INCH-POUND

MIL-P-44233B
9 April 1990
SUPERSEDING
MIL-P-44233A
12 January 1988

MILITARY SPECIFICATION

PORK SLICES WITH GRAVY, THERMOSTABILIZED, TRAY PACK

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers pork slices with gravy thermostabilized in tray pack cans for use by the Department of Defense as a component of operational rations.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.1).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5014 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8940

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

SPECIFICATIONS

FEDERAL

PPP-B-636 - Boxes, Shipping, Fiberboard

MILITARY

MIL-L-1497 - Labeling of Metal Cans for Subsistence Items
MIL-L-35078 - Loads, Unit: Preparation of Semiperishable Subsistence Items; Clothing, Personal Equipment and Equipage; General Specification For
MIL-C-44340 - Can, Tray Pack

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-900 - Bacterial Standards for Starches, Flours, Cereals, Alimentary Pastes, Dry Milks and Sugars Used in the Preparation of Thermostabilized Foods for the Armed Forces

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

National Primary Drinking Water Regulations

(Copies are available from the Office of Drinking Water, Environmental Protection Agency, WH550D, 401 M Street, S.W., Washington, DC 20460.)

U.S. DEPARTMENT OF AGRICULTURE (USDA)

Meat and Poultry Inspection Regulations

(Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.)

Institutional Meat Purchase Specifications for Fresh Pork, Series 400

(Copies are available from the Director, Livestock and Seed Division, Agricultural Marketing Service, U.S. Department of Agriculture, Room 2603, South Building, P.O. Box 96456, Washington, DC 20090-6456.)

U.S. Standards for Condition of Food Containers

(Copies are available from the Chairman, Condition of Container Committee, Agricultural Marketing Service, U.S. Department of Agriculture, Room 2506, South Building, P.O. Box 96456, Washington, DC 20090-6456.)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)

Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder (21 CFR Parts 1-199)

(Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.1).

AMERICAN ASSOCIATION OF CEREAL CHEMISTS (AACC)

Approved Methods of the American Association of Cereal Chemists

(Application for copies should be addressed to the American Association of Cereal Chemists, 3340 Pilot Knob Road, St. Paul, MN 55121.)

AMERICAN DEHYDRATED ONION AND GARLIC ASSOCIATION (ADOGA)

Official Standards and Methods of the American Dehydrated Onion and Garlic Association for Dehydrated Onion and Garlic Products

(Application for copies should be addressed to the American Dehydrated Onion and Garlic Association, 650 California Street, Suite 800, San Francisco, CA 94108.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 3330 - Peel Adhesion of Pressure-sensitive Tape

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

AMERICAN SPICE AND TRADE ASSOCIATION (ASTA)

Official Analytical Methods of the American Spice and Trade Association

(Application for copies should be addressed to the American Spice and Trade Association, Incorporated, 580 Sylvan Avenue, Englewood Cliffs, NJ 07632.)

ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS (AOAC)

Official Methods of Analysis of the Association of Official Analytical Chemists

(Application for copies should be addressed to the Association of Official Analytical Chemists, 2200 Wilson Boulevard, Suite 400-CD, Arlington, VA 22201-3301.)

NATIONAL ACADEMY OF SCIENCES

Food Chemicals Codex

(Application for copies should be addressed to the National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20418.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.1), a sample shall be subjected to first article inspection (see 6.2) in accordance with 4.4.

3.2 Ingredients. All ingredients shall be clean, sound, wholesome, and free from foreign material, evidence of rodent or insect infestation, extraneous material, off-odors, off-flavors, and off-colors.

3.2.1 Pork. Pork shall be derived from any one or any combination of the following recognizable cuts: shoulders, shoulder picnics, shoulder picnic cushion, Boston butts, hams and loins. Recognizable cuts are those which, when compared to Institutional Meat Purchase Specifications (IMPS) cuts, have no more than a minor amount of lean, fat, or bone removed or included from an adjacent cut. The pork shall be in the fresh-chilled state and shall be in excellent condition, that is, exposed lean and fat surfaces shall be of a color and bloom normally associated with the class and cut of meat, and typical of meat which has been properly stored and handled. Cut surfaces and naturally exposed lean surfaces shall show no more than slight darkening or discoloration due to dehydration, aging, or microbial activity. The fat shall show no more than a very slight discoloration due to oxidation or microbial activity. No odors foreign to fresh meat shall be present. Changes in color and odor characteristically associated with vacuum-packaged meat in excellent condition shall be acceptable. The pork shall show no evidence of freezing, defrosting, or mishandling. Coarse-textured, dark pork, or pale, soft, and exudative (PSE) pork is not acceptable. Cuts which have had no more than a slight amount of bruised lean removed will be acceptable. Cuts which have had more than a slight amount of lean removed, for any reason, shall not be included. All suitable lean meat shall be used in proportions as existing in the involved cut, except that the tenderloins may be excluded at the option of the contractor.

3.2.1.1 Boning and trimming. Pork shall be made boneless and trimmed to comply with the limitations listed in tables I and II. The pork shall be trimmed of fat to a degree necessary to ensure compliance with the product fat content requirements (see 3.6). All pork shipped between plants shall be accompanied by a USDA, Agricultural Marketing Service (AMS) certificate to certify condition of the product and compliance with boning and trimming requirements.

