Section 2.3.**1.** "~~**Basic Test Procedure –**~~ Define the Inspection Lot."	Editorial
3.14. Firewood			
3.14. G77 – G79	Firewood	Editorial: Make 3.14. Main Title, subtitle **Firewood** categories (**3.14.2. Boxed Firewood, 3.14.3. Crosshatched Firewood, and 3.14.4. Bundles and Bags of Firewood**).	Editorial

Section No. & Page No.	Title	Action	Comments
Chapter 4. Test Procedures Packages Labeled by Count, Linear Measure, Area, Thickness, and Combinations of Quantities			
4.4. Packages Labeled by Count of More than 50 Items			
4.4. G83 – G84	Packages Labeled by Count of More than 50 Items – Audit Procedure	Step 9: Added a minus symbol to the equation between Actual Package Gross Weight and Nominal Gross Weight.	Editorial
4.6. Special Test Requirements for Packages Labeled by Linear or Square Meters (Area)			
4.6.a. G88	Are there special measurement requirements for packages labeled by dimensions?	When testing yarn and thread apply tension and use the specialized equipment specified in ASTM D1907 ~~**9**~~**07**, "Standard Test Method for Linear Density of Yarn (Yarn Number) by the Skein Method," in conjunction with the sampling plans and package requirements described in this handbook.	Editorial
4.7. Polyethylene Sheeting			
4.7.a. G90	a. Which procedures are used to verify the declarations on polyethylene sheeting and bags? – Test Procedure	Step 3 (footnote) Updated the year (98) of approval referenced in ASTM Standard D 1505 ~~**98**~~ **03**, "Standard Method of Test for Density of Plastics by the Density Gradient Technique."	Editorial
4.8. Packages Labeled by Linear or Square (Area) Measure			
4.8. G95	– Test Procedure	Step 11 Added a minus symbol to the equation between "Package Gross Weight and Nominal Gross Weight."	Editorial
4.9. Baler Twine – Test Procedure for Length			
4.9. G97	– Test Procedure	Step 5 Added a minus symbol to the equation between "Packaged Gross Weight and Nominal Gross Weight."	Editorial
Appendix A. Table			
Table 1-1. Agencies Responsible for Package Regulations and Applicable Requirments			
	Table 1-1. Agencies Responsible for Package Regulations and Applicable Requirements	U.S. Bureau of Alcohol, Tobacco, and Firearms and state and local weights and measures ~~**http://www.atf.treas.gov**~~ **http:// www.atf.gov**	Editorial
G103	Table 2-1.	Correction to table (see next page)	Editorial

Section No. & Page No.	Title	Action	Comments

Table 2-1.
Sampling Plans for Category A

1	2	3	4	5	6
Inspection Lot Size	**Sample Size**	**Sample Correction Factor**	**Number of Minus Package Errors Allowed to Exceed the MAV[1]**	**Initial Tare Sample Size[2]**	
				Glass and Aerosol Packages	**All Other Packages**
1	1	Apply MAV			
2	2	8.984~~5~~			
3	3	2.484			
4	4	1.591			
5	5	1.24~~1~~2	0[1]	2	2
6	6	1.0~~5~~049			
7	7	0.925			
8	8	0.836			
9	9	0.769			
10	10	0.715			
11	11	0.672			
12 to 250	12	0.635			
251 to 3 200	24	0.422		3	
More than 3 200	48	0.29~~1~~0	1*		

[1] For mulch and soils packaged by volume, see Table 2-10. Exceptions to the Maximum Allowable Variations – 1 package may exceed the MAV for every 12 packages in the sample.

[2] If sample size is 11 or fewer, the initial tare sample size and the total tare sample size is 2 samples.

(Amended 2001)

Appendix B. Random Numbers Tables

G115	The Random Number Table	The random number tables in Appendix B are composed of the digits from 0 through 9, with approximately equal frequency of occurrence. This appendix consists of 8 pages. On each page digits are printed in blocks of ~~five~~ columns and blocks of ~~five~~ rows. The printing of the table in blocks is intended only to make it easier to locate specific columns and rows.	Editorial

Section No. & Page No.	Title	Action	Comments
Appendix C. Glossary			
G127	Glossary	**Sample correction factor.** ~~**Students' "t: value for a one sided test at the 3 % confidence level and n is the sample size.**~~ **The factor as computed is the ratio of the 97.5th quantile of the student's t-distribution with (n – 1) degrees of freedom and the square root of n where n is the sample size.** **sample error limit (SEL).** A statistical value computed by multiplying the sample standard deviation times the sample correction factor from Column 3 of Table 2-1. Category A – Sampling Plans for the appropriate sample size. The SEL value allows for the uncertainty between the average error of the sample and the average error of the inspection lot with an approximately 97.**5** % level of confidence.	Editorial
Appendix E. Model Inspection Report Forms			
G139		**Glazed Seafood Worksheet**	Add in report forms from Chapter 2., 2.6.
G140		**Glazed Seafood Worksheet – Example**	Add in report forms from Chapter 2., 2.6.
G141		**Glazed Seafood Package Report**	Add in report forms from Chapter 2., 2.6.
G142		**Glazed Seafood Package Report – Example**	Add in report forms from Chapter 2., 2.6.

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