

INCH-POUND

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MILITARY SPECIFICATION

BUNS, HAMBURGER, SHELF STABLE

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

1. SCOPE

1.1 Scope. This specification covers shelf stable hamburger buns 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 used in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5018 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8920

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MIL-B-44359A

SPECIFICATIONS

FEDERAL

- A-A-1898 - Cushioning Material, Cellulosic, Packaging
- L-P-378 - Plastic Sheet and Strip, Thin Gauge, Polyolefin
- QQ-A-1876 - Aluminum Foil
- PPP-B-636 - Boxes, Shipping, Fiberboard

MILITARY

- MIL-L-35078 - Loads, Unit: Preparation of Semiperishable Subsistence Items; Clothing, Personal Equipment and Equipage; General Specification for

STANDARDS

FEDERAL

- FED-STD-595 - Colors Used in Government Procurement

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
- MIL-STD-129 - Marking for Shipment and Storage

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 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, SW, Washington, DC 20460.)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS), U.S. FOOD AND DRUG ADMINISTRATION (FDA)

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 SOCIETY FOR TESTING AND MATERIALS (ASTM)

F 88 - Seal Strength of Flexible Barrier Material

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

AOAC INTERNATIONAL

Official Methods of Analysis of the AOAC

(Application for copies should be addressed to the AOAC International, 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, NW, 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-flavors, off-odors, and off-colors.

3.2.1 Flour. The flour shall be matured, bleached, enriched, hard wheat flour which will produce a product in compliance with 3.6. Alternatively, unenriched flour may be used providing the equivalent enrichments required in the Standard of Identity for Enriched Flour (21 CFR, Part 137.165) are added at the time of production of the finished product. The flour used for preparation of the dough shall have a protein content of not less than 12.5 percent and a maltose content of not greater than 0.2 percent. Amyolytic enzyme activity, as determined by the "falling number" method, shall not exceed 240 seconds. Flour not meeting the protein requirements, but otherwise in compliance, may be supplemented with vital wheat gluten to the required protein level.

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

3.2.3 Shortening. Shortening shall be refined hydrogenated cottonseed, peanut oil, or a combination of both and shall have a stability of not less than 100 hours as determined by the active oxygen method (AOM). Shortening used for greasing dough trough or dough pieces shall conform to the above requirements.

3.2.4 Glycerol. The glycerol shall comply with the Food Chemicals Codex.

3.2.5 Yeast. Yeast shall be good quality commercial baker's yeast.

3.2.6 Salt. Salt shall be noniodized, white, refined sodium chloride, with or without anticaking agents.

3.2.7 Emulsifier. The emulsifier shall be sucrose fatty acid esters complying with the Code of Federal Regulations (21 CFR, Part 172.859) and shall be limited to sucrose stearate having an HLB number of approximately 16 (see 6.4.1).

3.2.8 Gum arabic. Gum arabic shall comply with the Food Chemicals Codex and shall have been produced from a solution of gum arabic which has been spray dried.

3.2.9 Xanthan gum. Xanthan gum shall comply with the Food Chemicals Codex.

3.2.10 Potassium sorbate, encapsulated. Encapsulated potassium sorbate shall comply with the Food Chemicals Codex. Encapsulated potassium sorbate shall consist of 50 ± 2 percent potassium sorbate and 50 ± 2 percent partially hydrogenated vegetable oil. The hydrogenated vegetable oil shall have a melting point of 152°F to 158°F (see 6.4.2).

3.2.11 Sorbic acid, encapsulated. Encapsulated sorbic acid shall comply with the Food Chemicals Codex. Encapsulated sorbic acid shall consist of 50 ± 2 percent sorbic acid and 50 ± 2 percent hydrogenated vegetable oil. The hydrogenated vegetable oil shall have a melting point of 152°F to 158°F (see 6.4.3).

3.2.12 Cream flavor, artificial. The cream flavor shall be a white to off-white powder or liquid having a characteristic odor and flavor (see 6.4.4).

