

## SECTION C

This document covers thermostabilized apple dessert packaged in a polymeric tray for use by the Department of Defense as a component of operational rations.

### C-1 ITEM DESCRIPTION

PCR-A-003, APPLE DESSERT, PACKAGED IN A POLYMERIC TRAY, SHELF STABLE

### C-2 PERFORMANCE REQUIREMENTS

A. Product standard. A sample shall be subjected to first article or product demonstration model inspection as applicable, in accordance with the tests and inspections of Section E of this Performance-based Contract Requirements document.

B. Commercial sterility. The packaged food shall be processed until commercially sterile.

C. Shelf life. The packaged product shall meet the minimum shelf life requirement of 36 months at 80<sup>0</sup>F.

D. Appearance.

(1) General. The finished product shall be cooked apple dessert. The finished product shall contain not less than 70 percent by weight of intact apple slices. The apple dessert shall have a cooked color. The packaged food shall be free from foreign materials.

(2) Apple slices. The apple slices shall be uniform slices measuring not less than 1-1/4 inches in length and 3/4 + 1/4 inch in thickness. The apple slices shall have been produced from fresh apples meeting the requirements for U.S. No. 2 or better of the U.S. Standards for Grades of Apples for Processing.

(3) Sauce. The sauce shall be glossy, translucent light golden color.

E. Odor and flavor. The packaged food shall have an odor and flavor of apple dessert. The packaged food shall be free from foreign odors and flavors.

F. Texture.

(1) Apple slices. The apple slices shall be moderately firm.

(2) Sauce. The sauce shall be smooth.

G. Net Weight. The average net weight shall be not less than 92 ounces. No individual polymeric tray shall have a net weight of less than 90 ounces.

H. Drained weight of apple slices. The average drained weight shall be not less than 48.0 ounces. The drained weight of the apple slices in an individual tray shall be not less than 46.0 ounces.

I. Palatability and overall appearance. The finished product shall be equal to or better than the approved product standard in palatability and overall appearance.

J. Analytical requirements.

(1) Salt content. The salt content shall be not less than 0.2 percent and not greater than 0.4 percent.

(2) pH. The pH shall be in the range of 2.80 to 3.80.

**C-3 MISCELLANEOUS INFORMATION**

THE FOLLOWING IS INFORMATION ONLY TO PROVIDE THE BENEFIT OF PAST GOVERNMENT EXPERIENCE. THIS IS NOT A MANDATORY CONTRACT REQUIREMENT.

A. Ingredients/formulation. Ingredients and formulation percentages for the sauce may be as follows:

<u>Ingredients</u>	<u>Percent by weight</u>
Single strength apple juice	36.96
Granulated sugar	35.70
Water	14.94
Margarine	5.57
Modified waxy maize starch	4.56
Single strength lemon juice <u>1/</u>	1.52
Salt <u>2/</u>	0.25
Ground cinnamon	0.25
Ground nutmeg	0.25

1/ The total amount of lemon juice may be adjusted to ensure compliance with finished product pH requirements.

2/ The total amount of salt may be adjusted to ensure compliance with the finished product salt requirements.

**SECTION D**

**D-1 PACKAGING**

A. Preservation. Product shall be filled into polymeric trays and the trays with protective sleeves shall conform to the requirements of section 3 of MIL-PRF-32004A, Packaging of Food in Polymeric Trays. Verification testing and inspection of trays, lids and sleeves shall be in accordance with Section 4 of MIL-PRF-32004A and the Quality Assurance Provisions of Section E of this Performance-based Contract Requirements document.

