

SECTION C

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

C-1 ITEM DESCRIPTION

PCR-B-055, BEVERAGE POWDER, CARBOHYDRATE, PACKAGED IN A FLEXIBLE POUCH, SHELF STABLE

Flavors.

- Flavor 1 - Fruit Punch
- Flavor 2 - Grape
- Flavor 3 - Lemon-lime
- Flavor 4 - Orange
- Flavor 5 - Tropical punch
- Flavor 6 - Lemonade

Formulations.

- Formulation a - Fortified with ascorbic acid and enhanced with maltodextrin
Ascorbic acid – Not less than 45 milligrams per serving
Maltodextrin – Not less than 13 grams per serving
- Formulation b - Fortified with ascorbic acid and enhanced with maltodextrin
Ascorbic acid – Not less than 30 milligrams per serving
Maltodextrin – Not less than 30 grams per serving
- Formulation c - Fortified with ascorbic acid, vitamin D, and fiber, and enhanced with maltodextrin
Ascorbic acid – Not less than 30 milligrams per serving
Maltodextrin – Not less than 30 grams per serving
Vitamin D – Not less than 260 IU per serving
Dietary fiber – Not less than 2 grams per serving

Designs.

- Design B - Flat interlocking closure pouch
- Design E - Small flat pouch

C-2 PERFORMANCE REQUIREMENTS

A. Product standard. A sample shall be subjected to first article (FA) or product demonstration model (PDM) inspection as applicable, in accordance with the tests and inspections of Section E of this Performance-based Contract Requirements (PCR) document. The approved sample shall serve as the product standard. Should the contractor at any time plan to or actually produce the product using different raw material or process methodologies from the approved product standard, which result in a product noncomparable to the product standard, the contractor shall submit a replacement FA or PDM for approval. In any event, all product produced must meet all requirements of this document including product standard comparability.

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

C. Powdered product.

(1) Appearance. The beverage powder shall be a uniformly blended, free flowing, homogenous, dry mixture. The packaged food shall be free from foreign materials.

(2) Odor. The packaged food shall have an odor typical of the flavor specified. The packaged food shall be free from foreign odors.

(3) Texture. The packaged food shall be free from hard lumps.

D. Hydrated product. The beverage powder, when hydrated according to label instructions shall dissolve within 2 minutes.

(1) Appearance. The hydrated product shall be a clear to slightly cloudy, sediment-free liquid and shall have a color as specified below.

a. Flavor 1. The fruit punch beverage shall be a reddish-orange color.

b. Flavor 2. The grape beverage shall be a purple color.

c. Flavor 3. The lemon-lime beverage shall be a bright pale green color.

d. Flavor 4. The orange beverage shall be a bright orange color.

e. Flavor 5. The tropical punch beverage shall be a light red color.

f. Flavor 6. The lemonade beverage shall be a pale yellow color.

(2) Odor and flavor. The hydrated product shall be free from foreign odors and flavors and shall have an odor and flavor as specified below.

- a. Flavor 1. The fruit punch beverage shall have a sweet fruit blend odor and flavor.
- b. Flavor 2. The grape beverage shall have a sweet grape odor and flavor.
- c. Flavor 3. The lemon-lime beverage shall have a sweet, sour, lemon-lime odor and flavor.
- d. Flavor 4. The orange beverage shall have a sweet, sour, distinct orange odor and flavor.
- e. Flavor 5. The tropical punch beverage shall have a tropical fruit blend odor and flavor.
- f. Flavor 6. The lemonade beverage shall have a sweet, sour, lemon odor and flavor.

E. Net weight.

(1) Formulation a, design E. The net weight of an individual pouch shall be not less than 34 grams.

(2) Formulation b, design B. The net weight of an individual pouch shall be not less than 47 grams.

(3) Formulation c, design B. The net weight of an individual pouch shall be not less than 49 grams.

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

G. Analytical requirements.

(1) Moisture.

- a. Formulation a. The moisture content shall be not greater than 3.5 percent.
- b. Formulation b. The moisture content shall be not greater than 6.0 percent.
- c. Formulation c. The moisture content shall be not greater than 5.0 percent.

