

DETERMINING THE AMOUNT OF PURGE FROM CHITTERLINGS USING NIST HANDBOOK 133 “CHECKING THE NET CONTENTS OF PACKAGED GOODS”

Summary

When weights and measures inspectors test frozen chitterlings, they determine if the packages contain the labeled net weight and if the amount of purge is 20 % or less than the declared quantity. Inspectors use Section 2.3. “Basic Test Procedure” of National Institute of Standards and Technology (NIST) Handbook 133, “Checking the Net Contents of Packaged Goods” (the 2005 edition has been adopted by USDA) to conduct net weight tests. To determine the amount of purge, inspectors change a few of the steps in Section 2.6. “Determining the Net Weight of Encased-in-Ice and Ice Glazed Products” and use the equipment and procedures to carry out their test. The modifications include thawing the product in the package and applying a purge limit published by the United States Department of Agriculture (USDA), Food Safety and Inspection Service (FSIS). Inspectors must defer to the USDA value because a purge limit is not specified in NIST Handbook 133. The USDA recommends that purge determinations be conducted in the plant after packing but before the chitterlings are frozen. State inspections at retail are carried out in response to local consumer complaints. Over the past few years, the majority of state inspections have found the purge levels from chitterlings to be almost always more than 20%. In 2011, several state inspectors contacted the NIST Office of Weights and Measures (OWM) for technical assistance because of disputes with packers over the test procedures used to determine purge results. The states report that they found purge from domestic and foreign packers as high as 50% or more. As a result, packers and inspectors were both looking at packing practices and the test procedures to find an explanation for the high values.

In addition to the test data from inspectors, a study on the purge from frozen chitterlings from multiple packers was obtained (study conducted at Iowa State University) which revealed purge ranging 30 to 50 percent. OWM reviewed the test methods used by the states, Iowa State University, and several chitterling packers to identify opportunities for improving the accuracy and repeatability of the test procedure. A few differences between the test procedures used by packers and by state inspectors were found, but overall the approaches to testing appeared to be consistent. However, because NIST Handbook 133 does not include a purge test, there appears to be a need for a test procedure tailored specifically for use with chitterlings. OWM developed a draft test procedure for review and evaluation by packers and officials that may, depending on the level of support it finds among officials and packers, be submitted to the National Conference on Weights and Measures (NCWM) for possible addition to Handbook 133. Adoption and use of a uniform test procedure should improve uniformity and increase confidence in the test results.

One area where further study and guidance is needed is related to the methods used to thaw frozen chitterlings. Several weights and measures inspectors reported that thawing

out large packages of chitterlings takes extended time and is labor and resource intensive (typically large quantities of warm water are used). If quicker thawing techniques could be identified, they may improve productivity and reduce costs for packers and officials. Another effort that may benefit packers would be to identify and share good packing and filling practices to help industry reduce variations in their packing process. The variations in purge values on different lots tested by the states and in the university study varied significantly and variations between a few packers were noted. Reducing variability is often beneficial to packers and consumers and can sometimes be achieved with minor changes in the filling process. Perhaps the most significant issue that needs further study is the 20% limit which ostensibly is appropriate for fresh chitterlings but, may be too low for frozen chitterlings. Several packers reported that they target their purge levels for fresh chitterlings to be below 7% to 10% as a way to comply with FSIS requirements and avoid consumer complaints. Yet, packaged chitterlings from packers that target for those low purge values do not meet the 20% limit when their frozen chitterlings are thawed and tested using NIST Handbook 133. A different purge limit for frozen chitterlings, where cellular destruction caused by freezing is inevitable, may be justified. The OWM suggests that interested weights and measures officials and packers consider forming a work group to coordinate a review of the draft chitterling test procedure and other issues related to the testing of chitterlings.

What are Chitterlings?

The definition of chitterlings is in 9 CFR Ch. III §317.8 (30) - The term “Chitterlings” shall apply to the large intestines of swine, or young bovine animals when preceded with the word “Calf” or “Veal.” Meat food products that contain chitterlings or calf or veal chitterlings, in accordance with § 318.6(b)(8) of this subchapter shall be identified with product names that refer to such ingredients, as for instance, “Chitterling Loaf,” “Chitterling Pie,” or “Calf Chitterlings and Gravy.” According to the USDA,¹ chitterlings are a popular food served in many parts of the United States, the Caribbean, Latin America, western Asia, and Europe. Also called “chitlins,” as defined above, they are the large intestines of swine (hogs) or calves. Some people consider them a delicacy; while for others who grew up eating them, they are a comfort food. According to one industry source, chitterlings are eaten year round but about 90% are sold during the Thanksgiving, Christmas, and New Year holidays. The name “chitterlings” comes from Middle Old English or Middle High German. Caribbean and Latin America people use them in traditional dishes such as “Mondongo,” and the French call them *les tricandilles*. They are also used as casings for some sausages. Chitterlings became a traditional winter food of the South during Colonial times when, before refrigeration, hogs were slaughtered in December. Their texture is similar to calamari (squid). After a lengthy boil, chitlins sometimes are battered and fried and are commonly served with cider vinegar and hot sauce as condiments.

¹ http://www.fsis.usda.gov/fact_sheets/Yersiniosis_and_Chitterlings/index.asp - Accessed September 6, 2011.

Chitterling Cleaning, Processing and Packaging

The small intestine of a hog is a soft tubular organ typically 5 to 6 m (15 - 18 feet) long. When it is removed from a freshly killed hog, it usually contains undigested food and fecal matter and fat, with glands and connective tissue still attached. To avoid foodborne illnesses, intestines must be thoroughly cleaned prior to consumption. Chitterlings can be contaminated with the bacteria *Yersinia enterocolitica*, which can cause a diarrhea illness called "yersiniosis." *Yersinia* survives cold temperatures and can grow inside the refrigerator. Other foodborne pathogens (e.g., salmonella and *E. coli*) may also be present. For these reasons the USDA Food Safety and Inspection Service (FSIS) regulations require that they be thoroughly cleaned by the packer to prevent disease.

At most packing plants, the cleaning is performed using machines that flush fecal matter from pig intestines using tap water. The chitterlings are uncoiled and manually placed over a feed tube which sprays water through the tube forcing the fecal material out. During the process used in most plants, the intestines are cut and cleaned again in centrifugal or agitating washing bowls prior to undergoing final inspection and cleaning before they are packaged. Even though the cleaning equipment is designed to minimize structural damage to the cells of the intestines, the pressurized water may wash away some of the mucosa (intestinal lining) along with the digested material and fecal matter. The damage to the mucosa may increase the amount of purge released from the chitterlings. Even those chitterlings sold as "pre-cleaned" need to be rinsed and cleaned before they are cooked.