3.2.13 Vital wheat gluten. Vital wheat gluten shall be a cream to tan colored powder produced from wheat flour by drying freshly washed gluten under temperatures sufficiently low to preserve the vital characteristics of gluten. The rehydrated gluten shall absorb two times its weight in water and, when rehydrated, it shall be capable of forming cohesive, elastic dough. Vital wheat gluten shall have a protein content ($N \times 5.7$) of not less than 71 percent, total carbohydrate content of not more than 15 percent, a moisture content of not more than 6.5 percent, fat (by hydrolysis) of not more than 6.5 percent, and ash of not more than 1 percent.

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

3.3.1 Preparation. The bread may be manufactured by the straight dough method. Any other method yielding an equivalent product will be permissible. The dough shall be formulated from the following ingredients in the proportions specified:

<u>Ingredient</u>	<u>Percent by weight</u>
Flour <u>1/</u>	49.95
Water <u>1/</u>	29.74
Shortening	8.55
Glycerol	6.34
Yeast <u>1/ 2/</u>	2.25
Salt	1.29
Emulsifier	1.00
Gum arabic	0.50
Xanthan gum	0.25
Sorbic acid, encapsulated <u>3/</u>	0.10
Cream flavor, artificial	0.03

1/ The percent by weight of flour, water and yeast may be adjusted, if necessary, to compensate for in plant processing humidity and temperature conditions.

2/ When compressed or crumbled yeast is used, the percent by weight shall be adjusted to assure compliance with finished product requirements.

- 3/ Encapsulated potassium sorbate may be used in lieu of encapsulated sorbic acid. The percent by weight of encapsulated potassium sorbate shall be 0.133, the difference in percent by weight shall be adjusted by subtracting the appropriate weight from the flour.

3.3.2 Preparation of dough. Commonly used dough improvers, yeast foods and/or dough relaxers are permitted when necessary. The sucrose ester emulsifier shall be dry blended with the flour. All ingredients shall then be combined and sufficiently mixed to develop the dough.

3.3.3 Proofing, dividing, and depositing. The prepared dough shall be proofed, divided, and deposited as follows:

a. The prepared dough shall be sufficiently proofed to ensure proper dividing and shaping.

b. The proofed dough shall be divided into uniform bun shaped dough pieces of a size and weight to ensure compliance with the finished product requirements.

c. The bun shaped dough shall be deposited six each (2 by 3) per ovenable paperboard tray (see 3.5.1). 1/

d. The trayed dough shall be proofed sufficiently to ensure compliance with finished product requirements.

1/ The bun shaped dough may be deposited on baking sheets and then placed on paperboard trays (see 3.4.1 and 3.4.2).

3.3.4 Baking. The proofed buns shall be fully baked to a uniform, typical baked bun color.

3.4 Packaging methods. An interim or continuous packaging method may be used.

3.4.1 Interim packaging method. Buns baked in ovenable trays or buns baked on sheets shall be placed into heat sealable polyethylene or other FDA approved food packaging material for an interim period not to exceed 48 hours prior to repackaging in accordance with 5.1.1.1. Buns baked on sheets may be loaded into paperboard trays in accordance with 3.5.2 prior to interim packaging. The temperature of the buns at the time of interim package filling shall be not less than 80°F nor greater than 120°F. The interim packaged buns shall be stored at a temperature not less than 50°F nor greater than 90°F. Buns that were prepared, baked, and packaged using a completely automated system shall be handled in such a manner that will ensure product integrity during shipment and holding. Only FDA approved food packaging materials shall be used.

3.4.2 Continuous packaging method. One ovenable tray, in accordance with 3.5.1, containing six buns and the FDA approved oxygen scavengers shall be inserted into a trilaminate barrier pouch in accordance with 5.1.1. Alternatively, one paperboard tray, in accordance with 3.5.2, containing six buns, baked on sheets, and the FDA oxygen scavengers, shall be inserted into a trilaminate barrier pouch in accordance with 5.1.1. The temperature of the buns at the time of pouch filling shall be not less than 80°F nor greater than 120°F.

NOTE: A sufficient number of oxygen scavengers shall be used to ensure compliance with the finished product requirements. Follow the oxygen scavenger manufacturer's instructions.