(2) Nutrient content. The packaged product per serving shall contain not less than the following amounts:

<u>Fortification</u>	<u>Formulation</u>		
	<u>a</u>	<u>b</u>	<u>c</u>
Ascorbic acid (milligrams)	45	30	30
Maltodextrin (grams)	13	30	30
Vitamin D (IU)	-	-	260

(3) Dietary fiber. For Formulation c, the dietary fiber content of the packaged product shall be not less than 2 grams per serving.

SECTION D

D-1 PACKAGING

A. Packaging.

(1) Design B, Flat interlocking closure pouch. When specified, the powdered product shall be filled into a preformed barrier pouch. The pouch is to be used as a package and a hydrating pouch for the beverage powder.

a. Pouch material. The pouch shall be fabricated from 0.002 inch thick ionomer or polyethylene film laminated or extrusion coated to 0.00035 inch thick aluminum foil which is then bonded to 0.0005 inch thick polyester. The three plies may be laminated with nylon on the exterior of the pouch. Tolerances for thickness of plastic films shall be plus or minus 20 percent and tolerance for foil layer shall be plus or minus 10 percent. The material shall show no evidence of delamination, degradation, or foreign odor when heat sealed or fabricated into pouches. The material shall be suitably formulated for food packaging and shall not impart an odor or flavor to the product. The complete exterior surface of the pouch shall be uniformly colored and shall conform to number 20219, 30219, 30227, 30279, 30313, 30324, or 30450 of FED-STD-595, Colors Used in Government Procurement.

b. Pouch construction. The pouch shall be a flat design preformed or vertical form-fill-seal pouch with an interlocking closure. The design and dimensions shall be as specified in figure 1. The pouch shall be made by heat sealing the sides and top of the pouch with 3/8 (+1/8, -1/4) inch wide seals. The pouch shall exhibit no rupture or seal separation greater than 1/16 inch when tested for internal pressure resistance. The interlocking closure of the pouch shall not leak more than 15 ml. A tear nick or notch shall be provided on one or two opposite edges of the pouch above the interlocking closure to facilitate opening of the filled and sealed pouch. A 1/8 inch wide lip may be incorporated at the open end of the pouch.

c. Pouch filling and sealing. Product shall be inserted into the pouch and the filled pouch shall be sealed with a 1/8 to 1 inch wide heat seal. The closure seal shall be applied not more than 1/2 inch from the open end 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. Seals shall be free of impression or design on the seal surface that would conceal or impair visual detection of seal defects. The average seal strength shall be not less than 6

pounds per inch of width and no individual specimen shall have a seal strength of less than 5 pounds per inch of width. Alternatively, the filled and sealed pouch shall exhibit no 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 when tested for internal pressure resistance.

(2) Design E, Small flat pouch. When specified, the powdered product shall be filled into a small flat pouch.

a. Pouch material. The pouch shall be fabricated from 0.002 inch thick ionomer or polyethylene film laminated or extrusion coated to 0.00035 inch thick aluminum foil which is then bonded to 0.0005 inch thick polyester. Tolerances for thickness of plastic films shall be plus or minus 20 percent and tolerance for foil layer shall be plus or minus 10 percent. The material shall show no evidence of delamination, degradation, or foreign odor when heat sealed or fabricated into pouches. The material shall be suitably formulated for food packaging and shall not impart an odor or flavor to the product. The complete exterior surface of the pouch shall be uniformly colored and shall conform to number 20219, 30219, 30227, 30279, 30313, 30324, or 30450 of FED-STD-595, Colors Used in Government Procurement.

b. Pouch construction. The pouch shall be a flat style preformed or vertical form-fill-seal pouch. The pouch shall have maximum inside dimensions of 3-7/8 by 4-3/4 inches. The pouch shall be made by heat sealing three edges with 3/8 (-1/8, +3/16) inch wide seals. A tear nick or notch shall be provided to facilitate opening of the filled and sealed pouch. A 1/8 inch wide lip may be incorporated at the open end of the pouch.

c. Pouch filling and sealing. Product shall be inserted into 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. Seals shall be free of impression or design on the seal surface that would conceal or impair visual detection of seal defects. The sealed pouch shall not leak when tested in accordance with E-6,B(3).

