

INCH-POUND

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MILITARY SPECIFICATION

OATMEAL COOKIE AND GRANOLA BARS, (OPERATIONAL RATION COMPONENT)

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

1. SCOPE

1.1 Scope. This specification covers oatmeal cookie and granola bars for use by the Department of Defense as a component of operational rations.

1.2 Classification. The bars shall be of the following types as specified (see 6.1):

Type I - Oatmeal cookie bar

Style A - 3.0 inches long by 1.0 inches wide and not more than 1.1 inches thick

Style B - 3.25 inches long by 2.00 inches wide and not more than 0.6 inches thick

Type II - Granola bar

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: Commander, U.S. Army Soldier Systems Command, Natick Research, Development, and Engineering Center, ATTN: SSCNC-WRE, Natick, MA 01760-5018 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8920

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

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
- PPP-C-1752 - Cushioning Material, Packaging, Unicellular Polyethylene Foam, Flexible
- PPP-C-1797 - Cushioning Material, Resilient, Low Density Unicellular, Polypropylene Foam

MILITARY

- MIL-C-43231 - Food Packet, Survival, General Purpose, Packaging and Assembly of

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, S.W., Washington, DC 20460.)

U.S. DEPARTMENT OF AGRICULTURE (USDA)

Regulations Governing the Inspection of Eggs and Egg Products (7 CFR Part 59)

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(Copies are available from Chief, Standardization Branch, Poultry Division, Agricultural Marketing Service, U.S. Department of Agriculture, Room 3944, South Building, P.O. Box 96456, Washington, DC 20090-6456.)

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

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

Standards of Identity for Dried Eggs (21 CFR Part 160)

(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 OIL CHEMIST SOCIETY

Official and Tentative Methods of the American Oil Chemists Society

(Application for copies should be addressed to the American Oil Chemists Society, 508 South Sixth Street, Champaign, IL 61820.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 1238 - Flow Rates of Thermoplastics by Extrusion Plastometer  
D 1505 - Density of Plastics by Density Gradient Technique  
D 882 - Tensile Properties of Thin Plastic Sheetings

(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 AOAC International, 2200 Wilson Boulevard, Suite 400, 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 Baking Soda. Baking soda shall be fine powdered sodium bicarbonate, which meets the requirements of the Food Chemicals Codex.

3.2.2 Coconut, flaked, sweetened, dried. Coconut shall be salmonella free of the best quality flaked type, sweetened. It shall possess a characteristic coconut odor and flavor. It shall contain not more than 11.0 percent moisture.

3.2.3 Coconut fat. Coconut fat shall be refined coconut vegetable shortening and shall conform to the following requirements:

Flavor and odor - coconut oil characteristics  
Moisture and impurities - 0.10 percent maximum  
Wiley melting point - 73-112<sup>0</sup>F  
Solid fat index:

50<sup>0</sup>F - ~~78.5-97~~ - 78.5-97.5  
70<sup>0</sup>F - 28-54  
80<sup>0</sup>F - 1-13.5  
92<sup>0</sup>F - 0-5  
100<sup>0</sup>F - 5 (maximum)

Peroxide value - 1.0 milliequivalent of peroxide per kg of fat  
Free fatty acids - 0.1 percent maximum  
Oil Stability - 65 hours minimum  
Index (OSI) at  
110<sup>0</sup>C  
Iodine value - 7.0 maximum  
Color - 1.5R/15.0Y maximum

3.2.4 Egg products.

3.2.4.1 Eggs, whole, liquid or frozen. Whole eggs may be liquid or frozen and shall have been processed and labeled in accordance with the

**Comment [EP1]:** Follow Up to ES13-020 (DSCP-SS-13-31526) 7 Feb 13, After 50<sup>0</sup>F, delete "- 78.5-97" and insert "- 78.5-97.5"

Regulations Governing the Inspection of Eggs and Egg Products. The whole eggs shall be egg whites and egg yolks in their natural proportions as broken directly from the shell eggs as evidenced by a USDA Egg Products Inspection Certificate. For liquid whole eggs, the USDA certificate shall state the date and time of pasteurization. Liquid whole eggs shall be held at a temperature of 40°F or lower and shall be held for not more than 72 hours from the time of pasteurization until the start of formulation of the product in which the liquid whole eggs are used. Frozen whole eggs shall be held at 10°F or lower and used within 120 days. The whole eggs shall be free from foreign odors and flavors, such as metallic, musty, sour, fruity, or sulfide-like. Each product lot shall be accompanied by a certificate stating that the product is negative for the presence of Salmonella as tested by a USDA-AMS recognized laboratory.

