



Meat Grading & Certification Branch

**PREPARATION OF SAMPLES FOR LABORATORY FAT ANALYSIS
FOR NON-FEDERAL PURCHASE ITEMS**

Purpose

This Instruction sets forth U.S. Department of Agriculture (USDA), Agricultural Marketing Service (AMS), Meat Grading and Certification (MGC) Branch policies and procedures for the selection, collection, preparation, and shipment of ground, linked and other non-canned product samples for laboratory fat analysis.

Policy

It is USDA policy to analyze meat products for fat analysis when specified by the contract, specification and/or purchaser. This Instruction applies to all meat products requiring fat analysis with the exception of USDA purchased product for the National School Lunch Program for which the sampling, shipment, and analysis has been specified in USDA Technical Requirements Schedules and the contractor's approved technical proposal.

For all other products requiring fat analysis, it is the policy of the MGC Branch to select samples in accordance with universally recognized protocols, maintain sample integrity, and ensure that samples are prepared for laboratory analysis in accordance with procedures approved by the Association of Official Analytical Chemists (AOAC). See **Exhibit A**.

Scope

This Instruction applies to any processor or producer who supplies meat products as a contractor or subcontractor which requires fat analysis, but has not specified sampling procedures in contracts, specifications, schedules, technical proposals, etc., for contracts requiring fat content analysis certified by the MGC Branch.

Responsibilities

Contractors Will:

1. Provide facilities and equipment necessary for preparing samples for laboratory analysis, including:
 - a. Adequate and secure freezer facilities for sample storage.

- b. A commercial food processor, approved by the AOAC (i.e., Robot Coupe or equivalent must be used) for USDA purchases.
 - c. A plastic or rubber spatula with a 2-inch by 4-inch blade.
 - d. Plastic bags, knives, etc.
2. Provide a plant employee trained in laboratory sampling and sample preparation procedures capable of operating and cleaning the food processing equipment.
 3. 3. Pay for all costs associated with the laboratory analysis.

Contracted Laboratory Will:

Supply everything necessary for submitting samples including sample packaging materials:

- Shipping containers
- “Blue ice” gel packs
- “Whirl Pak” type bags

Meat Graders Will:

1. Establish plant specific sampling protocol in the Quality Manual.
2. Maintain adequate sample control measures at all times to prevent tampering.
3. Randomly select 4 filled shipping containers from each lot.
4. Randomly select an area within each shipping container and collect a 2-pound sample.
5. Monitor sample preparation by:
 - a. Monitoring placement of the sample into the food processor.
 - b. Ensuring that any fat that collects on either the inner wall or the bottom of the food processor and any connective tissue that collects around the blade are incorporated into the sample.
 - c. Instructing the plant employee to interrupt processing and press the sample to the bottom of the bowl with a spatula and blend the sample uniformly if the sample forms into a ball above the blades.
 - d. Ensuring the bowl and blades are thoroughly washed between each sample preparation.
6. Prepare the Sample Labels and attach to the applicable original and reserve “Whirl Pak” type bags.

7. Fill the “Whirl Pak” type sample bags with approximately four ounces of the emulsified sample and close.
8. Select and prepare samples for mailing by:
 - a. Completing the Request for Laboratory Analysis and Chain of Custody electronic template. **See Exhibit B.** Include the Official USDA Meat Grading Sample Bag number on the Laboratory Analysis and Chain of Custody form.
 - b. Securing the completed Laboratory Analysis and Chain of Custody form and the original samples in the Official USDA Meat Grading Sample Bag. **See Exhibit C.** Follow the step-by-step instructions printed on the bag.
 - c. **Ensuring that samples are solidly frozen prior to mailing.**
 - d. Placing the Official USDA Meat Grading Sample Bag(s) into the mailing container, with frozen “Blue Ice” gel packs.
 - e. Securely closing the mailing container. **Do not tape or use a shield stamp to seal the container.**
9. Ensure samples are shipped by guaranteed Next Day delivery (not 2-day) courier service. Contractors will provide return address and postage labels, so that the mailing containers can be returned.
10. Ensure samples are sent to the correct laboratory.
 - a. **Ship all samples derived from plants to:**

Warren Analytical Laboratories
650 “O” Street
Greeley, CO. 80631
 - b. **Send samples to the contracted laboratory Monday through Thursday only.**