D-2 LABELING

A. Pouches. Each pouch shall be correctly and legibly labeled. Printing ink shall be permanent black ink or other dark contrasting color which is free of carcinogenic elements. The label shall contain the following information:

- (1) Name and flavor of product (letters not less than 1/8 inch high)
- (2) Ingredients
- (3) Date 1/
- (4) Net weight
- (5) Name and address of packer
- (6) "Nutrition Facts" label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA regulations
- (7) Directions for Design B flat interlocking closure pouch:

Allow water just chemically purified to stand 30 minutes before adding to powder. Tear pouch at notch. Open zipper, add 12 ounces of water (about 1/2 canteen cup) to fill line. Close zipper, shake to mix. *Single use only.*

Fill line for Design B flat interlocking closure pouch: A fill line (not less than 1/32 inch thick, not less than 2 inches long and centered) shall be placed on the pouch/label for 12 ounce fill at $6\text{-}1/2 \pm 1/4$ inches from the inside edge of the bottom closure seal.

(8) Directions for Design E small flat pouch:
Allow water just chemically purified to stand 30 minutes before adding to powder. Add 12 ounces of water (about 1/2 canteen cup) to contents and stir.

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, 14 February 2013 would be coded as 3045. The Julian day code shall represent the day the product was packaged into the pouch.

D-3 PACKING

A. Packing. Not more than 40 pounds of product shall be packed in a fiberboard shipping box constructed in accordance with style RSC-L of ASTM D5118/D5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. The fiberboard shall conform to type CF, class D, variety SW, burst grade 200 or ECT grade 32 of ASTM D4727/D4727M, Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes. Each box shall be closed in accordance with ASTM D1974/D1974M, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

D-5 MARKING

A. Shipping containers. Shipping containers shall be marked in accordance with DLA Troop Support Form 3556, Marking Instructions for Boxes, Sacks, and Unit Loads of Perishable and Semiperishable Subsistence.

SECTION E INSPECTION AND ACCEPTANCE

The following quality assurance criteria, utilizing ANSI/ASQ Z1.4, Sampling Procedures and Tables for Inspection by Attributes, are required. Unless otherwise specified, single sampling plans indicated in ANSI/ASQ Z1.4 will be utilized. 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 appearance, odor, flavor, and texture. 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:

DEPARTMENT OF THE ARMY
FCDD-SCC-EMR
COMBAT CAPABILITIES DEVELOPMENT COMMAND-SOLDIER CENTER
10 GENERAL GREENE AVENUE
NATICK, MA 01760-5056

One lot shall be randomly selected during each calendar month of production or as otherwise specified in the contract. Three (3) sample units shall be randomly selected from that one production lot. The three (3) sample units shall be shipped to Natick within five (5) working days from the end of the production month from which they are randomly selected and upon completion of all USDA inspection requirements. The sample units will be evaluated for overall quality against the current first article or product demonstration model.

(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/ASQ Z1.4. The lot size shall be expressed in pouches. The sample unit shall be one filled and sealed 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.

TABLE I. Product defects 1/ 2/

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Powdered product</u>
		<u>General</u>
101		Not carbohydrate beverage powder flavor, formulation or design as specified.
		<u>Appearance</u>
	201	Not a uniformly blended, free flowing, homogenous, dry mixture.
		<u>Odor</u>
102		Not odor typical of flavor specified.
		<u>Texture</u>
	202	Presence of hard lumps. <u>3/</u>
		<u>Net weight</u>
	203	Net weight of an individual pouch for formulation a, design E , less than 34 grams.
	204	Net weight of an individual pouch for formulation b, design B , less than 47 grams.
	205	Net weight of an individual pouch for formulation c, design B , less than 49 grams.

TABLE I. Product defects 1/ 2/ - Continued

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Hydrated product 4/</u>
		<u>Appearance</u>
	206	Not a clear to slightly cloudy, sediment-free liquid.
	207	Flavor 1 fruit punch beverage not a reddish-orange color.
	208	Flavor 2 grape beverage not a purple color.
	209	Flavor 3 lemon-lime beverage not a bright pale green color.
	210	Flavor 4 orange beverage not a bright orange color.
	211	Flavor 5 tropical punch beverage not a light red color.
	212	Flavor 6 lemonade beverage not a pale yellow color.
		<u>Odor and flavor</u>
103		Flavor 1 fruit punch beverage not a sweet fruit blend odor or flavor.
104		Flavor 2 grape beverage not a sweet grape odor or flavor.
105		Flavor 3 lemon-lime beverage not a sweet, sour, lemon-lime odor or flavor.
106		Flavor 4 orange beverage not a sweet, sour, distinct orange odor or flavor.
107		Flavor 5 tropical punch beverage not a tropical fruit blend odor or flavor.
108		Flavor 6 lemonade beverage not a sweet, sour, lemon odor or flavor.

