

SECTION C

This document covers instant fruit juice, packaged in a flexible pouch or metal can for use by the Department of Defense as a component of operational rations.

C-1 ITEM DESCRIPTION

PCR-J-002A, JUICE, FRUIT, INSTANT

Types, styles, designs and packages.

Types.

Type I – Grape
Type II – Orange

Styles.

Style A – Sweetened
Style B – Unsweetened

Designs.

Design B – Flat interlocking closure pouch
Design F – Metal can

Packages.

Package E – Unitized Group Ration™ (UGR™)-Heat & Serve™ (UGR-H&S™)
Package I – Unitized Group Ration™-B (UGR-B™)
Package K – Unitized Group Ration™-Express™ (UGR-E™)

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. Standards.

(1) Ungraded.

a. Type I. Grape juice shall be a dried grape juice powder.

(2) Graded. The grade standard for type II shall conform to the following standard as an ingredient prior to dehydration.

a. Type II. Orange juice shall be U.S. Grade A of the United States Standards for Grades of Orange Juice.

D. Powdered product.

(1) Appearance. The finished product shall be a uniform, free flowing, dry mixture. The orange juice powder shall be a yellow-orange color and the grape juice powder shall be a purple color. The finished product shall be free from foreign materials and foreign colors.

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

(3) Texture. The instant fruit juice powder shall be free from hard lumps.

E. Hydrated product. The instant fruit juice, when hydrated according to directions for use, shall dissolve within 2 minutes of constant stirring or shaking.

(1) Appearance.

a. Type I, style A. The hydrated grape juice shall have a purple color.

b. Type II, style B. The hydrated orange juice shall have an orange color.

(2) Odor and flavor. The packaged food shall be free from foreign odors or flavors.

a. Type I, style A. The hydrated grape juice shall have a sweetened grape odor and flavor.

b. Type II, style B. The hydrated orange juice shall have an unsweetened orange odor and flavor.

(3) Texture. The hydrated fruit juice shall have no discernible lumps and shall be sediment free.

F. Net weight.

a. Type I, style A, design B. The net weight of the pouch of instant grape juice shall be not less than 34 grams.

b. Type II, style B, design B. The net weight of the pouch of instant orange juice shall be not less than 31 grams.

c. Type II, style B, design F. The net weight of the can of instant orange juice shall be not less than 16.5 ounces (468 grams).

d. Type I, style A, design F. The net weight of the can of instant grape juice shall be not less than 19.0 ounces (539 grams).

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

H. Analytical requirements.

(1) Moisture.

a. Design B. The moisture content shall be not greater than 2.0 percent.

b. Design F. The moisture content shall be not greater than 1.5 percent.

(2) Oxygen (design F only). The oxygen content of the headspace gas shall not exceed 2.0 percent.

(3) Sulfite (design F only). Sulfite compounds, not more than 250 ppm, may be added to the product.

C-3 MISCELLANEOUS INFORMATION

THE FOLLOWING IS FOR INFORMATION ONLY. THIS IS NOT A MANDATORY CONTRACT REQUIREMENT.

A. Ingredients for type I, style A may be as follows: Concentrated Concord grape juice, essence or natural flavor from Concord grapes, white refined granulated cane or beet sugar, dextrose, corn syrup or corn syrup solids, (used singly or in combination, sodium sulfite or sodium bisulfite), defoaming agents, foam stabilizers, vegetable gums or carboxymethylcellulose, tartaric, citric, malic acid, anticaking agents. 1/

1/ Dextrose, corn syrup and corn syrup solids, if used, should not exceed 1/2 by weight, of the total sweetening ingredient on a dry solids basis.

B. Ingredients for type II, style B may be as follows: Orange juice concentrate, oil of orange, entrapped orange oil granules, sodium sulfite, sodium bisulfite, foam stabilizers, vegetable gums, carboxymethylcellulose, and anticaking agents.

SECTION D

D-1 PACKAGING

A. Packaging.

(1) Design B, Flat interlocking closure pouch. For type I, style A, design B, 34 grams or for type II, style B, design B, 31 grams of fruit juice shall be filled into a preformed pouch as described below. The pouch shall be used as a package and for hydration of the fruit juice.

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 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 F Metal can. For type I, style A, a net weight of 19.0 ounces (532 grams) or for type II, style B, a net weight of 16.5 ounces (462 grams) shall be unit packed in a size 401 by 411 or 401 by 602 metal can in accordance with good commercial practice. After filling, the can shall be hermetically sealed under conditions which will result in a vacuum of not less than 15 inches of mercury or sealed under an atmosphere of nitrogen so that the oxygen content of the gases in the filled and sealed container does not exceed 2.0 percent. The filled, sealed, and processed can shall conform to the United States Standards for Condition of Food Containers. The can shall not leak when tested in accordance with E-6,B(5). Each can shall have a moisture content not greater than 1.5 percent. A desiccant may be used. An oxygen scavenger may be used.