3.5 Tray requirements.

3.5.1 Ovenable paperboard trays. The ovenable paperboard tray shall be food grade and shall be fabricated from solid bleached sulfate paperboard with a thickness of 0.018 inch, and having a basic weight of 198.2 pounds per 3000 square feet. The paperboard shall have 0.00125 inch thick, food grade, polyester extruded onto one side. The size of the tray shall be 10 inches in length, 6 inches in width, and 1-5/8 inches in depth, and shall be fabricated with the polyester surface on the food contactant side. The paperboard must be able to withstand an oven temperature of 400°F for a minimum of one hour.

3.5.2 Paperboard trays. The paperboard trays shall be of the same material and dimensions as the tray specified in 3.5.1, except the requirement for ovenability may be eliminated.

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, insects, insect parts, hair, wood, glass, or metal.
- b. There shall be no foreign odor or flavor such as, but not limited to, rancid, scorched, burnt, stale, sour, musty, or moldy.
- c. There shall be no color foreign to the product.
- d. No individual pouch shall contain less than 13.0 ounces of product.
- e. The oxygen content in any individual pouch shall not exceed 0.3 percent when tested not less than 36 hours after sealing.
- f. Each pouch shall contain six intact buns, one paperboard tray, and an appropriate number of packages of oxygen scavenger.

MIL-B-44359A

g. The water activity for an individual pouch shall be not more than 0.90 when measured at 25°C.

h. The bun crumb shall possess a typical uniform bread texture and shall not be excessively dry, crumbly, or excessively moist and gummy.

i. The buns shall have a typical bun shape and appearance.

j. The bun crust shall have a uniform brown, baked bread color without being excessively light or dark.

k. The bun crumb shall be white to off-white.

l. The texture of the buns shall not be excessively dry, crumbly, or excessively moist and gummy.

m. The buns shall show no evidence of dense crumb compression streaks.

n. There shall be only minor evidence of vacuum compression on the buns when the packaged buns are sealed and cooled.

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 product shall be prepared, processed, and packaged in establishments meeting the requirements of Title 21, Code of Federal Regulations, Part 110, "Current Good Manufacturing Practice in Manufacturing, Packing, or Holding Human Food," and the plant sanitation requirements of the appropriate Government inspection agency.

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 examination. In accordance with 4.1, components and materials shall be examined 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 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 AOAC and in the Approved Methods of the AACC, 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.

4.5.1.2 Laminated pouch material certification. Material listed below may be accepted on the basis of a contractor's certificate of conformance to the indicated requirements.

<u>Material requirement</u>	<u>Requirement paragraph</u>	<u>Test procedure</u>
Thickness of films	5.1.1.1	As specified L-P-378 except that machinist's micrometer may be used provided that its graduations and accuracy conform to the requirement of L-P-378

MIL-B-44359A

<u>Material requirement</u>	<u>Requirement paragraph</u>	<u>Test procedure</u>
Aluminum foil thickness	5.1.1.1	As specified in QQ-A-1876
Laminated material identification and construction	5.1.1.1	Laboratory evaluation
Color of laminated material	5.1.1.1	Visual evaluation

4.5.1.2.1 Ovenable paperboard tray material certification. Components and materials used in the construction of the ovenable paperboard tray may be accepted on the basis of a contractor's certificate of conformance to the indicated requirements specified in paragraph 3.5.1.

4.5.1.3 Unfilled preformed pouch certification. A certificate of compliance may be accepted as evidence that unfilled pouches conform to the requirements of 5.1.1.1. When deemed necessary by the USDA, testing of the unfilled preformed pouches shall be as specified in 4.5.1.3.1.

4.5.1.3.1 Unfilled preformed pouch seal strength testing. The unfilled pouches shall be tested for seal strength in accordance with ASTM F 88, except that the testing speed shall be 10 inches or 12 inches per minute. Machines that apply the tensile load to the test specimen by movement of the upper or lower clamp may be used. Test specimens shall be cut 1/2 inch or 1 inch in width and to a length suitable for proper mounting. The lot size shall be expressed in pouches. The sample unit shall be one unfilled pouch. The sample size shall be the number of pouches indicated by inspection level S-1. Three adjacent specimens shall be cut from each of the three sealed sides of each pouch in the sample. The results shall be reported to the nearest 0.1 pound. The average seal strength of each seal shall be calculated by averaging the strengths of the three test specimens cut from that seal. Any test specimen failing to meet the individual test specimen seal strength requirement or any seal failing to meet the average seal strength requirement specified in 5.1.1.2 shall be classified as a major defect and shall be cause for rejection of the lot.

