

United States Department of Agriculture Marketing and Regulatory Programs Agricultural Marketing Service Livestock and Seed Program

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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 Communities (AOAC) International (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 International (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. Pay for all costs associated with the laboratory analysis.

Contracted laboratory will:

Supply the following items for submitting samples:

- 1. Permanent markers or pre-printed labels
- 2. Commercially available gloves
- 3. Frozen ice packs
- 4. Insulated shipping containers
- 5. Plastic screw cap containers

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. Monitor sample preparation.
- 4. Prepare the sample labels and attach to the applicable original and reserve sample jars.
- 5. Select and prepare samples for mailing.

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.

Sample Selection, Collection and Preparation

- 1. Randomly select 4 filled shipping containers from each lot.
- 2. Randomly select an area within each shipping container and collect a 2-pound sample.
- 3. Each sample will be homogenized with careful mixing with a spatula through a rotary knife meat grinder with plate holes of 1/8" and 4 knife blades such as the Hobart type. A second grinding, again with careful mixing with a spatula, will be performed. Alternatively, adequate results may be obtainable with a food processor or high speed vertical chopper/mixer. If this option is used, care must be taken that the ultimate sample consistency is that of a uniform paste or pâté, comparable to what would be obtainable with the grinding procedure described. Equipment should be cleaned and drip dried between each group of 4 sample units. Eight sample containers (2 from each of the four sample units) of this product will be placed in screw-capped plastic containers. Each container can hold approximately 150-200 grams.
- 4. Four sample containers (one from each sample unit) will be placed in a tamper proof bag and will be sent to the contracted laboratory for analysis. The other four sample containers will be reserved and held in case the original samples are damaged or lost during shipment.

Sample Shipment

- 1. Complete the Sample Analysis Request Form Fat/Salt (SARF Fat/Salt) form (Exhibit B) available from the MGC Branch Intranet Template Page. Include the Official USDA Meat Grading Sample Bag (Exhibit C) number on the SARF Fat/Salt form.
- Secure the completed SARF Fat/Salt form and the original samples in the Official USDA Meat Grading Sample Bag. Follow the step-by-step instructions printed on the bag.
- 3. Ensure that samples are solidly frozen prior to mailing.
- 4. Place the Official USDA Meat Grading Sample Bag(s) into the insulated container, with frozen ice packs.

- 5. Securely close the insulated shipping container. Do not apply a shield stamp when sealing the insulated shipping container.
- 6. 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.
- 7. Ensure samples are sent to the correct laboratory.

Ship all samples derived from plants to:

Silliker, Inc. 3688 Kinsman Blvd. Madison, WI 53704

- 8. Place the reserve sample(s) in a secure freezer. Reserve samples may be analyzed only when the original sample was lost; or the original sample was unsuitable for analysis.
- 9. Return any corresponding reserve samples to the contractor once the lot has been shipped.

Sample Receipt

- 1. The contracted laboratory will receive samples on Monday through Saturday, except on select Federal Holidays (New Years Day, July 4th, Labor Day, Thanksgiving and Christmas).
- 2. If samples are not suitable for testing, the contracted laboratory will contact a designated MGC Branch staff member immediately by phone or e-mail, and will send a follow-up notification by fax:

Phone – 720-497-2520. E-mail – GradingInfo@usda.gov Fax – 720-497-0571.

3. A designated MGC Branch staff member will then contact the appropriate grader and request that the reserve sample(s) be submitted to the contracted laboratory for analysis.

Reporting Results

- 1. The contracted laboratory will transmit test results electronically to the MGC Branch Office by 5:00 PM EST, Monday through Friday, at GradingInfo@usda.gov.
- 2. Test results completed during a weekend will be transmitted no later than 9:00 AM EST of the following Monday or first official business day of the week.
- 3. In case of network problems, the contracted laboratory will fax the test results to the MGC Branch Office at 720-497-0571.
- 4. A designated MGC Branch staff member will transmit test results electronically to the appropriate MGC Branch field personnel.

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39. Meat and Meat Products

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U.S. Department of Agriculture

39.1.01

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

To prevent H_2O loss during preparation and subsequent handling, do not use small samples. Keep ground material in glass or similar containers with air- and H_2O -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 $100-102^{\circ}$ in air oven (mechanical convection preferred). Use covered Al dish \geq 50 mm diameter and \leq 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 \geq 50 mm diameter and \leq 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.

Exhibit B

SAMPLE ANALYSIS REQUEST FORM

	CLIE	NT INFORMATION		
DATE SENT	PO#	SAMPLES SUBMITTED BY (Name	e) USDA SAMPLE BAG#	
	AG-6395-D-09-00	53		
		SEND REPORTS TO		
COMPANY NAME AND ADI	DRESS	REPORTS TO	СОРҮ ТО	
USDA, AMS, LSP, Grading and Verification Division		GradingInfo@ams.usda.gov	Producer named on form	
13952 Denver West Pa	arkway, Suite 350	PHONE	FAX	
Lakewood, CO 80401		720-497-2520	720-497-0571	
CALL WITH PRESUMPTIVE	? YES 🗸 NO	SEND RESULTS VIA	EMAIL	
IF YES, GIVE EMERGENCY N	NUMBER	Semail Fax	GradingInfo@ams.usda.gov	
	SEND INVOIC	ES TO (If Different From Above)		
COMPANY NAME AND ADDRESS		ATTENTION	ATTENTION	
		PHONE	FAX	



3688 Kinsman Boulevard Madison, Wisconsin 53704 608-249-9112 FAX 608-249-9886

FOR SILLIKER USE ONLY				
ι	USDA-MG-1			
Separate programs for each producer				
Commercial Meat Testing				
F	Fat/Salt Form			

SAMPLE INFORMATION (Completed by Customer)				
	SAMPLE	FAT-SOX	OTHER	SAMPLE
Description/Identification			Please Specify	NOWBER
Producer				
Product Type				
Production Date				
Lot#	#Units			
Item				
Samples # Each cup should be labeled individually 1-4				

SPECIAL INSTRUCTIONS/METHODS

Lab: Please email Leonard Woody (Leonard.Woody@usda.gov), Willard Goad (Willard.Goad@usda.gov), and GradingInfo (GradingInfo@ams.usda.gov) if there are any problems with the samples received. (Leonard Woody 202-302-7265, Willard Goad 720-497-2531)

SARF Fat/Salt 11/18/11

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" Appearing on the Green Tape may indicate tampering. Do Not Open Bag. Notify MGC at 720-497-2520.

Do Not Cut Here to Open

Open

Cut Here to

Do Not (

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Meat Grading

SAMPLE

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 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