3.2.4.2 Eggs, whole, dried. The dried whole eggs shall be processed and labeled in accordance with the USDA Regulations Governing the Inspection of Eggs and Egg Products. The dried whole eggs shall be USDA certified salmonella free and shall conform to the FDA Standards of Identity for Dried Eggs. The dried whole eggs shall be of the latest date of pack. The USDA certificate shall accompany egg products shipped between plants.

3.2.5 Flavoring, vanilla. The flavoring shall be single strength, pure vanilla extract.

3.2.6 Flour, wheat. Wheat flour shall be free-flowing, enriched, general purpose, white (bleached).

3.2.7 Honey. The honey shall be pure high commercial grade.

3.2.8 Glycerol. Glycerol shall comply with the requirements of the Food Chemicals Codex.

3.2.9 Mineral premix. All ingredients in the mineral premix shall comply with the Food Chemicals Codex. The mineral premix shall have the following composition per 1.5 grams:

|           |                                  |
|-----------|----------------------------------|
| Magnesium | - 57 mg from magnesium oxide.    |
| Iron      | - 4 mg from ferrous sulfate.     |
| Zinc      | - 4 mg from zinc oxide.          |
| Copper    | - 1.5 mg from copper gluconate.  |
| Manganese | - 0.3 mg from manganese sulfate. |

3.2.10 Oleoresin, cinnamon, encapsulated. Encapsulated cinnamon oleoresin shall be obtained by the approved solvent extraction of the dried bark of the Cinnamomum (Korintji type) and a powder obtained by spray drying the extract on a dextrin carrier. The product shall have a typical four-fold strength versus ground cinnamon, a minimum volatile oil content of 8.7 percent and a maximum moisture content of 8.0 percent.

3.2.11 Oats, rolled. Rolled oats shall be thin uniform flakes produced by rolling or pressing whole oat groats. The oats shall be heated to destroy enzyme activity. In addition, the oats shall contain not more than 11.5 percent moisture and shall test negative to tyrosinase (catechol oxidase).

3.2.12 Rice, crisped. Crisped rice shall be processed from clean, sound rice and have a density between 100 and 160 g/liter (standard confectionery or full grain) and shall typically contain 7.5 percent sucrose.

3.2.13 Salt. Salt shall be iodized, white, refined sodium chloride, with or without anti-caking agents and shall comply with purity standards for sodium chloride of the Food Chemicals Codex.

3.2.14 Shortening, vegetable. Vegetable shortening shall be refined, hydrogenated, deodorized vegetable oils and may contain antifoaming agents and antioxidants (active ingredients BHA, BHT, TBHQ or propyl gallate) in amounts permitted by the FDA. The vegetable shortening shall possess a uniform plastic texture and shall have a stability of not less than 100 hours (A.O.M.).

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

3.2.16 Sugar, granulated, extra fine. Extra fine granulated sugar shall be white refined, cane or beet sugar or a combination thereof.

3.2.17 Syrup, corn. Corn syrup shall be a clarified, concentrated, aqueous solution of the products obtained by partial hydrolysis of cornstarch and includes dried corn syrup. The solids of corn syrup shall contain not less than 40 percent, by weight, of reducing sugars calculated as anhydrous dextrose.

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

3.3 Preparation and processing.

3.3.1 Oatmeal Cookie Bars.

3.3.1.1 Formula.

| <u>Ingredient</u>                                 | <u>Percent by weight</u> |
|---|--------------------------|
| Sugar, granulated, extra fine                     | 28.80                    |
| Oats, rolled                                      | 28.80                    |
| Shortening, vegetable                             | 14.80                    |
| Flour, wheat                                      | 13.40                    |
| Eggs, whole, liquid or frozen <u>1/</u> <u>2/</u> | 5.90                     |
| Water <u>1/</u>                                   | 4.85                     |
| Mineral premix                                    | 1.35                     |
| Syrup, corn                                       | 1.00                     |
| Baking soda                                       | 0.50                     |
| Salt  | 0.50                     |
| Flavoring, vanilla                                | 0.10                     |

1/ Use 1.5 percent dried whole eggs and increase water by 4.4 percent (for a total of 9.25 percent water) when replacing liquid or frozen whole eggs.