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

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. Palatability not applicable to powdered product.

3/ Lumps that do not fall apart under light pressure shall be scored as a defect.

4/ Prior to conducting the hydrated product examination, the beverage powder shall be hydrated per label instructions. Product that does not fully dissolve within 2 minutes with constant stirring or shaking 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 36 month 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 quality scale to be considered acceptable.

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

(3) Analytical. The sample to be analyzed shall be a composite of eight filled and sealed pouches which have been selected at random from the lot. The composite sample shall be prepared and analyzed in accordance with the following methods of the Official Methods of Analysis (OMA) of AOAC International:

<u>Test</u>	<u>Method Number</u>
Moisture	925.45A, or 2007.04 <u>1/</u>

Test results shall be reported to the nearest 0.1 percent. Government verification will be conducted through actual testing by a Government laboratory. Any result not conforming to the analytical requirement shall be cause for rejection of the lot.

1/ Applicable for Flavors 1-5, Formulation a only.

(4) Nutrient content. The sample to be analyzed shall be a composite of eight filled and sealed pouches which have been selected at random from the lot. The composite sample shall be prepared and analyzed in accordance with the following methods of the Official Methods of Analysis (OMA) of AOAC International:

<u>Test</u>	<u>Method Number</u> <u>1/</u>
Ascorbic Acid (Vitamin C)	984.26 or 967.21
Vitamin D	2002.05, 2011.12 or 2011.13

1/ Tests will be conducted on formulations a, b and c for Vitamin C and on formulation c for Vitamin D on the first production lot of a contract cycle. USDA will perform the verification

testing and obtain a copy of the formulation used in the production of that lot. A Certificate of Conformance (CoC) for nutrient content for Vitamin C and Vitamin D will be provided on all future lots produced using the same formulation. If the formula is changed or a new contract starts, then another set of tests shall be conducted by USDA, for Vitamin C and Vitamin D, and USDA will obtain a copy of the formulation.

(5) Dietary fiber content. For Formulation c, the dietary fiber content shall be verified by the NLEA “Nutrition Facts” label. Product not conforming to the fiber content as specified in Section C of this document shall be cause for rejection of the lot.

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

A. Packaging.

(1) Pouch material certification. The pouch material shall be tested for these characteristics. A Certificate of Conformance (CoC) may be accepted as evidence that the characteristics conform to the specified requirements.

<u>Characteristic</u>	<u>Requirement paragraph</u>	<u>Test procedure</u>
Thickness of film for laminated material	D-1,A(1)a and D-1,A(2)a	ASTM D2103 <u>1/</u>
Aluminum foil thickness	D-1,A(1)a and D-1,A(2)a	ASTM B479 <u>2/</u>
Laminated material identification and construction	D-1,A(1)a and D-1,A(2)a	Laboratory evaluation
Color of laminated material	D-1,A(1)a and D-1,A(2)a	FED-STD-595 <u>3/</u>

1/ Standard Specification for Polyethylene Film and Sheeting

2/ Standard Specification for Annealed Aluminum and Aluminum-Alloy Foil for Flexible Barrier, Food Contact, and Other Applications

3/ Colors Used in Government Procurement

(2) Unfilled preformed pouch certification. A CoC may be accepted as evidence that unfilled pouches conform to the requirements specified in D-1,A(1)a and b and D-1,A(2)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,B(1)a or b.

(3) Pouch material certification. For design E, all material, construction and sealing requirements shall be verified by a CoC.

(4) 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 or 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		Leakage. <u>6/</u>
108		Design B fill line missing or does not measure $6-1/2 \pm 1/4$ inches from the inside edge of the bottom closure seal.
109		Not packaged as specified.
	201	Label missing or incorrect or illegible.
	202	Tear nick or notch missing or does not facilitate opening.
	203	Seal width less than 1/8 inch but greater than or equal to 1/16 inch. <u>2/</u>
	204	Presence of delamination. <u>3/</u>
	205	Design B pouch does not meet design or dimensions cited in Figure 1.
	206	Design B fill line on pouch not required thickness or length.
	207	Design B pouch closure seal more than 1/2 inch from the open end of the pouch.