Water Content² and Purge

Meat and poultry products have naturally occurring water content that is very high. For example a whole chicken fryer is 66% water and the weight of a whole beef brisket is made up of about 71% water. USDA studies show that raw chitterlings typically have water content of 67% to 69%.

CURRENT USDA GUIDANCE:

Net Weight on Chitterlings³

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QUESTION TO FSIS: *"According to the Food Standards and Labeling Policy Book, frozen chitterlings are permitted to contain 20 % of the frozen net*

² "Yield and Comparison of Nutritive and Energy Values; Fatty Acids and Cholesterol Content of Raw and Cooked Chitterlings." By M.W. Vaughn, D.P. Wallace and B.W. Forster in *Journal of Food Science* – Volume 43 (1978).

³ http://askfsis.custhelp.com/app/answers/detail/a_id/1309 - Accessed September 6, 2011

weight as purge. At what point in the process should the determination of the 20% purge be measured; post packaging and prior to freezing, or post packaging after freezing?

FSIS RESPONSE: *“Historically, FSIS has not objected to chitterlings having up to a 20% purge due to the washing and preparation with water. Net weight should be verified after packaging and prior to freezing. When verifying net weights, inspection personnel will not take regulatory action for product containing up to 20% purge. This maximum of 20% purge is representative of actual purge from the washing process; it is not acceptable to add additional liquid to the package.”*

The basis of the FSIS allowance for purge may represent the purge found with fresh-raw chitterlings and may NOT be based on data from actual purge testing on frozen chitterlings. The 20 % purge value appears to have been taken from the 1981 Edition of USDA Agriculture Handbook No. 8-10 prepared by the USDA Human Nutrition Information Service⁴ that was determined using fresh samples.

Does USDA consider Purge to be retained water?

No, FSIS Directive 6700.1 (11/27/2002) addresses this question:

17. How is the retained water statement handled with chitterlings since the product is allowed to be packaged with up to a 20 percent purge?

Answer: Many years ago, before 1992, FSIS allowed, under normal conditions and good manufacturing practices, purge in containers of chitterlings not to exceed 20 percent of the marked weight of the product. The policy is long-held and is practiced industry wide. Consumers who purchase this product are aware of the policy and practice and have come to expect moisture content in chitterlings. As a result of this long-standing policy, no retained water statement is required when chitterlings are packaged with a purge. If chitterlings retain water during post evisceration processing and are not packaged with a purge, the product's labeling is required to bear a retained water statement.

⁴ See Page 126 -- Pork, Fresh Chitterlings, Raw - Composition of Foods: pork products: raw, processed, prepared / Part 2 of 2 of Agriculture Handbook 1983. Volume 008-10 Pages p. 101-206 Author: Anderson, Barbara A Doc ID ah008_10pt2 U.S. Dept. of Agriculture, Human Nutrition Information Service Subject: Pork--Composition--Tables; Canned pork--Composition--Tables; Food--Composition--Tables URL http://naldr.nal.usda.gov/NALWeb/Agricola_Link.asp?Accession=ah008_10pt2

The Impact of Freezing on Cells – Industry Approaches to Compliance

When meat or poultry products are frozen, the water that is a natural component of all meats turns to solid ice crystals. The water expands when it freezes and the sharp-edged crystals push into the surrounding tissue, rupturing the cells. The water that is outside the cell wall freezes first. As it does, it leeches water from the cell walls. After thawing, the product will have lost some of its natural springiness because the water released from the cells during freezing flows out of the thawing meats. Some studies have shown that under some conditions, cell destruction can also occur during the thawing process.⁵ After chitterlings are washed, they are weighed in advance of packaging. The weight includes the chitterlings (and the fluid held within the cell walls), and water accumulated in the folds and on the surface of the chitterlings, which are then packaged for freezing. Chitterlings are made up of gelatinous cells which easily rupture and the amount of damage depends primarily on the speed of the freezing process. When the chitterlings are thawed, the purge that flows out includes water that was originally held within many of the cells and the surface water and water that was trapped in the crevices and folds of the product.

There are many studies showing that freezing damages the cells and releases water that when thawed that cannot be reabsorbed. If chitterlings are tested before freezing and a purge of 20% is found, any test conducted after freezing and thawing will find a much higher level of purge. This is primarily because cell walls rupture and release the water they contained. Purge occurs with all meats, but with chitterlings, the amount of purge is measured and is required to meet a limit. The USDA limits the amount of water at point of pack to 20% so consumers receive a certain amount of meat solids in a product that is packaged in water. A limit on purge is similar to a standard-of-fill that the Food and Drug Administration defines for other food products with similar water versus solid content issues (e.g., tuna fish.) For these reasons, and to ensure they meet the USDA requirements, several chitterling packers keep their pre-packaging chitterling purge levels to 7% to 10%. Yet, as mentioned above, packages from those firms are often found to have purge levels of 24% to 34% when they are thawed and the NIST HB133 procedures are used to test purge levels.

Background

In 2011, the OWM was contacted by several state weights and measures officials for assistance in resolving disagreements with packers over the use of NIST Handbook 133 “Checking the Net Contents of Packaged Goods” (HB 133). Several state inspectors reported that they routinely receive consumer complaints about the amount of purge in chitterlings and that they had used Section 2.6., “Determining the Net Weight of Encased-in-Ice and Ice Glazed Products” to verify the net weight. They also reported that they had determined the amount of purge after thawing frozen chitterlings. Data from the inspectors revealed that the purge from all of the chitterlings they had tested exceeded a 20% limit specified by USDA. OWM also learned that at least one state had taken legal action against a packer whose chitterlings failed the 20% purge limit. The state had

⁵ Mazur, Peter, “Freezing of Living Cells: mechanisms and implications.” *American Journal of Physiology*, 247. 1984.

collected its evidence using a test procedure similar to Section 2.6. but added some practical modifications so it was usable in testing chitterlings.⁶

Another concern raised by the inspectors was that neither a purge limit nor test procedures for the determination of purge are included in NIST Handbook 133. As noted above, the test procedures in Section 2.6. were originally developed for drained weight testing of shrimp and other frozen foods to verify only net weight declarations. OWM agreed to review the test methods used by the state inspectors to see if the current test procedure could be revised to make it appropriate for use in testing chitterlings.