2/ Frozen whole eggs shall be tempered to a temperature not to exceed 40°F and held at 40°F or lower, and used within 24 hours after they have been tempered.

3.3.1.2 Preparation (see 6.4).

a. Blend the mineral premix and the granulated sugar together thoroughly.

b. Mix all ingredients together in a ribbon blender or other suitable mixer.

c. Form the dough into appropriate shape and thickness to assure complete cooking.

d. Bake at 375°F until baked using a standard oven or suitable method for complete cooking. Suggested final moisture content is approximately 3 to 4 percent.

e. Let cool until firm.

f. Grind the baked product into friable crumbs. A particle size similar to granola cereal is suitable.

g. Compress crumbs into bars to produce bars complying with finished product requirements.

h. The total time of production, including product preparation, grinding, compressing, and pouch filling and sealing shall not exceed 30 days.

3.3.2 Granola bars.

3.3.2.1 Formula.

| <u>Ingredient</u>                 | <u>Percent by weight</u> |
|-----------------------------------|--------------------------|
| Oats, rolled                      | 45.0                     |
| Sugar, brown                      | 12.0                     |
| Rice, crisped                     | 11.0                     |
| Coconut fat                       | 10.0                     |
| Water                             | 8.0                      |
| Coconut, flaked, sweetened, dried | 6.5                      |
| Honey                             | 4.0                      |
| Glycerol                          | 3.0                      |
| Flavoring, vanilla                | 0.3                      |
| Oleoresin, cinnamon, encapsulated | 0.2                      |

3.3.2.2 Preparation (see 6.4).

a. The coconut fat shall be melted and mixed with the honey, vanilla, brown sugar, and water.

b. The remaining ingredients shall be added and mixed until homogeneous.

c. The mixture shall be toasted until it reaches a temperature of 220°F, then removed from the oven immediately and cooled.

d. The mixture shall be compressed (see 6.3) to produce bars complying with finished product requirements.

e. The total time of production, including product preparation, compressing, and pouch filling and sealing shall not exceed 30 days.

3.3.3 Pouch filling and sealing.

3.3.3.1 Food Packet, Long Range Patrol, (Improved). For the Food Packet, Long Range Patrol, Improved (LRP), each pouch shall contain one oatmeal cookie bar or one granola bar and shall be filled and sealed to comply with the finished product requirements and to the requirements specified in 5.1.1.

3.3.3.2 Meal, Ready-to-Eat, Individual. For the Meal, Ready-to-Eat, Individual (MRE), each pouch shall contain one oatmeal cookie bar and shall be filled and sealed to comply with the finished product requirements and to the requirements specified in 5.1.1.

3.3.3.3 Ration Cold Weather. For the Ration, Cold Weather (RCW), each pouch shall contain two oatmeal cookie bars or two granola bars and shall be filled and sealed to comply with the finished product requirement and the requirements specified in 5.1.1.

3.3.3.4 Food Packet, Survival, General Purpose. For the Food Packet, Survival, General Purpose, each pouch shall contain one granola bar and shall be filled and sealed to comply with the finished product requirements and to the requirements specified in MIL-F-43231.

3.4 Finished product 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, musty, or moldy.

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

d. There shall be no compression streaks or stains.

e. Each granola bar shall weigh  $48 \pm 5$  grams and each oatmeal cookie bar shall weigh  $55 \pm 5$  grams.

f. The dimensions shall be as follows:

Style A -  $3.0 \pm 0.2$  inches long by  $1.0 \pm 0.2$  inches wide and not more than 1.1 inches thick

Style B -  $3.25 \pm 0.1$  inches long by  $2.00 \pm 0.2$  inches wide and not more than 0.6 inches thick

g. No pouch shall contain a bar which has been broken or crumbled (more than 3 pieces).

h. The moisture content in the compressed bars shall not exceed 5.0 percent.

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

3.5 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 Foods," and the plant sanitation requirements of the appropriate Government inspection agency.

3.6 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 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 products.

