

## SECTION C

This document covers waffles packaged in a flexible pouch for use by the Department of Defense as a component of operational rations.

### C-1 ITEM DESCRIPTION

#### **PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS FOR CID A-A-20234 WAFFLES, SHELF STABLE**

##### Types.

- Type I - Waffle, plain
- Type II - Waffle, berry flavored with added blueberries
- Type III - Waffle, apple and cinnamon flavored

### 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 Packaging Requirements and Quality Assurance Provisions document.

B. Shelf life. The packaged product shall meet the minimum shelf life requirement of 36 months at 80°F.

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

## SECTION D

### D-1 PACKAGING

A. Packaging. Product shall be packed in a preformed pouch as described below.

(1) Preformed pouches.

a. Pouch material. The preformed pouch shall be fabricated from 0.003 inch to 0.004 inch thick ionomer or polyethylene film laminated or extrusion coated to 0.00035 inch to 0.0007 inch thick aluminum foil which is then laminated to 0.0005 inch thick polyester. The three plies shall be laminated with the polyester on the exterior of the pouch. The material shall be suitably formulated for food packaging (FDA approved) 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. The complete exterior surface of the pouch shall be uniformly colored to conform to number 20219, 30219, 30227, 30279, 30313, 30324, or 30450 of FED-STD-595, Colors Used in Government Procurements.

b. Pouch construction. The pouch shall be a flat style preformed pouch having inside dimensions of 9 inches wide by 15 inches long (+ 1/8 inch in each dimension). The first dimension shall be the opening of the pouch between the heated sealed sides. The pouch shall be made by heating sealing three edges with 3/8 inch (+ 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 E-6,A,(4),a. A "V" or "C" shaped 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. A tear nick may be provided with an extended or foldover lip, extended not more than 1/8 inch (+ 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. 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.

c. Pouch filling and sealing. Eighteen waffles, arranged in three tiers of six each (2x3) with parchment paper or equivalent under and over the second tier, shall be positioned on a paperboard tray and placed in a pouch constructed as specified in E-6,A,(1),b. The appropriate number of oxygen absorber packets shall be placed into the pouch prior to closure to ensure the oxygen content shall not exceed 0.2 percent. 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 7/16 inch will be acceptable. 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 or entrapped matter that reduces the effective closure seal width to less than 1/16 inch. The 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 E-6,A,(4),b.

d. Packaging methods. An interim or continuous method may be used:

(i) Interim method. Immediately after cooling to a temperature range of 80°F to 120°F, the baked waffles 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 D-1 ,A,(1),c. The interim packaged waffles shall be stored at a temperature not less than of 50°F nor greater than 90°F.

(ii) Continuous method. Immediately after cooling to a temperature range of 80°F to 120°F, eighteen baked waffles shall be packaged in accordance with D-1,A,(1),c.

## D-2 LABELING

A. Pouches. Each pouch shall be clearly printed or stamped, in a manner that does not damage the pouch, with permanent black ink or other, dark, contrasting color which is free of carcinogenic elements. 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:

Name and flavor of product (letters not less than 1/8 inch high)  
Ingredients

To Serve: Waffles may be heated prior to serving or served at ambient temperature without heating. When heated, the following instructions shall apply:

To heat in water: Place unopened pouch in simmering water for 5 minutes.

To heat in oven: Remove pouch and place waffles in an oven at 250°F for 5 minutes.

DO NOT OVERHEAT.

YIELD: Serves 6 portions of 3 waffles each

Date 1/

Net Weight

Contractor's name and address

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, 2 June 2000 would be coded as 0154. The Julian day code shall represent the day the product was packaged into the pouch.

**D-3 PACKING**

A. Packing for shipment to ration assembler. Not more than 30 pounds of pouched product shall be packed flat in layers in a fiberboard shipping container constructed in accordance with style RSC-L, class domestic, variety SW, grade 200 of ASTM D 5118, Standard Practice for Fabrication of Fiberboard Shipping Boxes. Cushioning material not less than 1/8 inch thick, conforming to grade II, class B or C of FED A-A-1898, Cushioning Material, Cellulosic, Packaging, shall be placed between each of the layers and in the bottom and top of the box to minimize movement of the individual packages. Each container shall be securely closed in accordance with ASTM D 1974, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers.

**D-4 MARKING**

A. Shipping containers. Shipping containers shall be marked in accordance with DPSC 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 be required to 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)  
Natick, MA 01760-5018

One lot shall be randomly selected during each calendar month of production. Six (6) sample units of each item produced shall be randomly selected from that one production lot. The six (6) sample units shall be shipped to Natick within two (2) working days upon completion of all USDA inspection requirements. The sample units will be evaluated for the characteristics of appearance, odor, flavor, texture and overall quality. Failure of samples to conform to all such characteristics may be cause for rejection.

(2) Conformance inspection. Conformance inspection shall include the product examination 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 the Packaging Requirements and Quality Assurance Provisions document and A-A-20234 utilizing the double sampling plans indicated in ANSI/ASQC Z1.4 - 1993. The lot size shall be expressed in pouches. The sample unit shall be the contents of one pouch. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 1.5 for major defects and 4.0 for minor defects. Defects and defect classifications are listed in Table I. The product shall be examined at a temperature of 65°F to 75°F.