Note: The 2005 Edition of HB 133 was adopted by the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture for use in testing meat and poultry products in 2008 (see 9 CFR 442.2 “Quantity of Contents Labeling and Procedures and Requirements for Accurate Weights” and 73 FR 52192).

Based on the information presented above there appears to be a need for a chitterling test procedure in NIST Handbook 133. State weights and measures inspectors need a test procedure tailored to chitterlings so they can test in retail stores in response to consumer complaints. States do not have access to packing plants located in other states or countries so they rely on tests at retail or wholesale locations for their investigations. Testing at retail (the end point in distribution) allows inspectors to look at a variety of packers to ensure fair competition. By testing at retail, state inspectors are able to discover changes to the product that may occur during distribution due to environmental factors, mishandling or tampering. Packers and consumers both benefit from having retail marketplace surveillance so that equity and fair competition is maintained.

Net Weight versus Purge

A review of test results from several states and a university indicates that a majority of the packaged chitterlings tested comply with the average and individual package requirements for net weight as required under NIST Handbook 133. Currently the handbook does not include limits on the amount of purge from chitterlings so state weights and measures officials follow a 20% limit published by USDA. Determining the amount of purge goes beyond the net weight testing. Several inspectors reported they had to modify the test procedure in Section 2.6. to conduct the purge tests. Inspectors asked for technical assistance in evaluating whether their modifications to the current procedure were acceptable and requested that revisions to accommodate purge testing

⁶ In November 2010, San Diego County District Attorney’s Office filed a complaint and stipulated judgment against Clougherty Packing, LLC for \$451,564. Clougherty settled without admitting fault or liability. The case resulted from a consumer complaint to the California Department of Measurement Standards (CDMS) regarding large amounts of purge from chitterlings. More than 60,000 packages of chitterlings were tested and ordered off-sale due to shortages ranging from 31 to 45 %. The lots of packages inspected failed to meet NIST HB 133 requirements.

be made to NIST Handbook 133 so the test procedure would be uniform and accepted nationally.

USDA established the limits on purge to ensure that packages of chitterlings contain a certain percentage of meat. Currently the USDA policy sets the upper limit of purge at 20 % of the labeled quantity. Recent inspections conducted by several states and a comprehensive study by a university found that packages of frozen chitterlings from several packers (including one supplier from Europe) contain purge in the range of 30% to 50⁺%. The following results were obtained using test procedures based on Section 2.6. in NIST Handbook 133. Inspections by state weights and measures inspectors in California, Florida, and Louisiana which were carried out in response to consumer complaints about high amounts of purge in packages of chitterlings revealed the following: In October 2010, weights and measures inspectors from Louisiana tested samples from 10 lots (totaling more than 7740 containers) and found an average purge of 49%. In October 2010, weights and measures inspectors from Florida tested samples from a lot of 324 packages and found an average purge 33%. In November 2010, the San Diego District Attorney announced a settlement in an investigation of a consumer complaint. In this case weights and measures inspectors had tested lots totaling 60,588 packages from one packer and had found shortages of 31 - 45%.

Several chitterling packers have expressed concerns about the appropriateness of the test procedures used by inspectors and also about the high purge levels that the inspections had uncovered. One packer/retailer commented that it was difficult for his company to compete against many other packers because chitterlings are not routinely tested for compliance with purge limits. Several packers shared in-plant test data from their plants showing they target for a purge of 7% to 10% for their in-plant tests. These packers reported that if they do not target for low purge levels in their testing, they see a dramatic jump in consumer complaints about excessive purge.

The data from one university study of 5 packers indicates that the purge from sample lots (total $5 \times 30 = 150$ packages) ranged from 26.9% to 57.3% or from about 7% to 37% higher than the 20% limit set by USDA. The data was obtained in laboratory conditions and shows significant differences in purge amounts. The differences are likely caused by packers having different pre & post freezing purge targets along with variations in test equipment and drain procedures. There are also likely to be different fill target weights, weighing devices (e.g., different scale divisions) and other unique packaging procedures or freezing processes.

Variations in the standard deviations found on packages produced by the different packers ranged from 1.7% to 5.2%. The results include samples with purge as low as 18% to as high as 66%. That range of net contents is so wide that it would likely frustrate the ability of consumers to estimate how many packages to purchase to obtain a specific amount of chitterlings for use in a recipe and to make value comparisons. Even packages from the same packer had such a wide range of purge values that it may be difficult for consumers to estimate the quantity of chitterlings they would receive and therefore how many packages are needed to obtain a certain serving size.

Packer	a	b	c	d	e
Average Purge*	34.2%	57.3%	26.9%	33.6%	27.9%
Standard Deviation (s)	1.9	3.2	1.7	5.2	2.4
Range of Results (± 3 s)	28% – 40%	47% – 66%	21% – 31%	18% – 49%	20% – 35%

*Data is percentage purge based on labeled quantity from a 2008 study conducted by Dr. Ken Prusa, Professor, Iowa State University of Science and Technology on samples from 5 packers of 30 packages of frozen chitterlings using the procedures in Section 2.6. of NIST Handbook 133. Used with permission.

Thawing Procedures

Several inspectors requested guidance on how to thaw chitterlings more efficiently so they could improve the efficiency of their tests and improve the accuracy of their results. Inspectors reported that the thawing process for most large frozen packages is very time consuming (e.g., 5 lb packages of shrimp and seafood and 10 lb packages of chitterlings) regardless of the product. Gaining access to large quantities of warm water and ample sink space are also reported as a significant problem in some retail locations (the National Marine Fisheries, an agency of the U.S. Department of Commerce has indicated that their inspectors face similar challenges when they conduct inspections of imported seafood). A few state inspectors reported that they had to let sample packages of chitterlings sit in room temperature water for long hours or in a refrigerator for several days to allow them to thaw. One packer reported that its tests had not revealed any correlation between thaw time and increased purge. Still, reviewing the current thawing procedures to identify ways to increase uniformity, repeatability and accuracy may be beneficial.

The thawing procedure in NIST HB133 specifies that the water temperature be maintained between 23 °C to 29 °C (75 °F to 85 °F). Some inspectors asked if the temperatures of the water increases purge or if the temperature of the chitterlings at the time they are drained impacts purge levels. One packer has conducted some preliminary testing to explore that question. The results of those tests indicated that the water temperature used to thaw the chitterlings probably does not increase purge results (however, the water must not be too hot as that may cause the proteins in the chitterlings to denature.) The packer's tests indicated that the temperature of the chitterlings at the time they are drained may increase purge values. The data showed that warm chitterlings (e.g., room temperature or about 70 °F) lost about 10% more purge than chitterlings cooled to 40 °F before draining. Because the packer's data is limited more study is needed to better understand this aspect of purge testing.