3.2.1.2 Handling and storage. Handling and storage of the boned and trimmed pork, prior to processing into the finished product, shall be in accordance with the following requirements:

a. Pork processed on the day of initial certification shall be maintained in the temperature range of 28° to 50°F, inclusive.

b. Holding in the fresh-chilled state for not more than 4 days after initial certification is permitted, provided that the pork is maintained in the temperature range of 28° to 40°F, inclusive.

c. Holding in the frozen state for not more than 120 days after initial certification is permitted, provided that the pork is:

- frozen to 0°F or lower within 72 hours after initial certification
- stored at 0°F or lower
- protected from freezer deterioration and damage
- stored in containers that are adequate to maintain product excellence

- held after storage at an internal temperature not to exceed 40°F when further processing is resumed
- not reforzen after it has been tempered/thawed.

NOTE: Microwave tempering/thawing of the frozen pork is permitted provided that the pork is maintained in excellent condition, as determined by the USDA.

3.2.2 Water. Water used for formulation, ice making, and washing shall conform to the National Primary Drinking Water Regulations.

3.2.3 Starch, food, modified, high opacity. High opacity starch shall be white, odorless, finely pulverized, modified maize starch for use in thermostabilized foods. The modified starch shall demonstrate initial viscosity development in the temperature range 140° to 170°F and a typical viscosity (be fully hydrated) at common retort temperatures. The modified starch shall resist breakdown at low pH under shear stress. A cooked slurry prepared from the starch shall be bland with essentially no cereal or starch taste. The starch shall comply with MIL-STD-900.

3.2.4 Onions, dehydrated, chopped. Dehydrated chopped onions shall be Fancy Grade of the Official Standards and Methods of the American Dehydrated Onion and Garlic Association for Dehydrated Onion and Garlic Products.

3.2.5 Salt. Salt shall be noniodized, white, refined sodium chloride with or without anticaking agents and shall comply with the purity standards for sodium chloride of the Food Chemicals Codex.

3.2.6 Sauce, Worcestershire. Worcestershire sauce shall be brown to dark brown liquid and shall possess a pleasant, tart, peppery fruit-spice flavor with a typical heavy viscosity. The titratable acidity (as acetic acid) of the sauce shall be not less than 2.8 percent nor more than 3.3 percent.

3.2.7 Sugar, brown, light. Brown sugar shall be refined cane or beet sugar. The sugar shall be light brown in color and shall possess a sweet, molasses-like flavor.

3.2.8 Monosodium glutamate. Monosodium glutamate shall comply with the Food Chemicals Codex.

3.2.9 Garlic powder. Garlic powder shall be Fancy Grade of the Official Standards and Methods of the American Dehydrated Onion and Garlic Association for Dehydrated Onion and Garlic Products.

3.2.10 Pepper, white, ground. Ground white pepper shall be derived from the dried mature berries of Piper nigrum L. from which the outer covering or the outer and inner covering have been removed. The ground pepper shall have a characteristic, penetrating odor, a hot, biting, pungent flavor, and a light color. The ground pepper shall contain not less than 1.0 mL of volatile oil per 100 grams of ground white pepper and be of such size that not less than 95 percent shall pass through a U.S. Standard No. 40 sieve.

3.2.11 Paprika, ground. Ground paprika shall be Spanish paprika (Capsicum annuum L.) and shall possess a bright orange to red color with an extractable color value of not less than 110 American Spice and Trade Association (ASTA) color units. The ground paprika shall be of such size than not less than 95 percent shall pass through a U.S. Standard No. 30 sieve.

3.2.12 Color, caramel. Caramel color shall comply with the Food Chemicals Codex.

3.2.13 Preblended spice and seasoning mixture. Preblended spices and seasonings may be used. The spices and seasonings in the mixture shall comply with the requirements of this specification. The containers used for the spice and seasoning blend shall be labeled with each ingredient and the percentage of each ingredient in the blend. The ingredients shall be in the same proportions as specified in the ingredient formula.

3.3 Preparation and processing. Processing shall be on a continuous basis.

3.3.1 Preparation of pork. The pork shall be prepared as follows:

a. Boned and trimmed pork which meets the requirements of 3.2.1 shall be further trimmed, if necessary, to ensure compliance with finished product requirements (see 3.6).

b. The boned and trimmed pork shall be mechanically ground once through a kidney-shaped plate, having openings measuring 2-1/2 inches or more in the least dimensions, and using a two-bladed knife that yields pieces weighing at least 2 ounces.

3.3.1.1 Mixing. The pork pieces shall be mechanically mixed with the following ingredients for approximately 15 minutes or until the product becomes moderately tacky.

Ingredient	Percent by weight
Pork	96.25
Water or ice	3.00
Salt	0.75

3.3.1.2 Stuffing and forming. The pork mixture shall be mechanically stuffed tightly into number 7 regenerated cellulose prestuck casings. The resultant pork logs (rolls) shall be mechanically formed to approximate with the cross-sectioned shape and dimension shown on figure 1 or 2. The open ends shall be sealed to exert minimum pressure on the meat.