B. Polymeric tray closure. The filled, sealed, and processed tray shall be securely closed.

**D-2 LABELING**

A. Polymeric tray body. The polymeric tray body shall be clearly printed or stamped, in a manner that does not damage the tray, with permanent ink of any contrasting color, which is free of carcinogenic elements. One end of the polymeric tray (see figure 1 of MIL-PRF-32004A) shall be marked with the product name and number of portions. If the tray body end markings are not readily legible in low light conditions, a small, easily legible label shall be applied, but not over any existing tray markings. All other markings may be applied along the tray body side. To avoid erroneous marking of trays, the product name, lot number and filling equipment number shall be applied prior to processing. Additional tray marking may be applied before or after processing. 1/

Tray body markings shall include:

- (1) Product name. Commonly used abbreviations may be used when authorized by the inspection agency.
- (2) Tray code includes: 2/
  - Lot Number
  - Filling equipment identification number
  - Retort identification number
  - Retort cook number

1/ As an alternate method, tray body markings may be clearly printed or stamped onto the polymeric tray lid prior to processing, in a manner that does not damage the lid, with permanent ink of any contrasting color, which is free of carcinogenic elements, provided that the required markings are applied onto the tray body after processing.

2/ The lot number shall be expressed as a four digit Julian code. The first digit shall indicate the year of production and the next three digits shall indicate the day of the year (Example, 17 May 2002 would be coded as 2137). The Julian code shall represent the day the product was packaged into the tray and processed. Sublotting (when used) shall be represented by an alpha character immediately following the four digit Julian code. Following the four digit Julian code and the alpha character (when used), the other required code information shall be printed in the sequence as listed above.

B. Polymeric tray lid. The lid shall be clearly printed or stamped, in a manner that does not cause damage. Permanent ink of any contrasting color, which is free of carcinogenic elements, shall be used. As an alternate labeling method, a pre-printed self-adhering 0.002 inch thick clear polyester label printed with indelible contrasting color ink may be used.

- (1) Lid labeling shall include:
  - Product name
  - Ingredients
  - Net weight
  - Name and address of packer
  - Official establishment number (for example, EST 38) or a three letter code identifying the establishment
- (2) Lid labeling shall also show the following statements:

TO HEAT IN WATER: Submerge unopened tray in water. Bring water to a boil. Simmer gently 35-40 minutes. Avoid overheating (tray shows evidence of bulging).

WARNING: Do not heat tray in oven.

TO TRANSPORT AFTER HEATING: Insert tray back into protective sleeve to protect during transport. If sleeve is unavailable, stack trays lid-to-lid with fiberboard pads in between.

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

TO OPEN: Using a clean knife, cut the lidding around the inside perimeter of the tray seals.

SUGGESTION: Cut lid along 3 sides and fold over uncut portion. Fold back to keep unused portions protected.

YIELD: Serves 18 portions of approximately 2/3 cup each.

**D-3 PACKING**

A. Packing for shipment to ration assembler. Four filled, sealed, processed and sleeved polymeric trays shall be packed in a snug fitting fiberboard box conforming to style RSC-L, type CF, grade 275 of ASTM D 5118/D5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. The sleeved trays shall be placed flat with the first two trays placed with the lids together and the next two trays with the lids together. The box shall be closed in accordance with ASTM D 1974, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

**D-4 UNITIZATION**

A. Unit loads. Unit loads shall be as specified in DSCP FORM 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items.

**D-5 MARKING**

A. Shipping containers and unit loads. Marking of shipping containers and unit loads shall be as specified in DSCP FORM 3556 Marking Instructions for Shipping Cases, Sacks and Palletized/Containerized Loads of Perishable and Semiperishable Subsistence.

**SECTION E INSPECTION AND ACCEPTANCE**

The following quality assurance criteria, utilizing ANSI/ASQC Z1.4-1993, Sampling Procedures and Tables for Inspection by Attributes, are required. When required, the manufacturer shall provide the certificate(s) of conformance to the appropriate inspection activity. Certificate(s) of conformance not provided shall be cause for rejection of the lot.

A. Definitions.

(1) Critical defect. A critical defect is a defect that judgment and experience indicate would result in hazardous or unsafe conditions for individuals using, maintaining, or depending on the item; or a defect that judgment and experience indicate is likely to prevent the performance of the major end item, i.e., the consumption of the ration.

(2) Major defect. A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose.