Draft Revision of Section 2.6. for Chitterlings

Introduction

This test procedure was originally developed for the Food and Drug Administration (FDA) in the 1960s for its use in testing frozen blocks of seafood and other products. Over the years it has been modified for use in testing a variety of products including frozen seafood and glazed chicken breasts. Based on a review of the USDA procedures and information received from several weights and measures inspectors and chitterling packers, ten changes are proposed for Section 2.6. "Determining the Net Weight of Encased-in-Ice and Ice Glazed Products" to make it appropriate for use in testing frozen chitterlings when determining their net weight and the amount of purge in the package.

The draft test procedure can be used in USDA inspected packing plants and in wholesale and retail locations by weights and measures officials to determine if it is practical and to identify additional areas for improvement. For the test procedure to be added to NIST HB 133, it must be adopted by the National Conference on Weights and Measures (NCWM). The NCWM is a not-for-profit corporation dedicated to developing the U.S. standards for weights and measures. The NCWM is open to all interested parties and among its membership are representatives of the American Meat Institute and many of its member companies. Before submitting any proposal to the NCWM, support from both packers and weights and measures officials must be developed. One goal of this paper is to raise the question of whether or not the 20% purge limit set by USDA is appropriate for both fresh and previously frozen chitterlings. Based on the data and other information presented below, the current purge value of 20% may not be appropriate for use in testing frozen chitterlings. However, increasing it to 30% would not dramatically increase compliance levels. Before an appropriate purge value for frozen chitterlings can be recommended, data from tests of packages from many packers must be collected using a uniform test procedure.

OWM suggests that interested weights and measures officials and packers consider forming a work group to coordinate a review of the draft chitterling test procedure. The group could consider investigating some of the other issues mentioned above, including developing and sharing good packing practices and alternative thawing procedures. Once a uniform test method and good packing practices are in place, data could be collected to determine if a different purge limit for frozen chitterlings should be considered. OWM will use the draft test procedure to provide training to interested state officials and will recommend that states consider using it in their investigations of consumer complaints. OWM will also encourage states to share their experience with the draft procedure so it can be improved, and will invite them to share test data with the group so the data can be used to evaluate the test procedure and existing purge limit.

REVIEW OF SECTION 2.6., “DETERMINING THE NET WEIGHT OF ENCASED-IN-ICE & ICE GLAZED PRODUCTS.”

1. As with other foods where drained weight testing is used, the weight-per-volume of solids is approximately the same as the fluid poured from the package so all of the samples must be opened. For this reason, the use of an average tare weight or an average purge value cannot be used to compute package errors.

Suggested Change: Add the following note to the test procedure in HB 133:

Note: The weight-per-volume of solids is sometimes nearly equal to the weight of the fluid poured from the package so an average tare weight or average purge value cannot be used to verify the net quantity of contents of packages of chitterlings. All of the packages in the sample must be opened and tested.

2. A state inspector reported that a 300 mm (12 inch) sieve could hold 2.2 kg (5 lb) of chitterlings when tilted at 30 degrees but several measurements were required when larger containers were tested. It was suggested that a note be added to the test procedure to clarify that multiple measurements were permitted and to alert inspectors that some sieves may not hold the entire contents of larger packages.

Suggested Change: Add the following:

Note: If the amount of chitterlings in the package exceeds the capacity of the sieve, divide the solids evenly among two or more sieves of the same dimensions or make multiple determinations using a single sieve.

Addressing Differences from Current Field Use

3. **Packed or Unpacked** - Section 2.6. requires products to be unwrapped so they can be thawed in a water bath. The temperature is typically maintained using a constant flow of warm water. In discussions with state weights and measures inspectors who have tested chitterlings, we learned that they thaw the chitterlings while they are still packaged so they can obtain an accurate measurement of the purge from each package.

Suggested Change: Revise the procedure so frozen chitterlings can be thawed in the package. Also, delete reference to the wire mesh basket used to hold unwrapped products under water while preventing the loss of product solids.

4. Associated with this provision is a note which reads that “Direct immersion does not result in the product absorbing moisture because the freezing process causes the tissue to lose its ability to hold water.” If the procedure is modified to allow frozen chitterlings to be thawed in the package the note is no longer relevant.

Suggested Change: Delete the NOTE.

5. **Thawing Procedure** – Inspectors have reported difficulties using the thawing techniques prescribed in Section 2.6. due to the size of the containers, sample sizes and availability of an adequate size water bath and supply of hot water. The procedure calls for the packages to be immersed in a water bath. But, when the sample is made up of 4.5 kg (10 lb) buckets, many sinks cannot hold more than a few containers.

Suggested Change: Amend to allow the use of a sink, ice chest, or other large container for thawing.

6. A packer recommended that better guidance is needed to help inspectors determine that chitterlings are “thawed out.” The suggestion was to add a statement that a “thawed condition” is one in which no ice crystals are observed or felt in or on the chitterlings.

Suggested Change: insert a note that a “thawed condition is one in which no ice crystals are observed or felt in or on the chitterlings.”

7. **Drain Angle** – The techniques that inspectors use to tilt the sieve to drain chitterlings (and other frozen products) vary widely which may affect test results. The current procedure specifies that the sieve be tilted at a 30 degree angle for two-minutes. To address this issue, a tilt-angle block was fabricated so that it raises a 304 mm (12 inch) sieve to the correct height 152 mm (6 inches) to achieve a 30 degree angle. See figure 1 below for an example. The angle block was designed for use with both the 203 (8 inch) and 304 mm (12 inch) sieves and at other drain angles. A drawing of one type of angle block is available upon request from OWM to allow for local construction.

Suggested Change: Add Figure 1 (see below) to the test procedure and provide access to drawings of one type of tilt-angle block so it can be fabricated locally. Include a note that other methods may be used as long as the correct drain angle is used.

8. **USDA Policy on Chitterling Purge** - Several inspectors pointed out that NIST Handbook 133 does not include a purge limit. It was suggested that the current USDA limit on purge be added to NIST Handbook 133.

Suggested Change: Add a requirement to HB 133 to include the USDA 20% limit on purge.

9. **USDA Policy on Chitterling Purge** – The USDA procedure for purge tests conducted inside a packing plant is to calculate it using the labeled quantity of the package, not the gross weights of the individual packages (standardized). USDA policy also only applies the average requirement to purge tests. This USDA policy must be added to the HB 133 procedure to ensure consistent testing and application of the purge requirement.