3.3.1.3 Cooking. The formed pork logs shall be cooked by one of the following methods to provide a product meeting the finished product requirements.

a. Cook house method. The pork logs shall be cooked in a cook house (smokehouse without smoke) at a temperature range of 160° to 162°F and 100 percent relative humidity until the internal product temperature reaches 150° to 152°F.

b. Water cooking method. The pork logs shall be cooked in water until the internal product temperature reaches 150° to 152°F.

3.3.1.4 Cooling and freezing. Immediately after completion of the cooking process, the cooked pork logs shall be placed in an ice water bath or cooled by other commercially acceptable cooling methods and rapidly cooled to 130°F or below. The pork logs shall be further cooled from 130° to 80°F or below within 2 hours, and further cooled from 80° to 40°F or below within 4 hours. The cooled, cooked pork logs shall be held for not more than 48 hours at an internal temperature of 28° to 40°F after removal from the cooking process and prior to slicing. Alternatively, if the cooked pork logs are to held for more than 48 hours after cooking, they shall be placed in a freezer within 4 hours after cooking and frozen to an internal temperature of 0°F or lower within 72 hours after being placed in the freezer. If the pork logs are to be frozen, the pork shall not have been previously frozen and the pork shall be placed into separate oxygen impermeable casing materials approved by the USDA and FDA and securely closed. The frozen, cooked pork logs shall be held at an internal temperature of 0°F or below for a period of not more than 60 days prior to slicing. The frozen pork logs shall be tempered to an internal temperature of 28° to 40°F prior to slicing.

3.3.1.5 Slicing. The pork logs shall be sliced to a uniform size, shape, and thickness. The pork slices shall be filled into the tray pack cans within 4 hours after being sliced. End slices shall not be used.

3.3.2 Preparation of gravy. The gravy shall be formulated with the following ingredients:

Ingredient	Percent by weight
Water	91.69
Starch, food, modified, high opacity	5.50
Onions, dehydrated, chopped	0.93
Salt 1/	0.65
Sauce, Worcestershire	0.44
Sugar, brown, light	0.40
Monosodium glutamate	0.30
Garlic powder	0.04
Pepper, white, ground	0.02
Paprika, ground	0.02
Color, caramel	0.01

1/ The total amount of salt in the gravy formula shall be adjusted, as necessary, to produce a product that complies with the finished product salt requirements (see 3.6).

NOTE: The following gravy preparation procedures were used in the development of this product. Alternate procedures may be used provided finished product requirements are met. (When alternate procedures are used, the time and temperature requirements specified for the prepared gravy are still applicable.)

The gravy shall be prepared as follows:

a. A thin slurry shall be made with the starch and part of the water.

b. The balance of the water and the remaining ingredients shall be mixed together and heated to 140° to 180°F to form an emulsion.

c. The starch slurry shall be added to the emulsion to form the gravy.

d. The gravy shall be heated to 180° to 190°F and held for approximately 5 minutes in this temperature range.

e. The volume of the gravy shall be adjusted with water to compensate for evaporation loss during heating and holding.

f. The gravy shall be maintained in the temperature range of 150° to 180°F and filled into tray pack cans within 4 hours after preparation.

3.4 Tray pack filling and sealing. Each tray pack can (see 5.1.1) shall be filled with product to conform to the finished product requirements and to the following requirements:

a. Not less than 54 intact pork slices shall be shingled in two rows, lengthwise, in the tray pack can, and then the gravy shall be added.

b. The gravy at the time of filling shall be in the temperature range of 150° to 180°F.

c. The pork at the time of filling shall be in the temperature range of 28° to 40°F.

d. Immediately after filling, each can shall be hermetically sealed under a vacuum established by a processing authority and specified in the scheduled process so as to ensure compliance with the finished product requirement (see 3.6 s).

e. The filled and sealed tray pack cans shall be in the retort process within 2 hours after sealing.

3.5 Tray pack thermoprocessing. The filled and sealed tray pack cans shall be thermostabilized by retorting until a sterilization value (F_o) of not less than 6 has been achieved.

3.6 Finished product requirements. The finished product shall comply with the following requirements:

a. There shall be no foreign material such as, but not limited to, dirt, insect parts, hair, wood, glass, or metal.

b. There shall be no foreign odor or flavor such as, but not limited to, burnt, scorched, stale, sour, rancid, or moldy.

c. There shall be no color foreign to the product.

d. No individual can shall contain less than 104 ounces of product.

e. The average net weight shall be not less than 106 ounces.

f. Drained weight of 54 intact pork slices in any individual tray pack can shall be not less than 58.0 ounces.

g. The average drained weight of the slices shall be not less than 60.0 ounces.

h. No individual can shall contain less than 54 intact slices.

i. Pork slices shall approximate the size and shape shown in figure 1 or 2.

j. The texture of the slices shall not be dry, rubbery, or mushy.

k. No individual can shall have slices with adherent fat or a fat pocket measuring more than 1/2 inch by 1/2 inch.

l. No individual can shall contain a bone piece measuring 0.3 inch or more in any dimension.

m. The averge fat content of the finished product shall be not greater than 12.0 percent and no individual tray pack shall have a fat content greater than 14.0 percent.

n. The salt content of any individual tray pack shall be not less than 0.50 percent nor greater than 1.25 percent.

o. The product shall show no evidence of excessive heating (materially darkened or scorched.)

p. Total weight of cartilage, coarse connective tissue, section of tendons or ligaments, and glandular material, collectively, in any individual can shall be not more than 2.0 ounces.

q. The viscosity of the gravy shall be not less than 7.0 cm per 10 seconds nor greater than 23.0 cm per 10 seconds when determined by a Bostwick Consistometer.

r. Gravy consistency shall be smooth, without lumps.

s. Filled, sealed, and retorted cans shall show evidence of proper vacuum as determined by concavity of the can lid (see 4.5.6).