(3) Oxygen scavenger for Design F Metal can. The oxygen scavenger shall be constructed of materials that are safe for direct and indirect food contact and shall be

suitable for use with edible products. The oxygen scavenger shall be in compliance with all applicable FDA regulations.

(4) Desiccant for Design F Metal can. The desiccant shall be constructed of materials that are safe for direct and indirect food contact and shall be suitable for use with edible products. The desiccant shall be in compliance with all applicable FDA regulations.

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) 1/
- (2) Ingredients
- (3) Date 2/
- (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 the instant fruit juice powder. Tear pouch at notch. Open zipper, add 8 ounces of cold water (1/3 canteen cup) to fill line. Close zipper. Shake to mix. *SINGLE USE ONLY.*

(8) 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 or label for 8-ounce fill at $4-1/2 \pm 1/4$ inches from the inside edge of the closure seal.

1/ Type I, Style A, Design B, product name shall be referred to as instant grape juice and shall include percent juice.

2/ Each pouch or envelope 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 2014 would be coded as 4045. The Julian day code shall represent the day the product was packaged into the pouch.

B. Metal cans (Design F). Labeling of metal cans shall be as specified in DLA Troop Support Form 2997, Labeling of Metal Cans for Subsistence Items. The label shall include the following information as:

1. Type I, Style A, Design F.

GRAPE JUICE, INSTANT, SWEETENED

GAS PACKED (when applicable)
Preserved with Sulfur Dioxide (when applicable)

Directions for use

IMPORTANT: DISCARD DESICCANT BAG OR OXYGEN SCAVENGER

Place contents in a gallon measure and add 1-7/8 quarts of water while stirring. Makes 1/2 gallon (sixteen 4-fluid ounce servings) of grape juice.

To make grape juice drink, add an additional 1/2 gallon of water and stir. Makes 1 gallon (16, 8-fluid ounce servings) of grape juice drink.

NOTE: When a calcium oxide (CaO) desiccant is used, the following statement shall be printed on the packet:

DO NOT DISCARD DESICCANT PACK. Fill empty beverage can with water and submerge desiccant pack for 30 minutes before discarding. The spent desiccant may be disposed of with general trash.

2. Type II, Style B, Design F.

JUICE, ORANGE, INSTANT, UNSWEETENED

GAS PACKED (when applicable)
Preserved with Sulfur Dioxide (when applicable)

Directions for use

IMPORTANT: DISCARD DESICCANT BAG OR OXYGEN SCAVENGER

Pour approximately a quart of cold water into a gallon measure. While whipping water, gradually add product. When product has dissolved, add water to make one gallon of juice and stir. If desired, 1/4 cup of sugar may be added. Makes sixteen 8-fluid ounce servings of

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orange juice. When preparing juice in quantity, add contents of each can to 3-3/4 quarts of cold water and stir briskly.

NOTE: When a calcium oxide (CaO) desiccant is used, the following statement shall be printed on the packet:

DO NOT DISCARD DESICCANT PACK. Fill empty beverage can with water and submerge desiccant pack for 30 minutes before discarding. The spent desiccant may be disposed of with general trash.

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-4 UNITIZATION

A. Unit load examination. The unit load shall be examined in accordance with the requirements of DLA Troop Support Form 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items.

D-5 MARKING

A. Shipping containers and unit loads. Shipping containers and unit loads shall be marked in accordance with DLA Troop Support Form 3556, Marking Instructions for Boxes, Sacks, and Unit Loads of Perishable and Semiperishable Subsistence. In addition, the following markings (for design F, metal can only) shall appear upon the top of each shipping container in letters not less than 1 inch high.

STORE IN COOL, DRY PLACE
PRODUCT DETERIORATES
RAPIDLY ABOVE 80°F

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.

(2) **Periodic review evaluation.** 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:

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US Army Research, Development and Engineering Command
Natick Soldier Research, Development and Engineering Center
RDNS-CFF
15 Kansas Street
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.

(3) Conformance inspection. Conformance inspection shall include the examinations/tests and 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 or cans. The sample unit shall be one filled and sealed pouch or one filled and sealed can. 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 major defects and 4.0 for minor defects. Defects and defect classifications are listed in table I.