(3) Minor defect. A minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

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

(1) Product standard inspection. The first article or product demonstration model shall be inspected in accordance with the provisions of this document and evaluated for overall appearance and palatability. Any failure to conform to the performance requirements or any appearance or palatability failure, shall be cause for rejection of the lot. The approved first article or product demonstration model shall be used as the product standard for periodic review evaluations. All food components that are inspected by the USDA shall be subject to periodic review sampling and evaluation. The USDA shall select sample units during production of contracts and submit them to the following address for evaluation:

US Army Soldier & Biological Chemical Command  
Soldiers System Ctr., Natick Soldier Center  
Attn: AMSSB-RCF-F(N)  
15 Kansas Street  
Natick, MA 01760-5018

One lot shall be randomly selected during each calendar month of production. Two (2) sample units of each item produced shall be randomly selected from that one production lot. The two (2) sample units shall be shipped to Natick within five working days from the end of the production month and upon completion of all USDA inspection requirements. The sample units will be evaluated for the characteristics of appearance, odor, flavor, texture and overall quality.

(2) Conformance inspection. Conformance inspection shall include the examinations and the methods of inspection cited in this section.

**E-5 QUALITY ASSURANCE PROVISIONS (PRODUCT)**

A. Product examination. The finished product shall be examined for compliance with the performance requirements specified in Section C of this Performance-based Contract Requirements document utilizing the double sampling plans indicated in ANSI/ASQC Z1.4 - 1993. The lot size shall be expressed in trays. The sample unit shall be the contents of one tray. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 4.0 for major defects and 6.5 for minor defects. Defects and defect classifications are listed in table I below. The trays shall be heated in accordance with the heating instructions from the tray label prior to conducting any portion of the product examination. The samples for drained weight inspection shall be selected using the same sampling criteria as above.

TABLE I. Product defects 1/ 2/ 3/ 4/

<u>Category</u>		<u>Defect</u>
<u>Major</u>	<u>Minor</u>	
		<u>Appearance</u>
101		Product not apple dessert.
102		Finished product does not contain at least 70 percent by weight of intact apple slices.
	201	Apple dessert not a cooked color.
	202	Sauce not a glossy, translucent light golden color.
		<u>Odor and flavor</u>
103		The packaged food does not have an odor or flavor of apple dessert.
		<u>Texture</u>
	203	Apple slices not moderately firm.
	204	Sauce not smooth.
		<u>Net weight</u>
	205	Net weight of an individual polymeric tray is less than 90 ounces. <u>5/</u>
		<u>Drained weight</u>
	206	Drained weight of apple slices in an individual polymeric tray is less than 46.0 ounces. <u>6/</u>

1/ Presence of any foreign material such as, but not limited to dirt, insect parts, hair, wood, glass, metal, or mold, or any foreign odors or flavors such as, but not limited to burnt, scorched, rancid, sour, or stale shall be cause for rejection of the lot.

2/ Finished product not equal to or better than the approved product standard in palatability and overall appearance shall be cause for rejection of the lot.

3/ Size requirement for apple slices shall be verified by certificate of conformance.

4/ Grade requirements shall be verified by a USDA grading certificate.

5/ Sample average net weight less than 92 ounces shall be cause for rejection of the lot.

6/ Sample average drained weight less than 48.0 ounces shall be cause for rejection of the lot.

B. Methods of inspection.

(1) Commercial sterility. Commercial sterility shall be verified in accordance with USDA/FSIS regulations.

(2) Shelf life. The contractor shall provide a certificate of conformance that the product has a 3 year shelf life when stored at 80°F. Government verification may include storage for 6 months at 100°F or 36 months at 80°F. Upon completion of either storage period, the product will be subjected to a sensory evaluation panel for appearance and

palatability and must receive an overall score of 5 or higher based on a 9 point hedonic scale to be considered acceptable.

(3) Net weight. The net weight of the filled and sealed polymeric tray shall be determined by weighing each sample unit on a suitable scale tared with a representative empty polymeric tray and lid. Results shall be reported to the nearest 1 ounce.