3.6.1 Palatability. The finished product shall be equal to or better than the approved preproduction sample (see 6.1) in palatability and overall appearance.

3.7 Plant qualification. The meat component and the finished product shall originate and be produced, processed, and stored in plants regularly operating under the Meat and Poultry Inspection Regulations of the U.S. Department of Agriculture.

3.8 Federal Food, Drug, and Cosmetic Act. All deliveries shall conform in every respect to the provisions of the Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder.

4. QUALITY ASSURANCE PROVISIONS

4.1 Contractor's responsibility. Inspection and acceptance by the USDA shall not relieve the contractor of obligation and responsibility to deliver a product complying with all requirements of this specification. The contractor shall ensure product compliance prior to submitting the product to the USDA for any inspection.

4.2 Inspection and certification. Product acceptability shall be determined by the USDA. The USDA will determine the degree of inspection and supervision necessary to ensure compliance with the requirements of this specification.

4.3 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.4).
b. Quality conformance inspection (see 4.5).

4.4 First article inspection. When a first article is required (see 6.1), it shall be inspected in accordance with the quality assurance provisions of this specification and evaluated for overall appearance and palatability. Any failure to conform to the quality assurance provisions of this specification or any appearance or palatability failure shall be cause for rejection of the first article.

4.5 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.5.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

4.5.1.1 Pork examination for condition and cut. All pork shall be examined in either the bone-in or boneless state for conformance to the condition and cut requirements in 3.2.1. Cuts initially examined in the boneless state shall be in the form of whole boneless recognizable cuts. Any nonconforming pork shall be rejected.

4.5.1.2 Boned and trimmed pork examination. After boning and trimming and prior to any further processing or to any freezing, the pork shall be examined for the defects listed in table II. The lot size expressed in terms of pounds shall be declared to the AMS agent by the contractor. However, the AMS agent reserves the right to declare as a lot a portion of a declared lot, if, in his or her opinion, that portion may be out of compliance with any requirement. The sample unit shall be a minimum of 12 pounds of adjacent boneless pork. The sample size shall be as specified in table I. If all or a portion of the sample unit falls within a larger cut, the entire cut shall be examined. Failure of the pork to meet the acceptance criteria as indicated in table I shall be cause for rejection of the lot. Except for pork rejected because of freezing, defrosting, or not being in excellent condition, the pork may be reworked by the contractor and reoffered for examination. For reexamination, the sampling plan used shall be the one in table I designed for the next larger lot size than the one uner which the lot was initially rejected. Pork shall not be reexamined more than one time.

TABLE I. Sampling plan for boned and trimmed pork

Lot size (pounds)	Sample size (No. of sample units)	Defect categories			
		Major		Minor	
		AC	RE	AC	RE
500 or less	20	2	3	5	6
501 to 1200	32	3	4	7	8
1201 to 3200	50	5	6	10	11
3201 to 10000	80	7	8	14	15
10001 to 38000	125	10	11	21	22
Reinspection lots of 10001 to 38000	200	14	15	21	22

1/ Lot size ranges not in accordance with MIL-STD-105.

TABLE II. Boned and trimmed pork defects 1/ 2/

Category		Defect
Major	Minor	
101		Presence of blood clot measuring 0.5 inch or more in any dimension
	201	Presence of blood clot measuring 0.3 inch or more but less than 0.5 inch in any dimension
102		Presence of bruise measuring 1.0 inch or more in any dimension
	202	Presence of bruise measuring 0.3 inch or more but less than 1.0 inch in any dimension
103		Presence of a bone piece measuring 0.3 inch or more in any dimension
104		Presence of cartilage measuring 0.5 inch or more in any dimension
	203	Presence of cartilage measuring 0.3 inch or more but less than 0.5 inch in any dimension
105		Presence of popliteal, prescapular, prefemoral or any exposed lymph gland measuring 0.5 inch or more in any dimension
106		Presence of skin measuring 0.3 inch or more in any dimension
107		Exposed (protruding) ligaments and tendons measuring more than 0.3 inch
108		Presence of kidney measuring more than 1.0 inch in any dimension
109		Presence of coarse-textured, dark pork, or pale, soft, and exudative (PSE) pork
	204	Presence of shank with tendinous end showing less than 75 percent lean tissue on a cross-sectional cut surface

TABLE II. Boned and trimmed pork defects 1/ 2/ (cont'd)

Category		Defect
Major	Minor	
	205	Presence of exposed blood vessel measuring 1.0 inch or more in any dimension
	206	Presence of skirt (diaphragm) or abdominal tissue
	207	Presence of leaf, lumbar, or pelvic fat
	208	Presence of mediastinal tissue in the first rib or sternal region
	209	Presence of dehydrated surface measuring 1.0 inch or more in any dimension

1/ Determination of wholesomeness and acceptability of product with respect to the presence of foreign material (for example, glass, dirt, insect parts, hair, wood, metal) shall be made by a Meat and Poultry Inspection Operations employee.