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 ($\pm 1/16$ 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).

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.

6/ Examine design E, small flat pouch after removal from leakage test apparatus.

B. Methods of inspection.

(1) Seal testing. The pouch seals shall be tested for seal strength as required in a, b or c, 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 F88/F88M, Standard Test Method for Seal Strength of Flexible Barrier Materials. The lot size shall be expressed in pouches. The sample unit shall be one pouch. The sample size shall be the number of pouches indicated by inspection level S-1. Three adjacent specimens shall be cut from each of the three sealed sides of each pouch in the sample. The 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 classified as a major defect and 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 F88/F88M. The lot size shall be expressed in pouches. The sample unit shall be one pouch. The sample size shall be the number of pouches indicated by inspection level S-1. For the closure seal on preformed pouches, three specimens shall be cut from the closure seal of each pouch in the sample. For vertical 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 adjacent 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 classified as a major defect and shall be cause for rejection of the lot.

c. Internal pressure test. For design B, the internal pressure resistance shall be determined by pressurizing the pouches while they are restrained between two rigid plates. The lot size shall be expressed in pouches. The sample unit shall be one pouch. The sample size shall be the number of pouches indicated by inspection level S-1. If a three seal tester (one that pressurizes the pouch through an open end) is used, the closure seal shall be cut off for testing the sides and end of the pouch. For design B pouch, when testing the closure seal, the top and interlocking closure 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 + 1/16 inch. 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 manufacturer's 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 II, footnote 2/) shall be considered a test failure. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

(2) Interlocking closure test. For design B, the interlocking closure of the pouch shall be tested. The lot size shall be expressed in pouches. The sample unit shall be one pouch. The sample size shall be the number of pouches indicated by inspection level S-2. Open a filled and sealed interlocking pouch and prepare beverage in accordance with instructions using 70°F (± 5°F) water. Close pouch. Invert pouch and suspend pouch for 15 seconds. Collect and measure any liquid that drips. Pouches that leak more than 15 ml shall be classified as a major defect and shall be cause for rejection of the lot.

(3) Leakage test. For design E, filled and sealed pouches shall be tested by placing them in a dry desiccator, or similar apparatus, and subjecting them to a vacuum of 26 inches of mercury (atmospheric pressure is 29.9 inches of mercury) for 30 seconds. Any pouch that does not swell to form a tightly distended package having at least one distorted edge during the test shall be recorded as a leaker. After vacuum testing, the pouches shall be visually inspected for evidence of delamination and for seal separation. Any leakage, any delamination, or any seal separation of more than 1/16 inch from the product edge of any seal shall be recorded as a major defect.

C. Packing.

(1) Shipping container and marking examination. The filled and sealed shipping containers shall be examined for the defects listed in table III. 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
<u>Major</u>	<u>Minor</u>	
101		Marking missing or incorrect or illegible.
102		Inadequate workmanship. <u>1/</u>
	201	More than 40 pounds of product.

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.