TABLE I. Product defects 1/ 2/ 3/

Category	Defect
<u>Major</u>	<u>Minor</u>
	<u>Powdered product</u>
101	Product not type or style or design as specified.
	<u>Appearance</u>
	201 Not a uniform, free flowing, or dry mixture.
	202 Orange juice powder not a yellow-orange color.
	203 Grape juice powder not a purple color.
	<u>Odor</u>
102	Not odor of type specified.
	<u>Texture</u>
	204 Presence of hard lumps. <u>4/</u>
	<u>Net weight</u>
	205 Type I, style A, design B net weight of an individual pouch less than 34 grams.
	206 Type II, style B, design B net weight of an individual pouch less than 31 grams.
	207 Type II, style B, design F net weight of an individual can less than 16.5 ounces (468 grams).
	208 Type I, style A, design F net weight of an individual can less than 19.0 ounces (539 grams).

TABLE I. Product defects 1/ 2/ 3/ - Continued

Category	Defect
<u>Major</u>	<u>Minor</u>
	<u>Hydrated product</u> <u>5/</u>
	<u>Appearance</u>
	209 Type I, style A hydrated grape juice not a purple color.
	210 Type II, style B hydrated orange juice not an orange color.
	<u>Odor and flavor</u>
103	Type I, style A does not have a sweetened grape odor or flavor.
104	Type II, style B does not have an unsweetened orange odor or flavor.
	<u>Texture</u>
105	Product has discernible lumps or not sediment free.
	<u>Desiccant bag or oxygen scavenger (for Design F metal can only)</u>
106	Desiccant bag or oxygen scavenger missing or damaged. <u>6/</u>

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/ Failure of the juice ingredient for Type II to meet the U.S. Grade A requirements verified with a USDA Grade Certificate, shall be cause for rejection of the lot.

4/ Lumps that do not fall apart under light pressure between the fingers shall be scored as a defect.

5/ Prior to conducting the hydrated product examination, the instant fruit juice shall be reconstituted 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.

6/ Construction of the oxygen scavenger and compliance with FDA regulations will be verified by a Certificate of Conformance (CoC).

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 or can shall be determined by weighing each sample unit on a suitable scale tared with a representative empty pouch or can and lid. Results shall be reported to the nearest 0.1 ounce or gram.

(3) Analytical. The sample to be analyzed shall be a composite of three filled and sealed pouches or cans that 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 in sugars	925.45A, 934.06
Sulfites in foods (Design F metal can only)	990.28

The test results for moisture shall be reported to the nearest 0.1 percent for moisture. The test results for sulfites in foods shall be reported to the nearest 1 ppm. Government 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.

(4) Oxygen content testing (design F metal can). Eight filled and sealed cans shall be randomly selected from one production lot and individually tested for oxygen content. Testing shall be accomplished after the filled and sealed cans have been allowed to equilibrate at room temperature for not less than 48 hours from the time of sealing. Test results shall be reported to the nearest 0.1 percent. Government verification will be

conducted through actual testing by a Government laboratory. Any individual result not conforming to the oxygen content requirement 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 CoC may be accepted as evidence that the characteristics listed below conform to the specified requirements.

<u>Characteristic</u>	<u>Requirement paragraph</u>	<u>Test procedure</u>
Thickness of films for laminated material	D-1,A(1)a	ASTM D2103 <u>1/</u>
Aluminum foil thickness	D-1,A(1)a	ASTM B479 <u>2/</u>
Laminated material identification and construction	D-1,A(1)a	Laboratory evaluation
Color of laminated material	D-1,A(1)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. 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) 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		Fill line missing or does not measure within 4-1/2 + 1/4 inches from the inside edge of the 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 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 (\pm 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) Can condition examination. Examination of filled and sealed cans shall be in accordance with the United States Standards for Condition of Food Containers. In addition, scratches, scuffs or abrasions that occur on the outside coating as a result of the filling, sealing, and processing of the cans shall not be scored as a defect.

(4) Can closure examination. Can closures shall be examined visually and by teardowns in accordance with the can manufacturer's requirement and 21 CFR, Part 113, Subpart D, or 9 CFR, Part 318, Subpart G, as applicable. Any nonconformance based on

observation of can seam teardowns or on record of can seam teardowns shall be classified as a major defect and shall be cause for rejection of any involved product.

(5) Can leakage examination. Cans shall be inspected for leakage. The sample unit shall be one filled and sealed can. The lot size shall be expressed in cans. The sealed cans shall be examined for leakage by submerging the can in water contained in a vacuum desiccator, Mead Tester, or equivalent device, and drawing a vacuum of not less than 10 inches of mercury (atmospheric pressure 29.9 inches of Hg) for at least 30 seconds. A leak is indicted by a steady progression of bubbles and is a major defect. Isolated bubbles caused by air entrapped in the double seam are not considered signs of leakage. The inspection level shall be S-3 and the AQL, expressed as defects per hundred units, shall be 1.5.