2/ Evidence of freezing or defrosting or product not in excellent condition shall cause rejection of the lot.

4.5.1.3 Ingredient and component examination. Conformance of ingredients and components to identity, condition, and other requirements specified in 3.2 shall be certified by the ingredient supplier or ingredient manufacturer, and compliance shall be verified by examination of pertinent labels, markings, U.S. Grade Certificates, certificates of analyses, or other such valid documents acceptable to the inspection agency. If necessary, each ingredient shall be examined organoleptically or inspected according to generally recognized test methods, such as the standard methods described in the Official Methods of Analysis of the Association of Official Analytical Chemists and in the Approved Methods of the American Association of Cereal Chemists, to determine conformance to the requirements. Any nonconformance to an identity, condition, or other requirement shall be cause for rejection of the ingredient or component lot or of any involved product.

4.5.2 In-process examination. In-process examination shall be performed to determine conformance to the preparation, processing, can interior coating, filling, sealing, and packaging requirements. Any nonconformance revealed by actual examination or by review of records of time, temperature, and formulation, or of other valid documents shall be cause for rejection of the involved product.

4.5.3 Tray pack inspection. The inspection lot shall include only tray packs produced in one workshift. The USDA reserves the right to separate the inspection lot into smaller inspection lots.

4.5.3.1 Net weight examination. Randomly select 30 filled and sealed tray pack cans from the inspection lot and weigh separately. Subtract the average tare weight (determined by randomly selecting and weighing 30 of the empty tray pack cans and lids used in preparing the product and dividing the total weight by 30) from the weight of each tray pack in the sample. The results shall be reported to the nearest 1 ounce. If the average net weight is less than 106 ounces or if the net weight of any individual can is less than 104 ounces, the lot shall be rejected.

4.5.3.2 Product inspection. The sample size shall be as indicated by the double sampling plan specified in table III. The tray pack cans shall be selected at random from the lot. The tray pack cans shall be heated in accordance with heating instructions on the can label, opened, and inspected for the defects listed in table IV.

TABLE III. Double sampling plan for product inspection 1/

Lot size (cans)	Sample size (cans)	Cumulative sample	Defect categories			
			Major		Minor	
			AC	RE	AC	RE
500 or less	5	--	2/	2/	0	2
	5	10	2/	2/	1	2
501 to 3200	8	--	0	2	0	3
	8	16	1	2	3	4
3201 to 35000	13	--	0	3	1	4
	13	26	3	4	4	5

1/ a. If the number of defects found in the first sample is equal to or less than the acceptance number, the lot shall be accepted.

b. If the number of defects found in the first sample equals or exceeds the rejection number, the lot shall be rejected.

c. If the number of defects found in the first sample exceeds the acceptance number but is less than the rejection number, the second sample shall be inspected. Defects found in the first and second samples shall be combined and if the number of defects in the cumulative sample equals or exceeds the rejection number, the lot shall be rejected.

2/ Examination for major defects requires use of the next larger sample size (for example, lot size = 500 cans; select 8 sample cans. Examine 5 of 8 cans for major and minor defects, and the remaining 3 cans for major defects only).

TABLE IV. Product defects 1/ 2/ 3/

Category		Defect
Major	Minor	
101		Drained weight of 54 intact slices in any individual tray pack can is less than 58.0 ounces 4/ 5/
102		Texture of the slice is dry, tough, rubbery, or mushy
103		Product shows evidence of excessive heating (materially darkened or scorched)
104		Presence of a bone piece measuring 0.3 inch or more in any dimension
105		Total weight of cartilage, coarse connective tissue, section of tendons or ligaments, and glandular material, collectively, in any individual can is more than 2.0 ounces
106		Gravy consistency is lumpy
107		Slices not approximating the size and shape shown in figure 1 or 2 6/
108		Less than 54 intact slices in any individual can
109		More than three slices have adherent fat or a fat pocket measuring more than 1/2 inch by 1/2 inch
	201	Three or less slices have adherent fat or a fat pocket measuring more than 1/2 inch by 1/2 inch
	202	Slices not arranged in a shingled manner

1/ The presence of foreign material (for example, dirt, insect parts, hair, wood, glass, metal), foreign odor or flavor (for example, burnt, scorched, moldy, rancid, sour, stale), or foreign color shall be cause for rejection of the lot.

2/ Product not equal to or better than the approved preproduction sample in palatability and overall appearance shall be cause for rejection of the lot. (This comparison shall be performed only when deemed necessary by a USDA agent.)

3/ Interior of filled and sealed cans shall be examined vidually for coating defects during examination of quality samples. Suspected rust spots shall be verified by testing in accordance with 4.5.7. Any spot verified as a rust spot shall be cause for rejection of the lot. Any scratch or fracture that penetrates through the coating of a can shall be cause for rejection of the lot.

4/ To determine drained weight, the gravy in the can shall be poured off, strained through a U.S. Standard No. 8 sieve, and reserved for viscosity determinations. The remaining contents shall be poured into a flat-bottom container. A minimum of three times the tray pack can's volume of 190° to 212°F water shall be added to the container so as to cover the contents. The contents and water shall be agitated so as to liquify rendered fat and remove the gravy without breaking the pork slices. The contents shall then be poured into the U.S. Standard 1/2 inch sieve in a manner that will distribute the product over the sieve without breaking the pork slices. Sieve area shall be such that the distibuted product does not completely ccver all the openings of the sieve. The sieve shall be tilted at approximately a 45° angle and allowed to drain for 2 minutes before determining the drained weight by subtracting the sieve tare weight from the gross weight. The drained weight shall be reported tc the nearest 0.1 ounce.