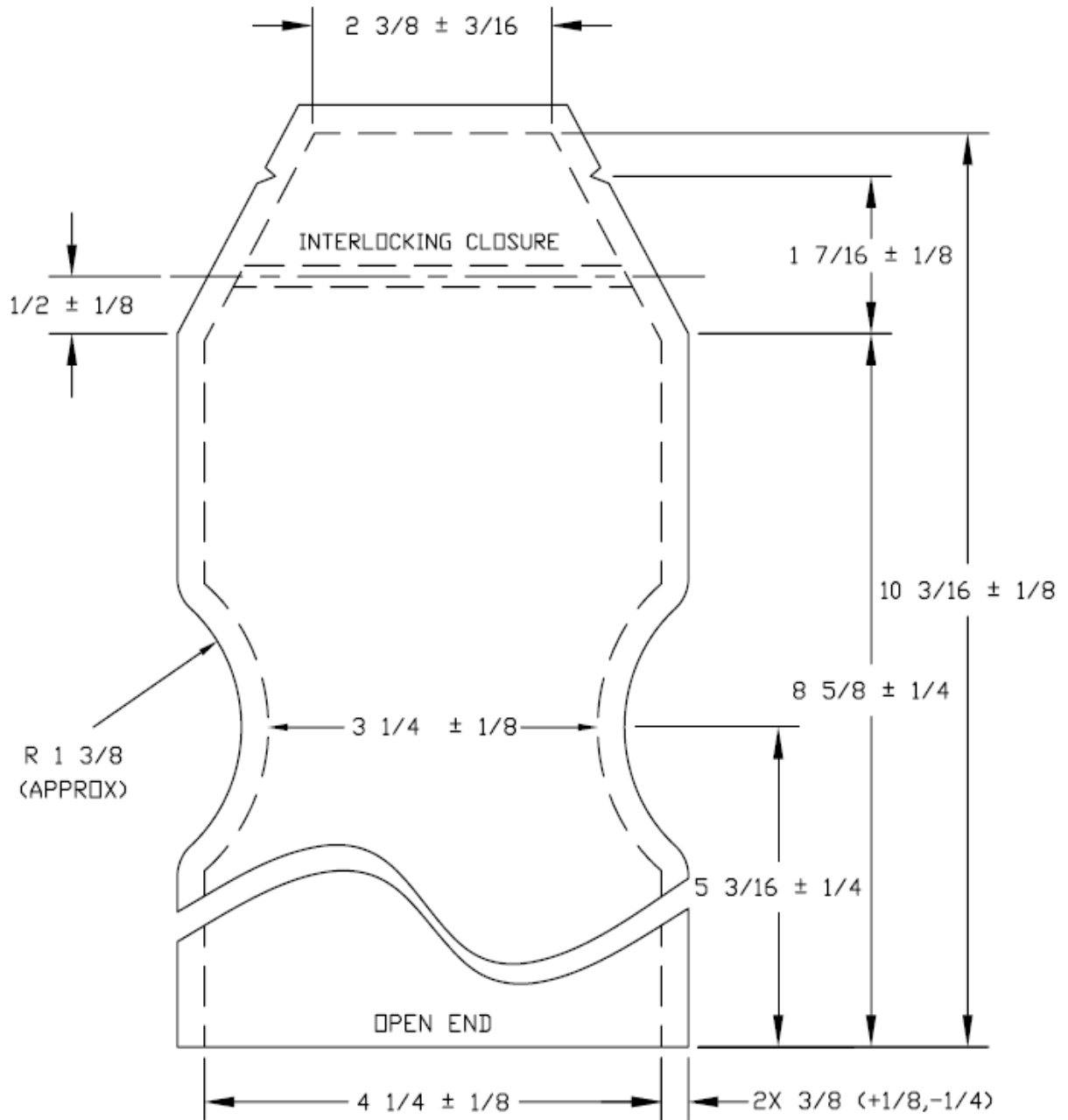


FIGURE 1. Design B, Flat Interlocking Closure Pouch
(Not actual size)

SECTION J REFERENCE DOCUMENTS

Unless otherwise specified, the applicable version of these documents is that which is active on the date of the solicitation or contract.

DLA Troop Support Forms

Form 3556 Marking Instructions for Boxes, Sacks, and Unit Loads of
Perishable and Semiperishable Subsistence

FEDERAL STANDARD

FED-STD-595 Colors Used in Government Procurement

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ) www.asq.org

ANSI/ASQ Z1.4 Sampling Procedures and Tables for Inspection by
Attributes

ASTM INTERNATIONAL www.astm.org

B479 Standard Specification for Annealed Aluminum and
Aluminum-Alloy Foil for Flexible Barrier, Food Contact,
and Other Applications

D1974/D1974M Standard Practice for Methods of Closing, Sealing, and
Reinforcing Fiberboard Boxes

D2103 Standard Specification for Polyethylene Film and Sheeting

D4727/D4727M Standard Specification for Corrugated and Solid
Fiberboard Sheet Stock (Container Grade) and Cut Shapes

D5118/D5118M Standard Practice for Fabrication of Fiberboard Shipping
Boxes

F88/F88M Standard Test Method for Seal Strength of Flexible Barrier
Materials

AOAC INTERNATIONAL www.aoac.org

Official Methods of Analysis (OMA) of AOAC International