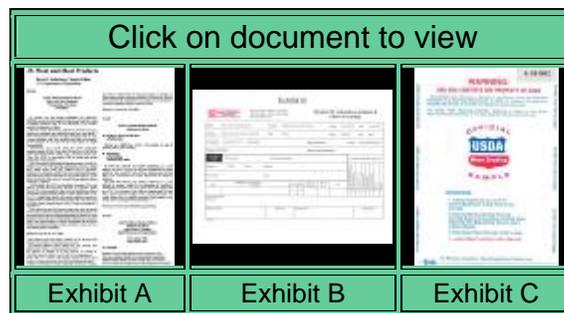
Note: Do not send samples on Fridays or days preceding holidays.
11. Place the reserve sample(s) in a secure freezer. Reserve samples may be analyzed only when:
 - a. The original sample was lost, or
 - b. The original sample was unsuitable for analysis.
12. Return any corresponding reserve samples to the contractor once the lot has been shipped.

Contracted Laboratories Will:

1. Contact the MGC Branch Office immediately via e-mail, and send a follow-up notification by fax, if samples are unsuitable for testing.
2. Provide analytical results electronically to the MGC Branch Office by 5:00 PM EST, Monday through Friday at GradingInfo@usda.gov.

MGC Branch Office Will:

1. Monitor the movement of samples submitted to the contracted laboratory.
2. Manage and maintain Laboratory Analysis Files, which are accessible only to designated persons.



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EXHIBIT A

39. Meat and Meat Products

David L. Soderberg, Chapter Editor
U.S. Department of Agriculture

39.1.01

AOAC Official Method 983.18 Meat and Meat Products Preparation of Sample Procedure

To prevent H₂O loss during preparation and subsequent handling, do not use small samples. Keep ground material in glass or similar containers with air- and H₂O-tight covers. Prepare samples for analysis as follows:

(a) *Fresh meats, dried meats, cured meats, smoked meats, etc.*-Separate as completely as possible from any bone; pass rapidly 3 times through food chopper with plate openings $\leq 1/8$ " (3 mm), mixing thoroughly after each grinding; and begin all determinations promptly. If any delay occurs, chill sample to inhibit decomposition.

Alternatively, use a bowl cutter for sample preparation (benchtop model, 1/2 HP; 14 in. bowl, 22 rpm; two 3.5 in. knives, 1725 rpm; Model 84145, Hobart Corp., 711 Pennsylvania Ave, Troy, OH, 45374, or equivalent). Chill all cutter parts before preparation of each sample.

Food Processor-FirstAction1990.-Benchtop model, 110/120 V, 60 Hz, 1 hp, 7.5 A, 1725 rpm, fan-cooled motor, 4 qt bowl; Model R4Y, Robot Coupe, USA, Inc., Jackson, MS, or equivalent. (Caution: Do not remove cutter bowl lid or cutter bowl from base until motor has come to full stop. Do not put hand, finger, or any object into bowl while motor is running. Unplug appliance before servicing or cleaning.)

Precut sample, up to 2 lb, to maximum dimension ≤ 2 in., and transfer to bowl for processing. Include any separated liquid. Process 30 s, then wipe down inner side wall and bottom of bowl with spatula (use household plastic or rubber spatula with ca 2 in. by 4 in. straight-edge blade) and transfer gathered material to body of sample. Continue processing another 30 s and wipe down as before. Repeat sequence to give total of 2 min processing and 3 wipe downs.

Take particular care with certain meat types such as ground beef to assure uniform distribution of fat and connective tissue. At each wipe-down interval, reincorporate these into sample by using spatula to remove fat from inside surfaces of bowl and connective tissue from around blades. If sample consolidates as ball above blades, interrupt processing and press sample to bottom of bowl with spatula before continuing.

Reference: JAOAC **72**, 777(1989).

(b) *Canned meats.*-Pass entire contents of can through food chopper, bowl cutter or food processor, as in (a).

(c) *Sausages.*-Remove from casings and pass through food chopper, bowl cutter or food processor, as in (a). Dry portions of samples of (a), (b), and (c) not needed for immediate analysis, either in vacuo $< 60^\circ$ or by evaporating on steam bath 2 or 3 times with alcohol. Extract fat from dried product with petroleum ether (bp $< 60^\circ$) and let petroleum ether evaporate spontaneously, finally expelling last traces by heating

short time on steam bath. Do not heat sample or separated fat longer than necessary because of tendency to decompose. Reserve fat in cool place for examination as in chapter on oils and fats and complete examination before it becomes rancid.