5/ The lot shall be rejected if the sample average drained weight is less than 60.0 ounces.

6/ Pork slices approximating the shape of figure 2 which have broken corners shall not be considered as intact slices.

4.5.3.3 Fat and salt content testing. Three filled and sealed tray pack cans shall be selected at random from the lot. The tray pack cans shall be individually tested for fat and salt content in accordance with the Official Methods of Analysis of the Association of Official Analytical Chemists, Methods of Analysis of the Association of Official Analytical Chemists, chapter: Meat and Meat Products, except that preparation of the samples shall be as follows: The unopened tray pack cans shall be gently warmed in a water bath to melt fat adhering to the inside of the cans. The cans shall be opened and the entire contents of each can shall be separately blended in a Waring Blendor or equivalent. The test results for fat content shall be reported to the nearest 0.1 percent. The test results for salt content shall be reported to the nearest 0.01 percent. Any result failing to conform to the fat and salt requirements in 3.6 shall be classified as a major defect and shall be cause for rejection of the lot.

4.5.3.4 Viscosity testing. The strained gravy collected from each of the cans in the first sample of cans selected for drained weight inspection (see 4.5.3.2 and 4/ of table IV) shall be individually tested for viscosity as follows (see 6.4):

Instrument: Bostwick Consistometer
Catalog Number: 23270-004
VWR Scientific Company
P.O. Box 7900
San Francisco, CA 94120

or Catalog number: 15-347-50
Fisher Scientific
585 Alpha Drive
Pittsburgh, PA 15238

Method:

a. Level the instrument.
b. Bring gravy to 100° ± 1°F in a water bath in a covered container.
c. Stir gravy thoroughly before filling the Bostwick cavity.
d. Scrape gravy evenly across upper edge of cavity.
e. Release gravy and time gravy flow to the nearest 1 second and measure distance traveled to the nearest 0.1 cm.

If the Bostwick viscosity value of the gravy for any can in the sample fails to conform to the requirement specified in 3.6, it shall be classified as a major defect and the lot shall be rejected.

4.5.4 Can condition examination. Examination of filled and sealed tray pack cans shall be in accordance with the United States Standards for Condition of Food Containers, except that the inspection for labeling shall be in accordance with 4.5.4.1. In addition, the following defect shall be classified as a major defect.

Evidence of buffing with an abrasive substance (see 5.1.1).

4.5.4.1 Can label examination. Labels shall be examined for defects in accordance with MIL-L-1497 (see 5.4) except, for self-adhering labels, the following additional defects shall apply:

Major: Label torn or scratched so as to obliterate any of the markings.

Minor: Air bubbles under label.
Label not properly adhered to can, (for example, label raised or peeled back from edges or corners).

4.5.4.2 Label adhesive examination. When self-adhering labels are used, the adhesive shall be tested in accordance with ASTM D 3330.

4.5.5 Can closure examination. Can closure shall be examined visually and by teardowns in accordance with the can manufacturer's requirement and CFR 21, Part 113, Subpart D, or CFR 9, Part 318, Subpart G, as applicable. Any nonconformance based on observation of can seam teardowns or on record of can seam teardowns shall be classified as a major defect and shall be cause for rejection of any involved product.

4.5.6 Vacuum examination. Cans shall be allowed to cool to 75° ± 5°F, held for at least 24 hours after sealing, and then examined for vacuum retention. To examine, lay a straight edge in the center of the lid along the length of the tray pack. Both ends of the straight edge shall touch the lid at the inside edge of the double seam. There shall be a visible gap between the straight edge and the lid for the entire distance of the label panel. Using a shorter straight edge, the same procedure shall be used across the width, in the center of the tray pack can. One measurement shall be made when examining a ribbed lid; lay the straight edge between the two center ribs along the length of the can. The inspection lot shall include only tray packs produced in a single shift on a single sealing machine. The sample size shall be 50 cans. Any nonconformance shall be classified as a major defect and shall be cause for rejection of the lot.

4.5.7 Test for rust spots on interior of tray pack cans. Where rust spots are suspected on interior of tray pack cans, the following test shall be performed:

a. Immerse a cotton swab in acetone or methyl ethyl ketone solvent and gently rub suspected spot. Handling of the solvent shall be in strict accordance with the guidelines of the manufacturer's Material Safety Data Sheet (MSDS).

b. If suspected spot immediately disappears, it is not a rust spot.

c. If suspected spot remains, continue gently rubbing with the swab resoaked with solvent, and observe for disappearances or retention of spot. Replenish solvent as necessary.

d. If spot persists, and all but a very thin coating, or no coating remains, it will be scored as a rust spot. This can be confirmed further by rubbing with a finger. The rust spot will be felt as a slight bump over the substrate.

e. Any spot scored as a rust spot defect on interior of the tray pack can shall be cause for rejection of the lot.