4.5.1.2 Pouch material certification. The material listed below may be

accepted on the basis of a contractor's certificate of conformance to the indicated requirements. In addition, compliance to the requirements for inside pouch dimensions and dimensions of manufacturer's seals may be verified by certificate of conformance.

| <u>Requirement</u>                                  | <u>Requirement paragraph</u> | <u>Test procedure</u>   |
|---|------------------------------|---|
| Thickness of films for laminated material           | 5.1.1.1.1 and 5.1.1.2.1      | As specified in L-P-378, except that a machinists' micrometer may be used provided that its graduations and accuracy conform to the requirements of L-P-378 |
| Aluminum foil thickness                             | 5.1.1.1.1 and 5.1.1.2.1      | As specified in QQ-A-1876   |
| Laminated material indentification and construction | 5.1.1.1.1 and 5.1.1.2.1      | Laboratory evaluation   |
| Color of laminated material                         | 5.1.1.1.1                    | Visual examination  |

4.5.1.3 Unfilled preformed bag seal strength testing. The unfilled preformed bags shall be tested for seal strength in accordance with Method A or B of ASTM D 882, except that testing speed may be 10 or 12 inches per minute. The lot size shall be expressed in bags. The sample size shall be the number of bags indicated by inspection level S-1. Three adjacent specimens shall be cut from each of the three sealed sides of each bag 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 specified in 5.1.1.1.3 or any seal failing to meet the average seal strength requirement specified in 5.1.1.1.3 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 acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 0.65 for major defects and 4.0 for minor defects.

TABLE I. Filled and sealed pouch defects 1/

| <u>Category</u> |              | <u>Defect</u> |
|-----------------|--------------|---------------|
| <u>Major</u>    | <u>Minor</u> |               |

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|     |   |
|-----|---|
| 101 | Tear, cut, hole, or abrasion through one or more layers in the pouch material or leakage through any heat seal. <u>2/</u> |
| 102 | Foldover wrinkle extending into the seal such that the effective closure seal to less than 1/16 inch. <u>3/</u>           |
| 103 | Presence of entrapped product that reduces the effective closure seal to less than 1/16 inch. <u>3/</u>                   |
| 104 | Presence of delamination. <u>4/</u>   |
| 105 | Unclean pouch. <u>5/</u>  |
| 106 | Labeling is missing, incorrect, or illegible.   |
| 107 | Any impression or design on the heat seal surfaces which conceals or impairs visual detection of seal defects. <u>6/</u>  |
| 108 | Less than 3/16 inch between inside edge of tear notch and inside edge of seal.  |
| 109 | Closure seal width not as specified.  |
| 110 | Closure seal not located as specified.  |
| 111 | Presence of stress cracks or material degradation in the aluminum foil. <u>7/ 8/</u>                                      |
| 201 | Tear notch or serrations missing or not located as specified.   |
| 202 | Depth of tear notch or serrations not as specified.   |
| 203 | Presence of delamination. <u>4/</u>   |

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

2/ Pinholes or breaks inherent to the manufacturing process of the aluminum foil shall not be scored as a defect.

3/ 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/ 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-counterclockwise 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 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 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 laminated 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 (+ 1/6 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 minor defects.

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

a. Foreign matter which present to health hazard or potential pouch damage and which can be readily removed by gently shaking the package or by gently brushing the pouch 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.

6/ If doubt exists as to whether or not the sealing equipment leaves an impression or design on the closure seal surface that could conceal or impair visual detection of seal defects, samples shall be furnished to the contracting officer for a determination as to acceptability.

7/ Applicable to form-fill-seal pouches only.

8/ To examine for stress cracks, the inside surface of the tray shaped boy (bodies) shall be placed over a light source and the outside surface observed for the passage of light. Observation of light through the bag material in the form of a curved or straight line greater than 2mm in length shall be evidence of the presence of stress cracks. Observation of light through the bag material in the form of a curved or straight line 2mm in length or smaller or of a single pinpoint shall be considered a pinhole. Observation of ten or more pinholes per bag shall be evidence of material degradation. When both sides of the form-fill-seal oatmeal cookie bar package have been

formed into tray-shaped cavities, as required for Style A, both sides of the package shall be examined for the presence of stress cracks in the aluminum foil.