4.5.2 In-process examination. In-process examination shall be performed to determine conformance to the preparation, processing, 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 Filled and sealed pouch examination. The filled and sealed pouches shall be examined for the defects listed in table I. The lot size shall be expressed in pouches. The sample unit shall be one filled and sealed pouch. The inspection level shall be I and the AQL, expressed in terms of defects per hundred units, shall be 0.65 for major defects and 2.5 for minor defects.

TABLE I. Filled and sealed pouch defects 1/

Category	Defect
<u>Major</u>	<u>Minor</u>
101	Tear, hole, or open seal
102	Pouch has foreign odor
103	Not clean 2/
104	Evidence of delamination 3/
105	Seal width less than 1/16 inch 4/
201	Closure or top seal extends into or below tear notch
202	Required labeling missing, incorrect, illegible, or that smudges
203	Tear notch missing, not located as specified, or does not facilitate easy opening
204	Seal width less than 1/8 inch, but greater than 1/16 inch
205	Evidence of delamination 3/

1/ Any evidence of insect or rodent infestation shall be cause for rejection of the lot.

2/ Packaging shall be free from foreign matter which is unwholesome, has the potential to cause pouch damage (for example, glass, metal fillings, etc.) or generally detracts from the clean appearance of the package. The following examples shall not be scored as defects for unclean:

- a. Foreign matter which presents no health hazard or potential pouch damage and which can be readily removed by gently shaking the package or by gently brushing the package with a clean, dry cloth.
- b. Dried product which affects less than 1/8 of the total surface area of one pouch face (localized and aggregate).
- c. Water spots.
- d. Very thin film of grease, oil, or product residue which is discernible to touch but is not readily discernible by visual examination.

3/ Delamination defect classification:

Major: Delamination of the outer ply in the pouch seal area that can be propagated to expose aluminum foil at the food product edge of the pouch after manual flexing of the delaminated area. To flex, the delaminated area shall be held between the thumb and forefinger of each hand with both thumbs and forefingers touching each other. The delaminated area shall then be rapidly flexed 10 times by rotating both hands in alternating clockwise, counter-clockwise directions. Care shall be exercised when flexing delaminated areas near the tear notches to avoid tearing the pouch material. After flexing, the separated outer ply shall be grasped between the thumb and forefinger and gently lifted toward the food product edge of the seal, or if the separated area is too small to be held, between the thumb and forefinger, a number two stylus shall be inserted into the delaminated area and a gentle lifting force applied against the outer ply. If separation of the outer ply can be made to extend to the product edge of the seal with no discernible resistance to the gentle lifting, the delamination shall be classified as a major defect. Additionally, spot delamination of the outer ply in the body of the pouch that is able to be propagated beyond its initial borders is also a major defect. To determine if the delaminated area is a defect, use the following procedure. Mark the outside edges of the delaminated area using a bold, permanent marking pen. Open the pouch and remove the contents. Cut the pouch transversely not closer than 1/4 inch (+ 1/16 inch) from the delaminated area. The pouch shall be flexed in the area in question using the procedure described above. Any propagation of the delaminated area, as evidenced by the delaminated area exceeding the limits of the outlined borders, shall be classified as a major defect.

Minor: Minor delamination of the outer ply in the pouch seal area is acceptable and shall not be classified as a minor defect unless it extends to within 1/16 inch of the food product edge of the seal. All other minor outer ply delamination in the pouch seal area or isolated spots of delamination in the body of the pouch that do not propagate when flexed as described above shall be classified as a minor defect.

4/ The effective closure seal is defined as any uncontaminated, fusion bonded, continuous path, minimum 1/16 inch wide, from side seal to side seal that produces a hermetically sealed pouch.

4.5.4 Net weight examination. Randomly select 30 filled and sealed pouches from the inspection lot and weigh separately. Subtract the average tare weight (determined by randomly selecting and weighing 30 empty trays, plus 30 empty pouches, plus the appropriate number of oxygen scavengers for one pouch [multiplied by 30] used in packaging the product, and dividing the total weight by 30) from the weight of each filled pouch in the sample. The results shall be reported to the nearest 0.1 ounce. If the weight of any individual pouch is less than 13.0 ounces, the lot shall be rejected.