Suggested Change: Add a step in the procedure to calculate purge values for each package using the quantity labeled on the package.

10. **Other Changes:** Amend the procedure to explain how to determine purge values and net weight requirements. These additions are presented in underlined text in the draft of 2.X. below:

2011 Edition NIST HANDBOOK 133 – TEST PROCEDURE 2.X.

A new test procedure for determining the net weight and percent of purge of chitterlings is presented below, using Section 2.6. as a basis for its creation. Additions to language used in Section 2.6. are shown in underlined text and deletions are shown with ~~strike through~~ lines. If this procedure is added to HB 133, it will be a new section with a new number. Worksheets for use in testing chitterlings with both the Category A & Category B Sampling Plans have been developed and are presented following the test procedure.

2.6X. Determining the Net Weight & Percent of Purge of ~~Encased-in-Ice and Ice Glazed Products~~ Fresh and Frozen Chitterlings

a. How should the net weight & percent of purge of fresh and frozen chitterlings ~~seafood, meat, poultry, or similar products encased-in-ice and frozen into blocks or solid masses~~ be determined?

1. Follow Section 2.3.1. “Define the Inspection Lot.” Use a “Category A” or a “Category B” sampling plan in the inspection (depending on the location of test); select a random sample; then use the following test procedures to determine lot compliance.

Note: This procedure may be used to determine the net weight and purge for both fresh and frozen chitterlings.

Note: The determination of compliance with both net weight and purge requirements is completed after all of the packages are opened and purge values obtained. The sample must pass the net weight and purge tests to comply with this section.

Note: The weight-per-volume of solids is sometimes nearly equal to the weight of the fluid poured from the package so an average tare weight or average purge value cannot be used to verify the net quantity of contents of packages of chitterlings. All of the packages in the sample must be opened and tested.

Note: If the amount of chitterlings in the package exceeds the capacity of the sieve, divide the solids evenly among two or more sieves of the same dimensions or make multiple determinations using a single sieve.

Net Weight

The net weight shall be determined using Sections 2.3.5., 2.3.6. & 2.3.7. Every package in the sample will be opened so the tare and net weight of each package are determined individually.

Individual Package Requirement (IPR): Compare the minus package errors in the sample to the MAV's in 2.9. for the package size to determine if there are any unreasonable package errors. If the number of unreasonable package errors in the sample exceeds the number of MAVs permitted in Table 2-1 or Table 2-2 for the sample size, the sample fails. If there are no unreasonable errors, apply the **Average Requirement (AR)**.

Average Requirement: Sum the package errors and apply Section 2.3.7.d.

Purge

Follow the procedures in 2.X.b. to determine the amount of purge from the chitterlings. An Individual Package Requirement (IPR) is not applied in purge tests. Instead apply the Average Requirement in Section 2.3.7.(d). to determine if the sample passes or fails the purge requirement. The average purge for the sample shall not exceed 20 % of the labeled weight.

~~Note: For determining the net weight of ice glazed seafood, meat, poultry, or similar products, follow the procedure in Section 2.6.b. "How should the net weight of ice glazed seafood, meat, poultry or similar products 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 fresh water at a temperature between 23 °C to 29 °C (75 °F to 85 °F) an approximate flow rate of 4 L to 15 L (1 gal to 4 gal) per minute for thawing plastic bags or buckets of chitterlings. ~~blocks and other products.~~
- Sink (water bath) or other receptacle of suitable size to hold the packages under test [i.e., bucket or other container with a capacity of approximately 15 L (4 gal) or larger]. ~~for thawing blocks and other products.~~
- ~~A wire mesh basket (e.g. used for testing large frozen blocks of shrimp) or a container that is large enough to hold the contents of one package (e.g., 2.27 kg or [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).~~
- Number 8 mesh, 203 mm (8 in) or 304 mm (12 in) sieve and drain pan and a 30 degree angle support.
- Stopwatch.
- Waterproof marking pen.
- Disposable gloves

b. Test Procedure for Determining the Amount of Purge from Fresh and Frozen Chitterlings, Encased-in-Ice Product Only

1. a. Enter Inspector Name, Labeled Weight (in Column A), Packer Identity, Package Lot Code, Number of Unreasonable Errors, MAV, and Unit of Measure used to make the weight determinations on worksheet.
b. Mark the packages for individual identification (e.g., 1-12).
2. Determine the Gross Weight of each package in the sample (record in Column B of the worksheet.)
3. Determine the weight of the dry sieve pan (record in the space provided for Drain Pan Tare above Column F of the worksheet.)

Frozen Chitterlings

4. Fully immerse Place the unopened package unwrapped of frozen chitterlings seafood, meat, poultry, or similar products in the a fresh water bath maintained at a temperature between 23 °C to 29 °C (75 °F to 85 °F) ~~wire mesh basket or an open container to thaw. (e.g. it is not placed in a plastic bag) a 15 L (4 gal) or larger container of~~ ~~Submerge the basket so that the top of the basket extends above the water level.~~

5. Maintain a continuous flow of water into the bath 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 bath. ~~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).~~

~~Note: Direct immersion does not result in the product absorbing moisture because the freezing process causes the tissue to lose its ability to hold water.~~

Fresh and Frozen Chitterlings

6. Slowly pour (if the chitterlings were frozen this is done as soon as the product is thawed determined by observation and touch to determine loss of rigidity in which no ice crystals are observed or felt in or on the chitterlings) transfer all material the chitterlings onto a sieve 203 mm [8 in] for packages less than 453 g [1 lb] or 304 mm [12 inch] for packages weighing more than 453 g [1 lb]).

Note: If the amount of chitterlings in the package exceeds the capacity of the sieve, divide the solids evenly among two or more sieves of the same dimensions or make multiple determinations using a single sieve.

7. Distribute the chitterlings over the draining surface with a minimum of handling, then ~~Without shifting the product,~~ Incline the Sieve 30° from the horizontal position to facilitate drainage, and drain for exactly 2 minutes (See Figure 1 for an example of one type of 30 ° angle support. Other means to ensure correct angle may be used.)



Figure 1 304 mm (12 in sieve) at 30 Degree Angle

8. At the end of the drain time, immediately transfer the product to a dry tared pan for weighing to determine the net- Weight of the Chitterlings (record in Column F of the worksheet).

9. Calculate Purge (use the labeled net weight not the gross weight of the package) and record in Column G of the Worksheet.