4.5.4 Pouch vacuum examination. The filled and vacuum sealed pouches shall be visually examined for conformance to the vacuum requirement in 5.1.1.1.3 and 5.1.1.2.2 not less than 96 hours after filling and sealing. The sealed pouch shall continue to exhibit tight adherence to the surface contours of the contents when a pulling force is applied at the center of each side seal. This force shall be applied by holding each side seal between thumb and forefinger of each hand, while simultaneously exerting a slight pull with both hands. Any evidence of loss of vacuum shall be classified as a major defect. 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.

4.5.5 Product examination. The finished product shall be examined for the defects listed in table II. The lot size shall be expressed in pouches. The sample unit shall be the contents of one filled and sealed pouch. The inspection level shall be S-3 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  |
|----------|-------|---|
| Major    | Minor |   |
| 101      |       | Presence of compression streaks or stains.                    |
|          | 201   | Weight of cookie bar or granola bar not as specified.         |
|          | 202   | Dimensions not as specified.                                  |
|          | 203   | Broken or crumbled bar (more than 3 large pieces in a pouch). |

1/ The presence of any foreign material (for example, dirt, insect parts, hair, wood, glass, metal), foreign odor or flavor (for example, burnt, scorched, stale, sour, rancid, musty, moldy), 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 (see 3.4.1).

4.5.6 Internal pressure test. Eight filled and sealed pouches shall be selected at random from the lot regardless of lot size and tested for internal pressure resistance. The internal pressure resistance shall be determined by pressurizing the pouches while they are restrained between two rigid plates spaced  $1/2 + 1/16$  inch apart. If a three-seal tester (one that pressurizes the pouch through and open end) is used, the closure seal shall be cut off for testing the side and bottom seals of the pouch; for testing of the closure seal, the bottom seal shall be cut off. The pouches shall be emptied prior to testing. If a four-seal tester (designed to pressurize filled pouches by use of a hypodermic needle through the pouch wall) is used,

all four seals can be tested simultaneously. The distance between rigid restraining plates on the four-seal tester shall be equal to the thickness of the product  $\pm 1/16$ . Pressure shall be applied at the approximate uniform rate of 1 pound per square inch gage (psig) per second until 14 psig pressure is reached. The 14 psig pressure shall be held constant for 30 seconds and then released. The pouches shall then be examined for separation or yield of the heat seals. Any rupture of the pouch or evidence of seal separation greater than  $1/16$  inch in the pouch manufacturers seal shall be considered a test failure. Any seal separation that reduces the effective closure seal width to less than  $1/16$  inch (see table I) shall be considered a test failure. The lot size shall be expressed in pouches. The sample unit shall be one pouch. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

4.5.6.1 Bag closure seal testing. The filled and sealed bags shall be tested in accordance with Method A or B or ASTM D 882, except that the testing speed may be 10 or 12 inches per minutes. For preformed bags, three adjacent specimens,  $1/2$  or 1 inch wide, shall be cut from the closure seal of each bag in the sample. For the form-fill-seal bags, three adjacent specimens,  $1/2$  or 1 inch wide shall be cut from each side and each end of each bag in the sample. For the preformed bag, the average seal strength of the closure seal shall calculated by averaging the test results of the three specimens cut from the seal. For the form-fill-seal bag, the average seal strength of each side of the bag shall be calculated by averaging the test results of the three specimens cut from that side or end. The results shall be reported to the nearest 0.1 pound per inch of width. The lot size shall be expressed in bags. The sample unit shall be one filled and sealed bag. The sample size shall be the number of bags indicated by inspection level S-1. Any test specimen or average seal strength failing to meet the requirements of 5.1.1.1.3 and 5.1.1.2.2 shall be cause for rejection of the lot.

4.5.7 Moisture content testing. Eight filled and sealed pouches shall be selected at random from the lot regardless of lot size. The contents of each pouch shall be blended to uniformity using a blender or a food processor. The blending must be rapid and conducted in such a way that minimum heat is transferred to the product and that the product has minimum exposure to atmospheric moisture. The blended samples shall be tested for moisture content in accordance with the Official Methods of Analysis of the AOAC, method 925.09 except that the drying cycle shall be 16 hours at  $70^{\circ}\text{C}$  under a pressure of not more than 100 mm Hg. The results shall be reported to the nearest 0.1 percent. Any result not conforming to the moisture content requirement in 3.4 shall be classified as a major defect.

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: Marking missing, incorrect or illegible.  
Cushioning material missing or not as specified.
- Minor: More than 40 pounds packed in shipping container.  
Pouched bars not packed flat in layers.