MIL-B-44359A

4.5.5 Product examination. The filled and sealed sample pouches shall be brought to room temperature (65°F to 75°F) and inspected for the defects listed in table II. The lot size shall be expressed in pouches. The sample unit shall be the contents of one pouch. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 1.5 for major defects and 6.5 for minor defects.

TABLE II. Product defects 1/ 2/

Category	Defect
<u>Major</u>	<u>Minor</u>
101	Oxygen content in pouch exceeding 0.3 percent 3/
102	Pouch does not contain six intact buns, one paperboard tray, and an appropriate number of packages of oxygen scavenger (see 5.1.1)
103	Two or more buns in pouch that do not have a typical bun shape and appearance
104	Two or more buns in a pouch that do not have crust color as specified (see 3.6)
105	Crumb color not white to off-white 4/
106	Texture of buns not typical of bread and is excessively dry, crumbly, or excessively moist and gummy
107	Buns show evidence of dense crumb compression streaks 4/
108	Tear, hole, or open seal in oxygen scavenger packet
201	Pouch contains a bun that does not have a typical bun shape and appearance
202	Pouch contains a bun that does not have a crust color as specified (see 3.6)
203	Buns show more than a minor amount of vacuum compression

- 1/ The presence of any foreign material (for example, glass, dirt, insect parts, hair, wood, or 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 or overall appearance shall be cause for rejection of the lot (see 3.6.1).
- 3/ Filled and sealed pouches shall be tested for oxygen content not less than 36 hours after sealing and in accordance with any USDA approved test method. Results shall be reported to the nearest 0.1 percent.

4/ To inspect for this defect, cut buns in half along the length from top to bottom.

4.5.6 Pouch closure seal testing. The filled and sealed pouches shall be tested in accordance with ASTM F 88, except that the specimen holding clamps shall be spaced 2 inches apart prior to testing and the testing speed shall be 10 inches or 12 inches per minute. Machines that apply tensile load to the specimen by movement of the upper or lower clamp may be used. The test specimens shall be cut to a length suitable for proper mounting. Three adjacent specimens, 1/2 inch or 1 inch wide shall be cut from the closure seal of each pouch in the sample. The average seal strength of the closure seal shall be calculated by averaging the test results of the three test specimens cut from that seal. The results shall be reported to the nearest 0.1 pound per inch of width. The lot size shall be expressed in pouches. The sample unit shall be one filled and sealed pouch. The sample size shall be the number of pouches indicated by inspection level S-1. Any test specimen or average seal strength failing to meet the requirements of 5.1.1.3 shall be classified as a major defect and shall be cause for rejection of the lot.

4.5.7 Water activity testing. Eight filled and sealed pouches shall be selected at random from the lot regardless of lot size. Water activity shall be determined not less than four days but not more than 14 days after baking to allow moisture equilibration in the product. The pouched product shall be individually tested for water activity in accordance with the Official Methods of Analysis of the AOAC, method 978.18, using an electric hygrometer system self-temperature controlled (at 25°C) or an equivalent instrument. When an equivalent instrument is used, any result failing to conform to the requirement in 3.6 must be confirmed using an electric hygrometer system. The sample for water activity testing shall conform in size to the hygrometer manufacturer's recommendations. The sample shall be a slice of the core taken from one of the two center buns and shall consist of approximately equal portions of the top crust and immediately adjacent crumb. The results of each water activity determination shall be reported to the nearest 0.01. Any test result failing to conform to the requirements of 3.6 shall be classified as a major defect and shall be cause for rejection of the lot.

4.5.8 Shipping container examination. Shipping containers shall be examined in accordance with the appendix of PPP-B-636. In addition, the following defects shall be included in the table of examination:

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.

MIL-B-44359A

Minor: Other required markings,, missing, incorrect, or illegible.
Arrangement or number of pouches 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. Six buns, on a paperboard tray, and a sufficient number of oxygen scavenger packages to ensure compliance with end item oxygen content requirement (see 4.5.1.2.1, 3.4.2, and 3.6e) shall be unit packed in a preformed pouch as specified in 5.1.1.1.