What is the Percent Purge?

$$\text{Purge in \%} = \frac{[(\text{Labeled Weight} - \text{Weight of Chitterlings after Draining}) \div \text{Labeled Weight}] \times 100}{}$$

Example: The labeled net weight is 5 lb and the Weight of the Chitterlings after Draining is 4.19 lb

$$\underline{5 \text{ lb} - 4.19 \text{ lb} = 0.81 \div 5 \text{ lb} = 0.162 \times 100 = 16.2 \% \text{ purge.}}$$

The purge is 16.2 %

10. Dry the empty package and determine its tare weight (record in Column C of the worksheet.)

11. Subtract the package tare weight from the gross weight to obtain the package error (record in Column E of worksheet).

Use the formula:

$$\underline{\text{Package Error} = \text{Gross Weight} - \text{Tare Weight}}$$

Repeat for all packages in the sample.

NET WEIGHT COMPLIANCE:

(1). **Individual Package Requirement:** If there are negative package errors, determine if any of the values exceed the Maximum Allowable Variation (MAV) for the packaged quantity in Table 2-9. "U.S. Department of Agriculture, Meat and Poultry Groups and Lower Limits for Individual Packages" (i.e., if the labeled net weight is more than 3 lb up to 10 lb then the MAV = 42.5 g (0.094 lb) 1.5 oz.).

a. If a package error exceeds the MAV, mark it as "Failed" in the MAV Pass or Fail column.

b. If a package error does not exceed the MAV, mark it as "Passed" in the worksheet.

c. If the number of packages that exceed the MAV is greater than the number allowed in Tables 2-1 or 2-2, the sample fails. Mark the sample as “Failed” in the Net Weight Compliance section of the worksheet.

d. If the sample passes the Individual Package Requirement, apply the Average Error Requirement.

(2). **Average Error Requirement:** Sum the package errors in Column E and enter the value in E1 – Total Error. Divide the value in E1 by the Sample Size (n) to obtain an Average Error and enter the value in E2. If the Average Error (E2) is a positive number, the sample passes. Go to the Net Weight Compliance Section and mark the sample as “Passed.”

(3) If the Average Error (E2) is a negative number, calculate the sample standard deviation of the package errors (Column E) and enter it in the block provided in the Net Weight Compliance section.

(4) Use the Sample Correction Factor (SCF) to calculate the Sample Error Limit (SEL).

(5) Disregarding the signs,

(a) if the Average Error (E2) is larger than the SEL, the sample fails. Mark it “Failed” in the Net Weight Compliance section of the worksheet.

or

(b), if the Average Error is less than the SEL, the sample passes. Go to the Net Weight Compliance Section and mark the sample as “Passed.”

PURGE COMPLIANCE:

Note: Maximum Allowable Variations (Lower Limits for Individual Packages) are not applied in the purge test.

(1) Sum the purge values in Column G and enter the value in G1 – Total Purge. Divide the value in G1 by the Sample Size (n) to obtain an Average Purge and enter the value in G2. If the Average Purge (G2) is less than or equal to 20%, the sample passes. Go to the Purge Compliance Section and mark the sample as “Passed.”

(2) If the Average Purge is greater than 20%, calculate the sample standard deviation of the values in Column G and enter it in the block provided in the Purge Compliance section.

(3) Use the Sample Correction Factor (SCF) to calculate the Purge Sample Error Limit (PSEL) in percent.

(4) Subtract the PSEL from the Average Purge (G2) to obtain an Adjusted Average Purge (AAP) and enter that value in G3.

(5) Pass or Fail

(a) If the AAP (G3) is greater than 20%, the sample fails. Enter the Purge Value (G3) in the Purge Compliance section and mark the sample as "Failed."

or

(b) if the AAP (G3) is 20% or less, the sample passes. Enter the Purge Value (G3) in the Purge Compliance section and mark the sample as "Passed."

INSPECTOR: <i>S. DRUCKER</i>		CHITTERLING WORKSHEET NET WEIGHT & PURGE DETERMINATIONS WORKSHEET FOR SAMPLE OF 12 PACKAGES – HB 133 CATEGORY A							
PACKER: <i>ZIFFLE'S</i>			LOT CODE: <i>A342012</i>			Drain Pan Tare: <i>0.997 lb</i>	UNIT OF MEASURE: LB		
PACKAGE NUMBER (n)	A	B	C	D	E	PACKAGE NUMBER (n) PASS OR FAIL	F	G	
	LABELED WEIGHT	GROSS WEIGHT	TARE WEIGHT	NET WEIGHT B – C =	PACKAGE ERROR D – A =		WEIGHT OF CHITTERLINGS AFTER 2 MIN DRAIN	PURGE % $\frac{(A - F) \times 100}{A}$	
1	5	5.130	0.032	5.098	0.098		4.19	16.2	%
2	5	5.160	0.033	5.127	0.127		4.21	15.8	%
3	5	5.012	0.032	4.980	-0.020	P	4.17	16.6	%
4	5	5.170	0.034	5.136	0.136		4.20	16.0	%
5	5	5.020	0.033	4.987	-0.013	P	4.18	16.4	%
6	5	5.102	0.032	5.070	0.070		4.22	15.6	%
7	5	5.051	0.033	5.018	0.018		4.24	15.2	%
8	5	5.116	0.032	5.084	0.084		4.20	16.0	%
9	5	5.120	0.034	5.086	0.086		4.19	16.2	%
10	5	5.023	0.032	4.991	-0.009	P	4.20	16.0	%
11	5	5.122	0.032	5.090	0.090		4.26	14.8	%
12	5	5.020	0.033	4.987	-0.013	P	4.18	16.4	%
NUMBER OF UNREASONABLE ERRORS ALLOWED: NONE MAV: 0.094 lb			E1 - Total Error		0.054 lb	G1 - TOTAL PURGE		191.2	%
			E2 – AVERAGE ERROR (E1 ÷ n =)		0.0045	G2 – AVERAGE PURGE (G1 ÷ n =)		15.9	%
			G3 – ADJUSTED AVERAGE PURGE (G2 - PSEL =)						
<p>NET WEIGHT COMPLIANCE: 1) If any of the minus package errors exceed the MAV the sample fails. (2) If none exceed the MAV and the Average Error (E2) is a positive number the sample passes. (3) If the Average Error (E2) is a minus number calculate the sample standard deviation and enter it below. (4) Use the Sample Correction Factor (SCF) to calculate the Sample Error Limit (SEL). (5) Disregarding the signs, (a) if the Average Error (E2) is larger than the SEL the sample fails or (b) if the Average Error is less than the SEL the sample passes.</p> <p>STANDARD DEVIATION: _____ × 0.635 (SCF) = _____ (SEL) PASSED <input checked="" type="checkbox"/> FAILED <input type="checkbox"/></p> <p>PURGE COMPLIANCE: MAVS ARE NOT APPLIED IN THE PURGE TEST (1) If the Average Purge Error (G2) is less than or equal to 20% the sample passes. (2) If the Average Purge Error is greater than 20% calculate the sample standard deviation and enter it below. (3) Use the Sample Correction Factor (SCF) to calculate the Purge Sample Error Limit (PSEL) in percent. (4) Subtract the PSEL from the Average Purge (G2) to obtain an Adjusted Average Purge (AAP) and enter that value in G3. (5)(a) If the AAP (G3) is greater than 20% the sample fails or (b) if the AAP (G3) is 20% or less the sample passes.</p> <p>STANDARD DEVIATION: _____ × 0.635 (SCF) = _____ (PSEL) PURGE (G3) 15.9% PASS ED <input checked="" type="checkbox"/> FAILED <input type="checkbox"/></p>									
SAMPLE DISPOSITION:								Date:	