4.5.8 Shipping container examination. Shipping containers shall be examined for defects in assembly, closure, and reinforcement (when applicable) in accordance with PPP-B-636. In addition, the following defects shall be classified as follows:

Major: National stock number, item description, contract number, or date of pack markings missing, incorrect, or illegible.
Reinforced with other than nonmetallic strapping or tape.
Dimensions of pads not as specified.
Interior packing with fiberboard liner or pads not as specified.

Minor: Other required markings missing, incorrect or illegible.
Arrangement or number of cans not as specified.

4.5.9 Unit load inspection. Inspection of unit loads shall be in accordance with the quality assurance provisions of MIL-L-35078.

5. PACKAGING

5.1 Preservation. The product shall be preserved in accordance with level A.

5.1.1 Level A. One hundred and six ounces of food product shall be filled into a tray pack can conforming to MIL-C-44340 and sealed and thermoprocessed as specified in 3.4 and 3.5. The practice of reconditioning tray pack cans by buffing with an abrasive substance shall not be permitted (see 4.5.4). The interior coating of filled and sealed thermoprocessed cans shall be free of rust spots, scratches, or fractures that penetrate through the coating when examined in accordance with 4.5.7.

5.2 Packing. The product shall be packed in accordance with level A, B, or C as specified (see 6.1).

5.2.1 Level A packing. Four cans of product, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard box, constructed and closed in accordance with style RSC-L or HSC-L with an HSC full depth cover, grade V2s of PPP-B-636. The cans shall be packed flat, four in depth within the box, with the first two cans placed with the lids together and the next two cans with the lids together. The inside of each box shall be provided with a box liner and five fiberboard pads fabricated of grade V3c fiberboard. The height of the box liner shall be equal to the full inside depth of the box (+0 inch, -1/8 inch). Flute direction of the box liner shall be vertical. The pads shall be placed between the cans and on the top and bottom of the stacked cans. The pad dimensions shall be not less than 1/8 inch of the full length and width dimensions of the box. Each box shall be reinforced with nonmetallic strapping or pressure-sensitive adhesive filament-reinforced tape in accordance with the appendix of PPP-B-636. Shipping containers shall be arranged in unit loads in accordance with MIL-L-35078 for the type and class of load specified (see 6.1) except that the unit load shall consist of 48 boxes with 12 boxes per course and

four courses per load with all courses having the same pattern so as to create columnar stacking. When unit loads are strapped, strapping shall be limited to nonmetallic strapping, except for type II, class F loads.

5.2.2 Level B packing. Four cans of product, preserved as specified in 5.1, shall be packed as specified in 5.2.1, except the box shall be constructed of grade V3c, V3s, or V4s fiberboard.

5.2.3 Level C packing. Four cans of product, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard box, constructed and closed in accordance with style RSC-L, class domestic, grade 275 of PPP-B-636. The cans shall be packed flat, four in depth within the box, with the first two cans placed with the lids together and the next two cans with the lids together. The inside of each box shall be provided with a box liner and five fiberboard pads. The height of the box liner shall be equal to the full inside depth of the box (+0 inch, -1/8 inch). Flute direction of the box liner shall be vertical. The pads shall be placed between the cans and on the top and bottom of the stacked cans. The pad dimensions shall be not less than 1/8 inch of the full length and width dimensions of the box and shall be fabricated of the same material as the box.

5.3 Unit loading. When specified (see 6.1), the product, packed as specified in 5.2.2 or 5.2.3, shall be arranged in unit loads in accordance with MIL-L-35078 for the type and class of load specified except that the unit load shall consist of 48 boxes with 12 boxes per course and four courses per load with all courses having the same pattern so as to create columnar stacking. When unit loads are strapped, strapping shall be limited to nonmetallic strapping, except for type II, class F loads.

5.4 Labeling. Each tray pack can shall be labeled in accordance with MIL-L-1497 and with the following:

- Official establishment number (for example, EST 38) or a three letter code identifying the establishment.
- Lot number 1/
- Production shift number 1/
- Retort identification number 1/
- Retort cook number 1/

1/ The lot number shall be expressed as a four digit Julian code. The first digit shall indicate the year of production and the next three digits shall indicate the day of the year (Example, March 19, 1990, would be coded as 0078). The Julian code shall represent the day the product was packaged and processed. Sub-lotting (when used) shall be represented by an alpha character immediately following the four digit Julian code. Following the four digit Julian code and the alpha character (when used), the other required code information shall be printed in the sequence as listed above.

In addition, the name of the product shall be marked, stamping is permitted, on one 1001 by 200 side of the can. The labeling shall be legible when examined as specified in 4.5.4 after preparation of product in accordance with heating instructions. Paper labels are not permitted. Cans shall show the following statements:

TO HEAT IN WATER: Submerge unopened can in boiling water. Simmer gently 40 - 45 minutes. Avoid overheating (can shows evidence of bulging).

CAUTION: Use care when opening as pressure may have been generated within the can.

TO HEAT IN OVEN: Either punch several holes in lid of can or open can in usual manner leaving the loose lid in place. Place in a 350°F oven 35 - 40 minutes.

WARNING: Do not place unopened can in oven. This may cause the can to burst.

YIELD: Serves 18 portions of 3 slices each.