## 5. PACKAGING

Food Packet, Long Range Patrol, (Improved).

When the oatmeal cookie or granola bar are procured as components of the LRP, each bar shall be packaged in accordance with 5.1.

Meal, Ready-to-Eat, Individual.

When the oatmeal cookie bar is procured as a component of the MRE, the bar shall be packaged in accordance with 5.1.

Ration, Cold Weather.

When the oatmeal cookie bars or granola bars are procured as components of the RCW, two oatmeal cookie bars or two granola bars shall be packaged in accordance with 5.1.

Food Packet, Survival, General Purpose.

When the granola bar is procured as a component of Food Packet, Survival, General Purpose, the bar shall be packaged in accordance with MIL-F-43231.

5.1 Preservation. Preservation shall be level A.

5.1.1 Level A. One or two bars, as applicable, shall be unit packed in a laminated pouch in accordance with 5.1.1.1 or 5.1.1.2.

5.1.1.1 Preformed pouch.

5.1.1.1.1 Pouch material. The pouch shall be made from a three ply flexible laminate barrier material consisting of an outer ply of 0.0009 inch thick oriented polypropylene bonded to an intermediate ply of 0.0007 inch thick aluminum foil with 10 pounds per ream pigmented polyethylene, and bonding the opposite side of the aluminum foil to 0.003 inch thick ionomer (inner ply) or a blend of not less than 50 percent linear low density polyethylene and polyethylene. the linear low density polyethylene portion of the blend shall be a copolymer of ethylene and octene-1, having a melt index range of 0.8 to 1.2 g/10 minutes in accordance with ASTM D 1238 and a density range of 0.918 to 0.922 g/cm<sup>3</sup> in accordance with ASTM D 1505. Alternatively, the outer ply may consist of 0.0005 inch thick polyester. All tolerances for thickness of pouch materials shall be plus or minus 20 percent. The exterior bag color shall conform to number 20219, 30219, 30227, 30279, 30313, 30324, or 30450 of FED-STD-595. For RCW applications, the complete exterior of the bag shall be colored white overall with a color in the range of 37778 through 37886 of FED-STD-595. The material shall not impart any undesirable odor or flavor to the product and shall be FDA approved for food use. The material shall show no evidence of delamination, degradation, or foreign odor when heat sealed or fabricated into pouches.

5.1.1.1.2 Pouch construction. For single bars (MRE and LRP applications), the pouch shall be a flat style preformed pouch having inside dimensions of 2-3/4 inches wide by 5-3/4 inches long (+ 1/8 inch in each dimension). For two bars (RCW), the pouch shall be flat style preformed pouch having inside dimensions of 3-7/8 inches wide by 5-3/4 inches long (+ 1/8 in each dimension). The first dimension shall be 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 (- 1/8 inch, + 3/16 inch) wide seals. The

heat seals shall be made in a manner that will assure hermetic seals. A "V", "C", or block "U" 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 5/16 inch to facilitate opening and filling. Tear notch location shall be measured from the top of the pouch, excluding the extended or foldover lip. Alternatively, if the pouch has serrated edges, the serrations may be used as tear notches provided that the serrations are sharp (no plastic tailings exist) and the serrations depth and the minimum seal width at the serrated edges are in accordance with the above requirements. The pouch shall be constructed with a square or rounded corners at all four corners (radius approximately 3/8-inch).

5.1.1.1.3 Pouch filling and sealing. The bar(s) shall be inserted into the pouch in such a manner as to avoid puncturing the pouch material or contaminating the heat seal area. The filled pouch shall be sealed under a vacuum of not less than 23 inches of mercury. The sealed pouch shall show no loss of vacuum when examined as specified in 4.5.4. The filled pouches shall have a 3/8 inch (+ 1/8 inch) wide heat seal. If thermal impulse closure seals are used, a seal width of 1/8 to 7/16 inch will be acceptable. The closure seal shall be free of entrapped matter (for example, cookie crumbs) that reduces the effective closure seal to less than 1/16 inch wide. The closure seal shall not extend below the tear notch on either side of the pouch. The closure seal shall be free of foldover wrinkles and delaminations. The filled and sealed pouches shall withstand an internal pressure of 14 psig for 30 seconds without rupture or seal separation greater than 1/16 inch or seal separation that reduces the effective closure seal width to less than 1/16 inch (see 4.5.6). As an alternative to the internal pressure requirement, the average seal strength shall be not less than 6 pounds per linear inch, and no individual test specimen seal strength shall be less than 5 pounds when tested as specified in 4.5.6.1.