INSPECTOR: <i>S. DRUCKER</i>		CHITTERLING WORKSHEET NET WEIGHT & PURGE DETERMINATIONS WORKSHEET FOR SAMPLE OF 12 PACKAGES – HB 133 CATEGORY A							
PACKER: <i>ZIFFLE'S</i>			LOT CODE: <i>A342013</i>			Drain Pan Tare: <i>0.997 lb</i>	UNIT OF MEASURE: LB		
PACKAGE NUMBER (n)	A	B	C	D	E	MAV PASS OR FAIL	F	G	
	Labeled Weight	Gross Weight	Tare Weight	Net Weight B - C =	Package Error D - A =		Weight of Chitterlings After 2 Min Drain	Purge % $\frac{(A - F) \times 100}{A}$	
1	5	5.130	0.032	5.098	0.098	p	3.982	20.36	%
2	5	4.970	0.033	4.937	-0.063	p	3.851	22.98	%
3	5	5.012	0.032	4.980	-0.020	p	3.830	23.4	%
4	5	4.970	0.034	4.936	-0.064	p	4.136	17.28	%
5	5	5.020	0.033	4.987	-0.013	p	4.009	19.28	%
6	5	5.102	0.032	5.070	0.070	p	3.985	20.3	%
7	5	5.001	0.033	4.968	-0.032	p	3.859	22.82	%
8	5	5.016	0.032	4.984	-0.016	p	3.920	21.6	%
9	5	5.002	0.034	4.968	-0.032	p	3.990	20.2	%
10	5	5.123	0.032	5.091	0.091	p	4.110	17.8	%
11	5	4.952	0.032	4.920	-0.080	p	3.878	22.44	%
12	5	5.020	0.033	4.987	-0.013	p	4.201	15.98	%
NUMBER OF UNREASONABLE ERRORS ALLOWED: NONE MAV: 0.094 lb			E1 – Total Error		<i>0.074 lb</i>	G1 – TOTAL PURGE		<i>191.2</i>	%
			E2 – AVERAGE ERROR (E1 ÷ n =)		<i>0.0061</i>	G2 – AVERAGE PURGE (G1 ÷ n =)		<i>15.9</i>	%
			G3 – ADJUSTED AVERAGE PURGE (G2 - PSEL =)		<i>20.37 - 1.536 = 18.83</i>		%		
<p>NET WEIGHT COMPLIANCE: 1) If any of the minus package errors exceed the MAV the sample fails. (2) If none exceed the MAV and the Average Error (E2) is a positive number the sample passes. (3) If the Average Error (E2) is a minus number calculate the sample standard deviation and enter it below. (4) Use the Sample Correction Factor (SCF) to calculate the Sample Error Limit (SEL). (5) Disregarding the signs, (a) if the Average Error (E2) is larger than the SEL the sample fails or (b) if the Average Error is less than the SEL the sample passes.</p> <p>STANDARD DEVIATION: 0.0601×0.635 (SCF) = 0.0382 (SEL) PASS ED <input checked="" type="checkbox"/> FAILED <input type="checkbox"/></p> <p>PURGE COMPLIANCE: MAVS ARE NOT APPLIED IN THE PURGE TEST (1) If the Average Purge Error (G2) is less than or equal to 20% the sample passes. (2) If the Average Purge Error is greater than 20 % calculate the sample standard deviation and enter it below. (3) Use the Sample Correction Factor (SCF) to calculate the Purge Sample Error Limit (PSEL) in percent. (4) Subtract the PSEL from the Average Purge (G2) to obtain an Adjusted Average Purge (AAP) and enter that value in G3. (5)(a) If the AAP (G3) is greater than 20% the sample fails or (b) if the AAP (G3) is 20% or less the sample passes.</p> <p>STANDARD DEVIATION: 2.420×0.635 (SCF) = 1.536 (PSEL) PURGE (G3) 18.83% PASSED <input checked="" type="checkbox"/> FAILED <input type="checkbox"/></p>									
Sample Disposition: <i>Lot Passes on Both Criteria</i>								Date:	