5.1.1.1 Preformed pouch. The preformed pouch shall be fabricated from a 3-ply laminate consisting of, from inside to outside, 0.003 inch to 0.004 inch thick polyolefin, 0.00035 inch to 0.0007 inch thick aluminum foil, and 0.005 inch thick polyester. The three plies shall be laminated with the polyester on the exterior of the pouch. The complete exterior of the pouch shall be uniformly colored in the range of 34079 through 34087, or 24052 through 24087, or 30045 through 30118 (excluding 30109), or 10045 of FED-STD-595. The material shall be suitably formulated for food packaging and shall not impart an odor or flavor to the product being packed. The material shall show no evidence of delamination, degradation, or foreign odor when heat sealed or fabricated into pouches.

5.1.1.2 Pouch construction. The preformed pouch shall be a flat style pouch having inside dimensions of 8-3/4 inches wide by 14-1/4 inches long ($\pm 1/8$ inch). The first dimension is measured at the opening of the pouch between the heat sealed sides. The empty pouch shall be made by heat sealing three edges with 3/8 inch ($\pm 1/8$ inch) wide seals. The heat seals shall be made in a manner that will assure hermetic seals. The side and bottom seals shall have an average seal strength of not less than 6 pounds per inch and no individual specimen shall have a seal strength of less than 5 pounds per inch when tested as specified in 4.5.1.3. A V-shaped or C-shaped (half round) tear notch at least 1/32 inch deep, located 1 to 1-1/4 inches from the top edge of the pouch, shall be made in one or both side seals. The distance between the inside edge of the tear notch and the inside edge of the seal shall be at least 3/16 inch. One side of the open end of the pouch may be provided with an extended or foldover lip, extended not more than 1/8 inch ($\pm 1/16$ inch) to facilitate opening and filling. Tear notch location shall be measured from the top of the pouch excluding the extended or foldover lip.

5.1.1.3 Pouch filling and sealing. The baked buns and the appropriate number of packages of oxygen scavenger shall be placed into the pouch in a manner so as to avoid contamination of the closure seal area. The buns shall be filled into the pouch using the methods specified in 3.4. The filled pouch shall be closed with a continuous heat seal not less than 1/4 inch wide. If thermal impulse or combination (heated curved bar with thermal impulse) sealing is used, any seal width from 1/8 to 1/16 inch will be acceptable. The closure seal shall not extend below the tear notch on either side of the pouch. The average seal strength shall be not less than 6 pounds per linear inch, and no individual test specimen shall be less than 5 pounds when tested as specified in 4.5.6.

5.1.1.4 Oxygen scavenger packet. The oxygen scavenger packet shall be FDA approved as suitable for use with food. The oxygen scavenger packet shall be resistant to the migration of oil, moisture, and scavenger components (see 6.4.5).

5.2 Packing. Packing shall be level B.

5.2.1 Level B packing. Eight pouches of product preserved as specified in 5.1 shall be packed in a fiberboard box constructed and closed in accordance with style RSC-L, grade V3c of PPP-B-636. The inside box dimensions shall be 13-1/4 inches in length by 10-3/4 inches in width by 9-1/4 inches in depth. The pouches shall be packed flat, two pouches per layer and four layers in depth within the box. When packing, the pouches shall be separated by a 1/2 inch thick cellulosic cushioning material pad, approximately 19 inches by 12 inches, conforming with type II, class B or C of A-A-1898. An additional pad shall be placed on the bottom of the pack and on the top of the top pouch. The ends of the pads shall be folded up over the end of the pouch to form a snug-fitting pack. Alternatively, the pouches shall be packed in two layers, with a layer of six pouches on edge across the box width and a layer of two pouches packed flat on top. The buns shall be cushioned with the cellulosic cushioning material pads, as specified above, with one pad on the bottom of the box, one pad on the top of the box and one pad between the two layers. Each box shall be reinforced with nonmetallic strapping or pressure-sensitive adhesive filament reinforced tape in accordance with the appendix of PPP-B-636.