#### 5.1.1.2 Form-fill-seal pouch.

5.1.1.2.1 Pouch material. The form-fill-seal pouch shall consist of a formed tray-shaped body with a tray-shaped heat sealable cover. For the Type I, style B bar, the form-fill-seal pouch may consist of a formed tray-shaped body with a flat sheet cover. The tray-shaped body and the tray-shaped cover or the flat sheet cover shall be fabricated from 3-ply flexible laminate barrier material consisting of, from outside to inside, 0.0009 inch thick oriented polypropylene bonded to 0.0007 inch thick aluminum foil with 10 pounds per ream pigmented polyethylene bonded to 0.003 inch thick ionomer or a blend of not less than 50 percent linear, low density polyethylene and polyethylene. All tolerances for thickness of pouch materials shall be plus or minus 20 percent. the linear low density polyethylene portion of the blend shall be the copolymer of ethylene and octene-1, having a melt index range of 0.8 to 1.2 g/10 minutes in accordance with ASTM D 1238 and a density range of 0.918 to 0.922 g/cc in accordance with ASTM D 1505. Alternatively, 0.0005 inch thick polyester laminated may be used in place of the oriented polypropylene as the outer ply of the laminate. The color requirements of the exterior of the laminates shall be as specified in 5.1.1.1.1. The pouch material shall not impart any undesirable odor or flavor to the product and shall be FDA approved for food use.

#### 5.1.1.2.2 Pouch construction, filling and sealing. The tray-shaped



body and the tray-shaped cover shall be formed by drawing the flexible laminate material into an appropriately shaped cavity. One or two bars shall be placed into the tray-shaped body of the pouch. The filled pouch body shall then be hermetically sealed in accordance with the vacuum requirements as specified in 5.1.1.1.3 and examined as specified in 4.5.4. Pouch closure shall be effected by heat sealing the tray-shaped cover or the flat cover sheet (as applicable) to the tray-shaped body along the entire pouch perimeter. The outside pouch width and length shall be not more than 6 and 6 3/8 inches, respectively. The closure seal width shall be a minimum 1/8 inch. The closure seal shall be free of entrapped matter (for example, cookie crumbs) that reduces the effective closure seal to less than 1/16 inch wide. When tested as specified in 4.5.6, the pouches shall withstand an internal pressure of 14 psig for 30 seconds without rupture or seal separation greater than 1/16 inch or seal separation that reduces the effective closure seal width to less than 1/16 inch. As an alternative to the internal pressure requirement, the average seal strength shall be not less than 6 pounds per linear inch, and no individual test specimen seal strength shall be less than 5 pounds when tested as specified in 4.5.6.1. A tear-nick or notch shall be placed on one outside edge or two opposite outside edges of the pouch to effect easy opening of the pouch in the machine direction of the pouch body and cover laminates. Each tear-nick or notch shall be at least 1/32 inch deep but shall not extend into the seal to a depth that would reduce the seal width to less than 1/16 inch. Alternatively, if the pouch has serrated edges, the serrations may be used as tear-notches provided that the serrations are located to effect easy opening in the machine direction of the pouch laminates, the serrations are sharp (no plastic tailing exists), and the serration depth and the minimum seal width at the serrations are in accordance with the above tear notch requirements. the sealed pouch shall not show any evidence of material degradation, aluminum stress cracking, delamination or odor. Heat seals shall be free of foldover wrinkles and occluded matter.

## 5.2 Packing. Packing shall be level C.

5.2.1 Level C Packing. Not more than 40 pounds of pouched product preserved as specified in 5.1.1 shall be packed flat in a fiberboard box constructed and closed in accordance with style RSC-L, class domestic, variety SW, grade 200 of PPP-B-636. Cushioning material not less than 1/8 inch thick conforming to grade II, class B or C or A-A-1898 or cushioning material not less than 1/16 inch thick conforming to type I of PPP-C-1797 or cushioning material conforming to type VII, class I of PPP-C-1752 shall be placed between each of the layers and in the bottom and top of the box to completely separate the layers and minimize movement of the individual packages.