INSPECTOR: <i>S. DRUCKER</i>		CHITTERLING WORKSHEET NET WEIGHT & PURGE DETERMINATIONS WORKSHEET FOR SAMPLE OF 10 PACKAGES – HB 133 CATEGORY B							
PACKER: <i>PORK COMPANY</i>			LOT CODE: <i>A34526</i>			Drain Pan Tare: <i>0.997 lb</i>	UNIT OF MEASURE: LB		
PACKAGE NUMBER (n)	A	B	C	D	E	MAV PASS OR FAIL	F	G	
	LABELED WEIGHT	GROSS WEIGHT	TARE WEIGHT	NET WEIGHT B – C =	PACKAGE ERROR D – A =		WEIGHT OF CHITTERLINGS AFTER 2 MIN DRAIN	PURGE % $\frac{(A - F) \times 100}{A}$	
1	5	5.130	0.032	5.098	0.098		4.19	16.2	%
2	5	5.160	0.033	5.127	0.127		4.21	15.8	%
3	5	5.012	0.032	4.980	-0.020	P	4.17	16.6	%
4	5	5.170	0.034	5.136	0.136		4.20	16.0	%
5	5	5.020	0.033	4.987	-0.013	P	4.18	16.4	%
6	5	5.102	0.032	5.070	0.070		4.22	15.6	%
7	5	5.051	0.033	5.018	0.018		4.24	15.2	%
8	5	5.116	0.032	5.084	0.084		4.20	16.0	%
9	5	5.120	0.034	5.086	0.086		4.19	16.2	%
10	5	5.023	0.032	4.991	-0.009	P	4.20	16.0	%
NUMBER OF UNREASONABLE ERRORS ALLOWED: NONE			E1 – Total Error		<i>0.057 lb</i>	G1 – TOTAL PURGE		160	%
MAV: 0.094 lb			E2 – AVERAGE ERROR (E1 ÷ n =)		<i>0.057 lb</i>	G2 – AVERAGE PURGE: (G1 ÷ n =)		16	%
<p>NET WEIGHT COMPLIANCE: (1) If any of the minus package errors exceed the MAV the sample fails. (2) If none of the package errors exceed the MAV and the Average Error (E2) is a positive number the sample passes. (3) If the Average Error (E2) is a minus number the sample fails.</p> <p>PASSED <input checked="" type="checkbox"/> FAILED <input type="checkbox"/> passes.</p> <p>PURGE COMPLIANCE: MAVS ARE NOT APPLIED IN THE PURGE TEST (1) If the Average Purge Error (G2) is less than or equal to 20% the sample passes. (2) If the Average Purge Error (G2) is greater than 20% the sample fails.</p> <p>PURGE 16% PASSED <input checked="" type="checkbox"/> FAILED <input type="checkbox"/></p>									
SAMPLE DISPOSITION:							Date:		
<i>Approved for sale.</i>									

BLANK FORMS FOR CATEGORY A AND CATEGORY B
SAMPLING PLANS ARE PROVIDED ON THE
FOLLOWING PAGES

INSPECTOR:		CHITTERLING WORKSHEET NET WEIGHT & PURGE DETERMINATIONS WORKSHEET FOR SAMPLE OF 10 PACKAGES – HB 133 CATEGORY B								
PACKER:			LOT CODE:			Drain Pan Tare:	UNIT OF MEASURE:			
PACKAGE NUMBER (n)	A	B	C	D	E	MAV (n) PASS OR FAIL	F	G		
	LBELED WEIGHT	GROSS WEIGHT	TARE WEIGHT	NET WEIGHT B - C =	PACKAGE ERROR D - A =		WEIGHT OF CHITTERLINGS AFTER 2 MIN DRAIN	PURGE % $\frac{(A - F) \times 100}{A}$		
1									%	
2									%	
3									%	
4									%	
5									%	
6									%	
7									%	
8									%	
9									%	
10									%	
NUMBER OF UNREASONABLE ERRORS ALLOWED: NONE MAV:			E1 – Total Error				G1 –TOTAL PURGE			%
			E2 – AVERAGE ERROR (E1 ÷ n =)				G2 – AVERAGE PURGE: (G1 ÷ n =)			%
<p>NET WEIGHT COMPLIANCE: (1) If any of the minus package errors exceed the MAV the sample fails. (2) If none of the package errors exceed the MAV and the Average Error (E2) is a positive number the sample passes. (3) If the Average Error (E2) is a minus number the sample fails.</p> <p>PASSED FAILED ____passes.</p> <p>PURGE COMPLIANCE: MAVs ARE NOT APPLIED IN THE PURGE TEST (1) If the Average Purge Error (G2) is less than or equal to 20% the sample passes. (2) If the Average Purge Error (G2) is greater than 20% the sample fails.</p> <p>PURGE ____ PASSED ____ FAILED ____</p>										
SAMPLE DISPOSITION:								Date:		

INSPECTOR:		CHITTERLING WORKSHEET NET WEIGHT & PURGE DETERMINATIONS WORKSHEET FOR SAMPLE OF 12 PACKAGES – HB 133 CATEGORY A								
PACKER:				LOT CODE:			Drain Pan Tare:	UNIT OF MEASURE:		
PACKAGE NUMBER (n)	A	B	C	D	E	MAV (n) PASS OR FAIL	F	G		
	LABELED WEIGHT	GROSS WEIGHT	TARE WEIGHT	NET WEIGHT B - C =	PACKAGE ERROR D - A =		WEIGHT OF CHITTERLINGS AFTER 2 MIN DRAIN	PURGE % $\frac{(A - F) \times 100}{A}$		
1									%	
2									%	
3									%	
4									%	
5									%	
6									%	
7									%	
8									%	
9									%	
10									%	
11									%	
12									%	
NUMBER OF UNREASONABLE ERRORS ALLOWED: NONE MAV:			E1 – Total Error <i>lb</i>				G1 – TOTAL PURGE			%
			E2 – AVERAGE ERROR (E1 ÷ n =)				G2 – AVERAGE PURGE (G1 ÷ n =)			%
			G3 – ADJUSTED AVERAGE PURGE (G2 – PSEL =)							%
<p>NET WEIGHT COMPLIANCE: (1) If any of the minus package errors exceed the MAV the sample fails. (2) If none exceed the MAV and the Average Error (E2) is a positive number the sample passes. (3) If the Average Error (E2) is a minus number calculate the sample standard deviation and enter it below. (4) Use the Sample Correction Factor (SCF) to calculate the Sample Error Limit (SEL). (5) Disregarding the signs, (a) if the Average Error (E2) is larger than the SEL the sample fails or (b) if the Average Error is less than the SEL the sample passes.</p> <p>STANDARD DEVIATION: $\times 0.635 (SCF) = (SEL)$ PASSED ____ FAILED ____</p> <p>PURGE COMPLIANCE: MAVs ARE NOT APPLIED IN THE PURGE TEST (1) If the Average Purge Error (G2) is less than or equal to 20% the sample passes. (2) If the Average Purge Error is greater than 20% calculate the sample standard deviation and enter it below. (3) Use the Sample Correction Factor (SCF) to calculate the Purge Sample Error Limit (PSEL) in percent. (4) Subtract the PSEL from the Average Purge (G2) to obtain an Adjusted Average Purge (AAP) and enter that value in G3. (5)(a) If the AAP (G3) is greater than 20% the sample fails or (b) if the AAP (G3) is 20% or less the sample passes.</p> <p>STANDARD DEVIATION: $\times 0.635 (SCF) =$ ____ (PSEL) PURGE (G3) ____% PASSED ____ FAILED ____</p> <p>SAMPLE DISPOSITION: _____ Date: _____</p>										