Reference: JAOAC **66**, 759(1983).

39.1.02

AOAC Official Method 950.46 Moisture in Meat

A. *Drying in Vacuo at 95-100°* --Final Action

Proceed as in **934.01** (see 4.1.03). (Not suitable for high fat products such as pork sausage.)

B. *Air Drying* --First Action --Final Action 1991

(a) With lids removed, dry sample containing ca 2 g dry material 16-18 h at 100-102° in air oven (mechanical convection preferred). Use covered Al dish ≥ 50 mm diameter and ≤ 40 mm deep. Cool in desiccator and weigh. Report loss in weight as moisture.

(b) With lids removed, dry sample containing ca 2 g dry material to constant weight (2-4 h depending on product) in mechanical convection oven or in gravity oven with single shelf at ca 125°. Use covered Al dish ≥ 50 mm diameter and ≤ 40 mm deep. Avoid excessive drying. Cover, cool in desiccator, and weigh. Report loss in weight as moisture. (Dried sample is not satisfactory for subsequent fat determination.)

References: JAOAC **33**, 749(1950); **36**, 279(1953).

39.1.03

AOAC Official Method 985.14 Moisture in Meat and Poultry Products Rapid Microwave Drying Method

First Action 1985
Final Action 1991

A. *Principle*

Moisture is removed (evaporated) from sample by using microwave energy. Weight loss is determined by electronic balance readings before and after drying and is converted to moisture content by microprocessor with digital percent readout.



650 "O" Street, Greeley, CO 80631
 970.475.0252 • FAX 970.351.6648
 www.warrenlab.com

Request for Laboratory Analysis & Chain of Custody

Client: USDA, AMS, LSP, MGC Branch	Contact: Willard Goad or Leonard Woody	Phone: 720-497-2531	Fax: 720-497-0571																
Address: 13952 Denver West Parkway, Suite 350	City: Golden	State: Colorado	Zip: 80401																
PO Number: AG-6395-D-07-0374	Plant Name:	Applicant Number:	E-mail: GradingInfo@usda.gov																
Sampler (Print/Sign):		USDA Sample Bag Number:																	
Lab Use Only	Work Order #:	WAL Project Manager:	Food & Microbiological Services																
Shipping: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx Airbill No:			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Standard Plate Count</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Total Coliforms</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Generic E. coli</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Staphylococci</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Salmonella</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">E-Coli 0157:H7</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Fat %</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Salt</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	Standard Plate Count	Total Coliforms	Generic E. coli	Staphylococci	Salmonella	E-Coli 0157:H7	Fat %	Salt	<input type="checkbox"/>							
Standard Plate Count	Total Coliforms	Generic E. coli		Staphylococci	Salmonella	E-Coli 0157:H7	Fat %	Salt											
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Temperature: Notes:																			
Item	<u>Sample ID and Description</u> Product	Orig	Res	Date of Production	No. of Cntrs.	LOT	<input type="checkbox"/>												
Special Instructions to the Lab:																			
Relinquished By:				Date/Time:		Received By:				Date/Time:									

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WARNING:

BAG AND CONTENTS ARE PROPERTY OF USDA

Unauthorized Use, Removal, or Alteration in any Manner without the Expressed Permission of an Authorized Representative of USDA is a violation of the Agricultural Marketing Act of 1946, as amended and regulations issued thereunder.

The Words "VOID Tampering Detected" Appearing in yellow on the Green Tape may indicate tampering. Do Not Open Bag. Notify MGC at 202-720-1246.



INSTRUCTIONS

1. Indicate Bag Number on Lab Form. Insert in Back Pouch of Bag. Remove strip and seal.
2. Place sample jars into Bag. Place bag print side down on a flat surface. Fold Back Green Tape away from Bag Opening. Remove strip to expose adhesive.
3. Press Green Tape firmly and smooth to close.
4. **AVOID DIRECT CONTACT WITH DRY ICE!**

To Remove Contents - Cut Along Bottom Dotted Line



Do Not Cut Here to Open

Do Not Cut Here to Open