5.2.2 Level C packing. Eight pouches 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, type CF, variety SW, class domestic, grade 275, of PPP-B-636. The inside box dimensions shall be 13-1/4 inches in length by 10-3/4 inches in width by 9-1/4 inches in depth. The pouches shall be packed flat, 2 pouches per layer and four layers in depth within the box. When packing, the pouches shall be separated by a 1/2 inch thick cellulosic cushioning material pad, approximately 19 inches by 12 inches, conforming to type II, class B or C of A-A-1898. An additional pad shall be placed on the bottom of the pack and on the top of the top pouch. The ends of the pads shall be folded up over the end of the pouch to form a snug-fitting pack.

Alternatively, the pouches shall be packed in two layers, with a layer of six pouches on edge across the box width and a layer of two pouches packed flat on top. The buns shall be cushioned with the cellulosic cushioning material pads, as specified above, with one pad on the bottom of the box, one pad on the top of the box and one pad between the two layers.

5.3 Unit loading. When specified (see 6.1), the product, packed as specified in 5.2.1 or 5.2.2., 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, the strapping shall be limited to nonmetallic strapping.

5.4 Labeling. Each pouch shall be clearly printed with permanent ink in large letters of black, purple, or similar dark contrasting color with the following information:

BUNS, HAMBURGER, SHELF STABLE

INGREDIENTS:

TO SERVE

For sandwiches, cut each bun in half lengthwise.

NOTE:

Buns may be served warm. To heat in water: place unopened pouch in simmering water for five minutes. To heat in oven: remove pouch and place buns in an oven at 250°F for five minutes. DO NOT OVERHEAT.

YIELD: Six rolls of approximately 2 ounces each.

NET WEIGHT:

NAME AND ADDRESS OF PRODUCER:

5.5 Marking.

5.5.1 Shipping containers. 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.

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. Type and class of unit load when unit loading is required (see 5.3).

6.2 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of Federal Acquisition Regulation (FAR) 52.209-4. 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 Ingredient information.

6.4.1 Emulsifier. It has been found that sucrose fatty acid ester S-1670, manufactured by Mitsubishi International Corporation, 510 Madison Avenue, New York, NY meets the requirements of 3.2.7 and performs satisfactorily in this product.

6.4.2 Potassium sorbate, encapsulated. It has been found that an encapsulated potassium sorbate manufactured by Balchem Corporation, Slate Hill, New York, meets the requirements of 3.2.10 and performs satisfactorily in this product.

6.4.3 Sorbic acid, encapsulated. It has been found that sorbic acid manufactured by Van Den Bergh Foods, Inc., Lisle, Illinois, meets the requirements of 3.2.11 and performs satisfactorily in this product.

6.4.4 Cream flavor, artificial. It has been found that artificial cream flavor R-7752, manufactured by Haaramann and Reimer Corporation, Springfield, NJ, or product no. 331884, manufactured by Felton International, Brooklyn, NY, meet the requirements of 3.2.12 and perform satisfactorily in this product.

6.4.5 Oxygen scavenger. Oxygen scavenger suitable for the purpose may be obtained from the Multiform Desiccants, Inc., Buffalo, NY. Other approved oxygen scavengers may be used.

6.5 Subject term (key word) listing.

Bread
Combat field feeding
Operational ration
Rolls
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 the extensiveness of the changes.

Custodians:

Army - GL
Navy - SA
Air Force - 50

Preparing activity:

Army - GL
(Project 8920-0555)

Review activities:

Army - MD, QM
Navy - MC
DLA - SS

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

MIL-B-44359A

2. DOCUMENT DATE (YYMMDD)

1993 September 10

3. DOCUMENT TITLE

BUNS, HAMBURGER, SHELF STABLE

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)

7. DATE SUBMITTED (YYMMDD)

(1) Commercial

(2) AUTOVON
(if applicable)

8. PREPARING ACTIVITY

a. NAME

b. TELEPHONE (include Area Code)

(1) Commercial

(2) AUTOVON/DSN

508-651-4501

256-4501

U.S. Army Natick RD&E Center

c. ADDRESS (include Zip Code)