As an alternate labeling method, a preprinted, self-adhering 0.002 inch thick clear polyester label printed with indelible black ink may be used. Self-adhering labels shall be applied after retorting. Pressure-sensitive adhesive shall require no preparation prior to application. Labels shall tack quickly and adhere without curling or breaking. The adhesive shall have a minimum adhesion of 60 ounces per inch width when examined as specified in 4.5.4.2. When self-adhering labels are used, the tray pack cans shall be labeled with the Julian code and a product code prior to retorting.

5.5 Marking.

5.5.1 Shipping containers. In addition to any special marking required by the contract or purchase order, shipping containers shall be marked in accordance with MIL-STD-129.

5.5.2 Unit loads. Unit loads shall be marked in accordance with MIL-L-35078. In addition, the following precautionary marking in capital letters larger than other markings shall be included:

CAUTION: DO NOT STACK PALLETS IN TRANSIT OR MORE THAN TWO HIGH IN STORAGE, UNLESS PALLET RACKS ARE USED.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.
b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
c. When a first article is required (see 3.1, 4.4, and 6.2).
d. Provisions for approved preproduction samples (see 3.6.1 and 6.2).
e. Level of packing required (see 5.2).
f. Type and class of unit load when unit loading is required (see 5.2.1 and 5.3).

6.2 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.3 Appropriate level of pack. Based on the conditions known or expected to be encountered during shipment, handling, and storage of the specific item being procured, the procuring activity should select the appropriate level of pack in accordance with the criteria established in AR 700-15/NAVSUPINST 4030.28/AFR 71-6/MCO 4030.33A/DLAR 4145.7.

6.4 Alternate viscosity testing method. The contracting officer may authorize an alternate contractor recommended method of viscosity testing if the alternate method is approved by U.S. Army Natick Research, Development, and Engineering Center.

6.5 Subject term (key word) listing.

Canned food
Combat field feeding
Food Processing
Meat
Operational rations
Shelf stable

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - GL
Navy - SA
Air Force - 50

Review activities:

Army - MD, QM
Navy - MC
DP - SS

Preparing activity:

Army - GL

(Project 8940-0691)

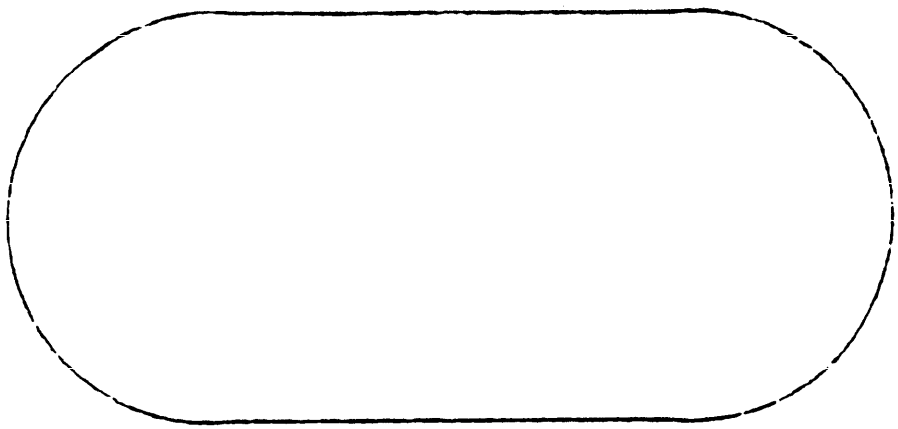

Figure 1

PORK SLICE SHAPE

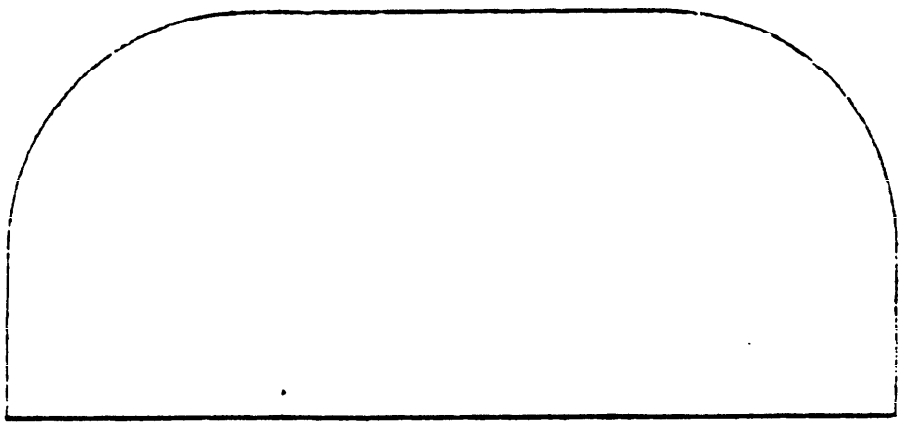

Figure 2

ALTERNATE PORK SLICE SHAPE

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYMMDD)
	MIL-P-44233B	900409

3. DOCUMENT TITLE

PORK SLICES WITH GRAVY, THERMOSTABILIZED, TRAY PACK

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE (Include Area Code)	
U.S. Army Natick Research, Development, and Engineering Center ATTN: STRNC-ES	(1) Commercial (508)651-5221	(2) AUTOVON 8-256-5221
c. ADDRESS (Include Zip Code) Kansas Street Natick, MA 01760-5014	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	