TABLE I. Product defects 1/ 2/

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>General (Applicable to all waffles)</u>
101		Waffles not fully baked with an exterior not light to golden brown and an interior not off-white to tan color.
102		Waffles exhibit evidence of excessive heating (materially darkened or scorched), are excessively crumbly, dry and crisp, have gummy centers or soggy areas, and contain raw portions.
103		Waffles do not possess a sweet flavor with mild egg and vanilla notes or a sweet odor.
104		Pouch does not contain intact oxygen absorber packets.
	201	Texture not moist or not tender, but dry and rubbery.
	202	Waffle type not as specified.
	203	Waffle dimensions not as specified.
	204	Net weight of individual pouch less than 12 ounces.
		<u>Appearance</u>
	205	Type II waffles do not exhibit small blueberries dispersed throughout surface and waffle interior.
		<u>Odor and flavor</u>
105		Type II waffles also do not possess a characteristic sweet blueberry odor or blueberry flavor.
106		Type III waffles also do not possess a characteristic sweet apple cinnamon odor or apple cinnamon flavor.
		<u>Texture</u>
	206	Type II waffles do not have small, soft, moist blueberries.

1/ The presence of foreign material for example, dirt, insect parts, hair, wood, glass, metal or mold, or 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.

B. Methods of inspection.

(1) 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.

(2) Net weight. The net weight of the filled and sealed pouches shall be determined by weighing each sample unit on a suitable scale tared with a representative empty pouch, paperboard tray, and applicable number of oxygen absorber packets. Results shall be reported to the nearest 1 ounce.

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

A. Packaging.

(1) Pouch material certification. Material listed below may be accepted on the basis of a contractor's certification 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	D-1,A,(1),a	As specified in ASTM D 2103 <u>1/</u>
Aluminum foil thickness	D-1,A,(1),a	As specified in ASTM B 479 <u>2/</u>
Laminated material identification and construction	D-1,A,(1),a	Laboratory evaluation
Color of laminated material	D-1,A,(1),a	Visual evaluation by FED-STD-595 <u>3/</u>

1/ ASTM D 2103 Specification for Polyethylene Film and Sheeting

2/ ASTM B 479 Specification for Annealed Aluminum Foil For Flexible Barrier Application

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

(2) Unfilled preformed pouch certification. A certification of conformance may be accepted as evidence that unfilled pouches conform to the requirements specified in D-1,A,(1) a and b. When deemed necessary by the USDA, testing of the unfilled preformed pouches for seal strength shall be as specified in E-6,A,(4),a.

(3) Filled and sealed pouch examination. The filled and sealed pouches shall be examined for the defects listed in table II. The lot size shall be expressed in pouches. The sample unit shall be one 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 II. Filled and sealed pouch defects 1/

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Tear, hole, or open seal.
102		Seal width less than 1/16 inch. <u>2/</u>
103		Presence of delamination. <u>3/</u>
104		Unclean pouch. <u>4/</u>
105		Pouch has foreign odor.
106		Any impression or design on the heat seal surfaces which conceals or impairs visual detection of seal defects. <u>5/</u>
107		Not packed as specified.
	201	Label smudges, is missing, incorrect, or illegible.
	202	Tear notch or serrations missing or does not facilitate opening.
	203	Seal width less than 1/8 inch but greater than 1/16 inch.
	204	Presence of delamination. <u>3/</u>

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

2/ 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.

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- 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 (+1/16 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 minor defects.

4/ 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 classified 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 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.

5/ 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.

(4) Seal testing. The pouch seals shall be tested for seal strength as required in a or b, as applicable.

a. Unfilled preformed pouch seal testing. The seals of the unfilled preformed pouch shall be tested for seal strength in accordance with ASTM F 88, Seal Strength of Flexible Barrier Materials. The lot size shall be expressed in pouches. 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 average seal strength of any side shall be calculated by averaging the three specimens cut from that side. Any average seal strength of less than 6 pounds per inch of width or any test specimen with a seal strength of less than 5 pounds per inch of width shall be cause for rejection of the lot.

b. Pouch closure seal testing. The closure seals of the pouches shall be tested for seal strength in accordance with ASTM F 88. The lot size shall be expressed in pouches. The sample size shall be the number of pouches indicated by inspection level S-1. For the closure seal on preformed pouches, three adjacent specimens shall be cut from the closure seal of each pouch in the sample. For the form-fill-seal pouches, three adjacent specimens shall be cut from each side and each end of each pouch in the sample. The average seal strength of any side, end or closure shall be calculated by averaging the three specimens cut from that side, end or closure. Any average seal strength of less than 6 pounds per inch of width or any test specimen with a seal strength of less than 5 pounds per inch of width shall be cause for rejection of the lot.

B. Packing.

(1) Shipping container and marking examination. The filled and sealed shipping containers shall be examined for the defects listed in table III below. The lot size shall be expressed in shipping containers. 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 III. Shipping container and marking defects

Category	Defect
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<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	More than 30 pounds of product.

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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.

#### **SECTION J REFERENCE DOCUMENTS**

##### DSCP FORM

DPSC FORM 3556 Marking Instructions for Shipping Cases, Sacks and Palletized/Containerized Loads of Perishable and Semiperishable Subsistence

##### FEDERAL SPECIFICATION

A-A-1898, Cushioning Material, Cellulosic, Packaging,

##### FEDERAL STANDARD

FED-STD-595 - Colors Used in Government Procurement

##### NON-GOVERNMENTAL STANDARDS

##### AMERICAN SOCIETY FOR QUALITY CONTROL (ASQC)

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

##### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

B 479 - Specification for Annealed Aluminum Foil For Flexible Barrier Application

D 1974 - Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers

D 2103 - Specification for Polyethylene Film and Sheeting

D 5118 - Standard Practice for Fabrication of Fiberboard Shipping Boxes

F 88 - Seal Strength of Flexible Barrier Materials

AOAC INTERNATIONAL Official Methods of Analysis of the AOAC International