Commander, U.S. Army Natick RD&E Center

ATTN: SA1NC-WT

Natick, MA 01760-5018

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

Malason, Michael

From: Willena Rosemond[SMTP:wrosemon@natick-emh2.army.mil]
Reply To: wrosemon@natick-emh2.army.mil
Sent: Thursday, July 02, 1998 1:51 PM
To: Malason, Michael; paa3165@dscp.dla.mil; alowry@dpsec.dla.mil; amiraulr@lee-dns1.army.mil; cgrabowski@dpsec.dla.mil; darthur@dpsec.dla.mil; dkavanagh@dpsec.dla.mil; dmoore@dpsec.dla.mil; dsheerman@natick-ccmail.army.mil; egifford@dpsec.dla.mil; hoffmane@agency.afsv.af.mil; jhunt@dpsec.dla.mil; jkennedy@dpsec.dla.mil; jlecollier@dpsec.dla.mil; jpracchi@dpsec.dla.mil; Ilcharya@dpsec.dla.mil; ratallant@dpsec.dla.mil; tkasa@dpsec.dla.mil; wagnerg@hqj.usmc.mil; Allen Richards; Claire Lee; Clare Mungovan; Fred Mitchell; Judith Aylward; Peter Sherman; Raymond Valvano; Robert Trottier
Subject: Solicitation: SPO300-98-R-8910; Hamburger Buns, Shelf Stable

ES98-113

SSCNC-WRE (Friel/4261)

1 July 1998

TO: DSCP-HRA (O. J. Hunt/5353)

Subject: Engineering Support Request, Technical Proposal; Solicitation: SPO300-98-R-8910; Hamburger Buns, Shelf Stable, MIL-B-44359A; Sterling Foods, Inc.; DSCP Case # 1-R-038-98

1. Date received: 19 June 1998
Date due: 26 June 1998
Date replied: 1 July 998

2. Natick does not accept the submitted alternate PDM based on review and evaluation.

3. Natick concurs in deleting the ovenable paperboard/paperboard tray in the subject document.

4. Natick recommends the following changes to MIL-B-44359A for use in all current, pending and future procurements until the document is formally amended or revised:

a. para 3.3.3, make the following changes:

- (1) subpara c., delete "six each (2 x 3) per ovenable paperboard tray (see 3.5.1). 1/"; insert "in a six bun unit (2 x 3) on baking sheets."
- (2) footnote 1, delete entirely

b. para 3.4.1, make the following changes:

- (1) line 1, delete " in ovenable trays or buns baked"
- (2) lines 4-6, sentence 2, delete entirely

c. para 3.4.2, delete entirely

d. para 3.5.1, delete entirely

e. para 3.5.2, delete entirely

f. para 3.6, subpara f., line 1, delete ", one paperboard tray,"

g. para 4.5.1.2.1, delete entirely

h. para 4.5.4, line 3, delete "30 empty trays, plus"

Page 2
ES98-113
1 July 1998

i. para 4.5.5, Table II, Major defect 102, line 1, delete ", one paperboard tray,"

j. para 5.1.1, make the following changes:

(1) line 1, delete ", one paperboard tray,"

(2) line 3 delete " 4.5.1.2.1, 3.4.2"

Gary W. Shults

Chief, Ration Systems

Division

Sustainability Directorate

ES REQUIRED

CF:

Cmdt, USMC

MFriel/4261

Cdr, NFSO

USDA, Mr. John Lund C, ESB,RSD, SusD

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Page 3
ES98-113
1 July 1998

AMSSB-RCF-F(N) (Friel/4261)

18 May 2001

TO: DSCP-HRUT(C.Henry/7802)

SUBJECT: (ES01-060) Request for Technical Assistance; Hamburger Buns,
Shelf Stable, MIL-B-44359A; DSCP Case HRUT-021-01

1. Date received: 11 May 2001
Date due: 21 May 2001
Date replied: 18 May 2001
2. Natick concurs with the specification change to the subject document.
3. The following change is provided to the subject document for all current, pending and future procurements until the document is formally amended or revised:

a. Para 5.1.1.1, line 4, delete "0.005", insert "0.0005"

DONALD A. HAMLIN
Team Leader
Food Engineering Services Team
Combat Feeding Program

ES REQUIRED

MFriel

CF:
Harrington
Richards
Trottier
Swantak
Costanza
Valvano
A.Konrady
M.Konrady
Hoffman
Beward
Wagner
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A.Boies
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