(4) Drained weight. To determine drained weight, the contents of the tray shall be poured into a flat-bottom container. A minimum of three times the polymeric tray's volume of 180°F to 190°F water shall be added to the container so as to cover the contents. The contents and water shall be agitated so as to remove the sauce without breaking the apple slices. The contents shall then be poured into a U.S. Standard 1/4 inch sieve in a manner that will distribute the product over the sieve without breaking the apple slices. Sieve area shall be such that the distributed product does not completely cover all the openings of the sieve. The sieve shall be tilted at such an angle so as to assure complete drainage of all liquid from the product. The product shall be drained for 2 minutes before determining the drained weight. Determine the drained weight by subtracting the sieve tare weight from the gross weight. The drained weight shall be reported to the nearest 0.5 ounce.

(5) Analytical. The sample to be analyzed shall be a one-pound composite of three filled and sealed polymeric trays that have been selected at random from one production lot. The composite sample shall be prepared and analyzed in accordance with the following Official Methods of Analysis of AOAC International (OMA).

<u>Test</u>	<u>Method Number</u>
Salt	971.27
pH	981.12
Sample preparation	983.18

Test results shall be reported to the nearest 0.1 percent for salt and 0.10 unit for pH. Verification will be conducted through actual testing by a Government laboratory. Any result not conforming to the analytical requirements shall be cause for rejection of the lot.

**E-6 QUALITY ASSURANCE PROVISIONS (PACKAGING AND PACKING MATERIALS, POLYMERIC TRAY)**

A. Packaging and labeling.

(1) Polymeric tray testing. For purposes of clarification, the polymeric tray without the lid will be referred to as the "tray" and the polymeric tray with the lid shall be referred to as the "container". The polymeric tray with protective sleeve and polymeric tray material shall be examined for the characteristics listed in table I of MIL-PRF-32004A, Packaging of Food in Polymeric Trays. Utilizing the single sampling plans indicated in ANSI/ASQC Z1.4 - 1993, the lot size, sample unit, and inspection level criteria are provided in table II below for each of the test characteristics. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot. For rough handling survivability at frozen temperature, polymeric tray survival rate shall be at least 85 percent.

TABLE II. Polymeric tray quality assurance criteria

Prior to processing			
Characteristic	Lot size expressed in	Sample unit	Inspection level
Tray configurations and dimensions	Trays	1 tray	S-1
Oxygen gas transmission rate of tray	Trays	1 tray	S-1
Oxygen gas transmission rate of lid	Yards	1/2 yard	S-1
Water vapor transmission rate of tray	Trays	1 tray	S-1
Water vapor transmission rate of lid	Yards	1/2 yard	S-1
Camouflage	Containers	1 container	S-1

  

After processing			
Characteristic	Lot size expressed in	Sample unit	Inspection level
Processing	Trays	1 tray	S-2
Rough handling survivability	Test containers	1 container	S-2
Protective sleeve	Containers	1 container	S-1
Residual gas	Containers	1 container	S-1
Closure seal	Containers	1 container	S-1
Internal pressure	Containers	1 container	S-1
Lid opening	Containers	1 container	S-1

(2) Examination of container. The container with protective sleeve removed shall be examined for the defects listed in table II of MIL-PRF-32004A and the labeling defects listed in table III below. The lot size shall be expressed in containers. The sample unit shall be one processed and labeled container. Utilizing the single sampling plans indicated in ANSI/ASQC Z1.4 - 1993, the inspection level shall be I and the AQL, expressed in terms of defects per hundred units, shall be 0.65 for major A defects, 2.5 for major B defects and 4.0 for minor defects. Two hundred sample units shall be examined for critical defects. The finding of any critical defect shall be cause for rejection of the lot.

TABLE III. Container labeling defects

Category		Defect
<u>Major A</u>	<u>Minor</u>	
101		Polymeric tray lid or body labeling missing, incorrect or illegible.
	201	When a pre-printed self adhering label is used, the label not adhering to tray lid (for example, label raised or peeled back from edge to corner) or presence of any areas of gaps along the perimeter of the label where the label is not properly adhered.