## 5.3 Labeling and marking.

5.3.1 Pouches. Each pouch shall be clearly printed or stamped, in a manner that does not damage the pouch, with permanent black ink which is free of carcinogenic elements or ingredients. The color of the printing ink shall conform to number 20045, 20122, 30045, 30099, 30108, 30111, or 30140 of FED-STD-595. If a non-contact printer is used, the information may be located anywhere on the pouch (in one complete print) except the closure seal area. The label shall contain the following information:

Product name (letters not less than 7/32 inch high)  
Date 1/ (letters not less than 1/8 inch high)

Contractors name and address (letters not less than 1/8 inch high)

1/ Each pouch shall have the date of pack noted by using a four digit code beginning with the final digit of the current year followed by the three digit Julian day code. For example, March 19, 1991 would read 1079. the Julian day code shall represent the date the product is unit packed into the pouch.

5.3.2 Shipping containers. Shipping containers shall be marked in accordance with MIL-STD-129.

## 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. Type and style (as applicable) of product required (see 1.2).
- c. 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).
- d. When a first article is required (see 3.1, 4.4, and 6.2).
- e. Provisions for approved preproduction samples (see 3.4.1 and 6.2).
- f. When oatmeal cookie bar is procured as a component of the MRE, or when oatmeal cookie bar or granola bar are procured as components of the LRP or RCW (see 5.), or when the granola bar is procured as a component of Food Packet, Survival, General Purpose.

6.2 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of 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 Spray Conditioning. In the laboratory, after toasting, typical granola mixtures have contained 2 to 3 percent moisture. Spraying with a 50/50 brown sugar and water solution onto the product at a total theoretical moisture of 4 percent by weight, has produced acceptable product. If the moisture content is 3 percent or higher, the product may compress satisfactorily without a "spray back".

6.4 Other manufacturing methods and procedures. Manufacturing methods and procedures which differ from those specified herein may be used provided the product manufactured thereby is equivalent in composition and texture to that manufactured under the processes and procedures outline herein and as confirmed by first article.

6.4 Subject term (key word) listing.

Food Packet, Long Range Patrol, (Improved)  
Food Packed, Survival, General Purpose

MIL-O-44136C

Meal, Ready-to-Eat, Individual  
Pouched food  
Ration, Cold Weather  
Snack Food

6.5 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:                      Preparing activity:

|                |                     |
|----------------|---------------------|
| Army - GL      | Army - GL           |
| Navy - SA      |                     |
| Air Force - 50 | (Project 8920-0552) |

Review activities:

Army - MD, QM  
Navy - MC  
DLA - SS

## For DLA Website Posting

RDNS-CFF

7 February 2013

TO: DLA-FTRE

SUBJECT: Follow up to ES13-020 (DSCP-SS-13-31526); Document change request to update the Solid Fat Content 50°F measurement into the requirements for coconut oil specified in MIL-O-44136C, Oatmeal Cookie and Granola Bars; for use in the Food Packet Survival, General Purpose; Contract SPM3S1-13-F-Z113, Vendor

1. Reference: ES13-020 (DSCP-SS-13-26306); Document change request to substitute the technical requirements for coconut oil specified in MIL-O-44136C, Oatmeal Cookie and Granola Bars; for use in the Food Packet Survival, General Purpose; Contract SPM3S1-13-F-Z113, Vendor, 14 January 2013
2. Natick received a Follow Up ES case from DLA Troop Support because Vendor is requesting that Natick update the higher temperature of "97.5" for the 50°F Solid Fat Content for the coconut oil specified in MIL-O-44136C so that it aligns more closely with the technical requirements given by Columbus Vegetable Oils product specification sheet for product "92 Coconut Oil #560".
3. Natick concurs with Vendors's request to update the higher temperature for the 50°F Solid Fat Content measurement of the coconut oil specified in MIL-O-44136C.
4. Natick submits the following change to Section 3.2.3 of subject document for all current, pending and future procurements until the document is formally amended or revised:
  - a. p. 4, Section 3.2.3, after 500F, delete "- 78.5-97" and insert "- 78.5-97.5"
5. This change should have no effect on the performance of the granola bar.
6. Attached is Change 02, MIL-O-44136C, Oatmeal Cookie and Granola Bars, 4 February 2013, with changes highlighted.