(3) Label adhesive examination. When self-adhering labels are used, the adhesive shall be tested in accordance with ASTM D 3330/D 3330M, Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape. In lieu of testing, a certificate of conformance (COC) shall be provided.

B. Packing.

(1) Shipping container and marking examination. The filled and sealed shipping containers shall be examined for the defects listed in table IV below. The lot size shall be expressed in shipping containers. Utilizing the single sampling plans indicated in ANSI/ASQC Z1.4 - 1993, the sample unit shall be one shipping container fully packed. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 4.0 for major defects and 10.0 for total defects.

TABLE IV. Shipping container and marking defects

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Marking omitted, incorrect, illegible, or improper size, location sequence or method of application.
102		Inadequate workmanship. <u>1/</u>
	201	Arrangement or number of polymeric trays not as specified.

1/ Inadequate workmanship is defined as, but not limited to, incomplete closure of container flaps, loose strapping, inadequate stapling, improper taping, or bulged or distorted container.

C. Unitization.

(1) Unit load examination. The unit load shall be examined in accordance with the requirements of DSCP Form 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items. Any nonconformance shall be classified as a major defect.

**SECTION J REFERENCE DOCUMENTS**

DSCP FORMS

DSCP FORM 3507 Loads, Unit: Preparation of Semiperishable Subsistence Items  
 DSCP FORM 3556 Marking Instructions for Shipping Cases, Sacks and Palletized/Containerized Loads of Perishable and Semiperishable Subsistence

MILITARY SPECIFICATIONS

MIL-PRF-32004A Packaging of Food in Polymeric Trays

GOVERNMENT PUBLICATIONS

Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder (21 CFR Parts 1-199) and (9 CFR Parts 1-391)

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ)

ANSI/ASQCZ1.4-1993 Sampling Procedures and Tables for Inspection by Attributes

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- D 1974 Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
- D 3330/D 3330M Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape
- D 5118/D 5118M Standard Practice for Fabrication of Fiberboard Shipping Boxes

AOAC INTERNATIONAL

Official Methods of Analysis of the AOAC International (OMA)

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

6 May 2003

TO: DSCP-HRAC (Charya/3832)

SUBJECT: ES03-101 (DSCP-SS-03-02338) Request for Specification changes, drained weight of apples; PCR-A-003, Apple Dessert, Packaged in a Polymeric Tray; SOPAKCO

1. Date received: 15 April 2003  
Date due: 21 April 03  
Date extended: 9 May 03  
Date replied: 6 May 2003

2. The Natick Soldier Center (NSC) has reviewed the request from the vendor and concurs to change the drained weight of apples to coincide with the recently changed net weight requirement.

**Another producer of the apple dessert in polymeric trays has stated that the fill weight of apples needs to comply with the current drained weight requirements which is extremely high and causes sealing problems.**

Work was done at Natick to verify the requested drained weights. The apple dessert product with the new drained weight requirement still appears to have a very good amount of apples pieces.

3. Natick submits the attached document with electronic highlighted changes. Natick recommends the following changes to the subject document for use in all current, pending and future procurements until the document is formally amended or revised:

a. C-2, H., delete entirely and insert the following new para:  
"H. Drained weight of apple slices. The average drained weight shall be not less than 48.0 ounces. The drained weight of the apple slices in an individual tray shall be not less than 46.0 ounces."

b. E-5, A. Table I, Defect 206, delete entirely and insert the following new defect:  
**"Drained weight of apple slices in an individual polymeric tray is less than 46.0 ounces."**

c. E-5, A. Table I, footnote 6, delete entirely and insert new footnote:  
"6/ Sample average drained weight less than 48.0 ounces shall be cause for rejection of the lot."

4. The apple dessert product in the metal tray can has not been a problem to date.

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6 May 2003  
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DONALD A. HAMLIN  
Team Leader  
Food Engineering Services Team  
DoD Combat Feeding Directorate

MFriel

CF: NSC:  
Arcidiacono  
Friel  
Hamlin  
Harrington  
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Richards  
Swantak  
Trottier  
Valvano

CF: DSCP & SVCs:  
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