(6) Vacuum test. The vacuum level in the cans shall be determined by use of a puncture vacuum gauge. The sample unit shall be one filled and sealed can. The lot size shall be expressed in cans. The inspection level shall be S-3. No vacuum or a vacuum level less than 15 inches of mercury shall be a failure and classified 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.

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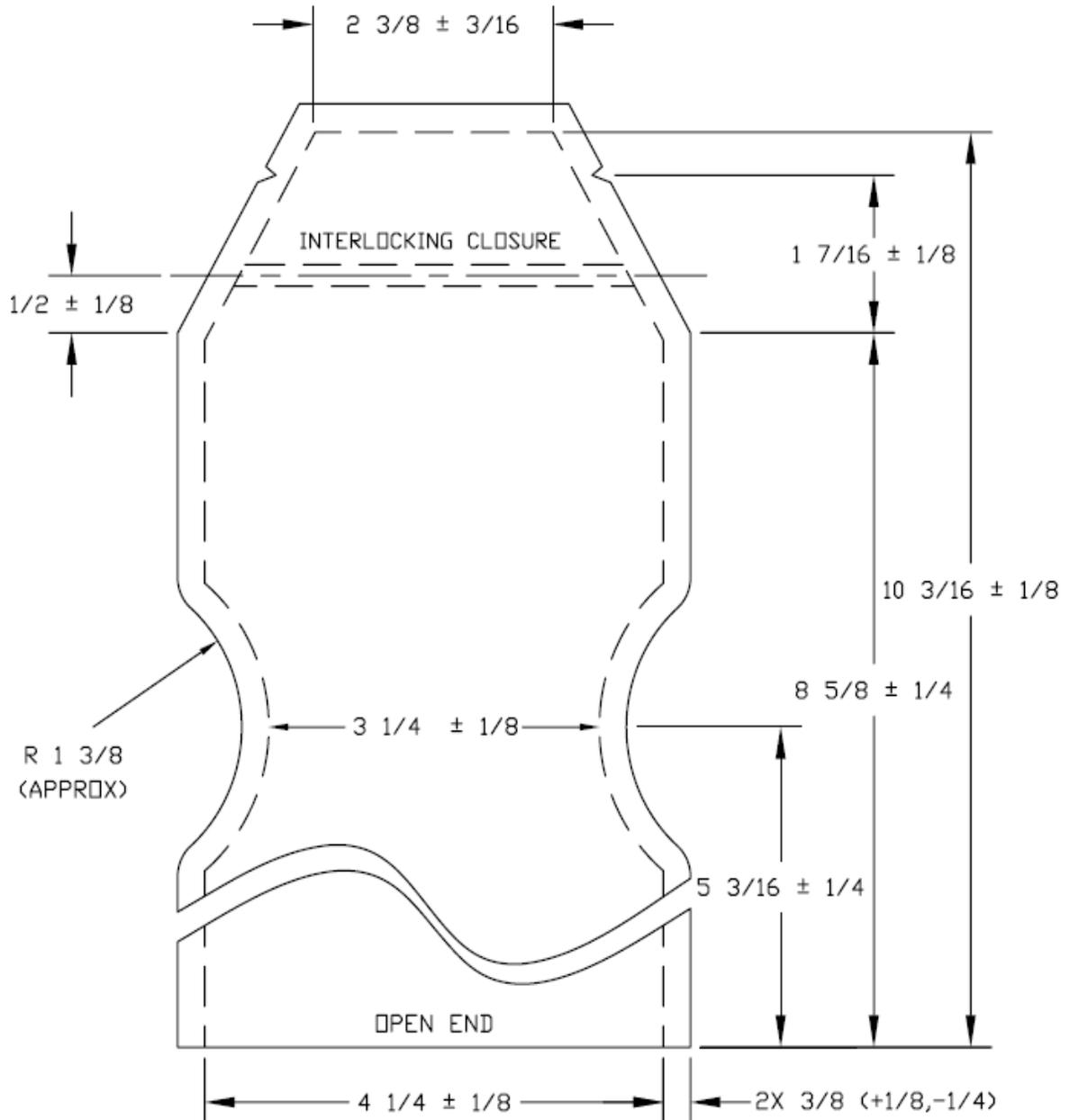


FIGURE 1. Design B Flat, Interlocking Closure Pouch
(Not actual size)

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

DLA Troop Support Form 2997 Labeling of Metal Cans for Subsistence Items

DLA Troop Support 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

GOVERNMENT PUBLICATIONS

U.S. STANDARDS FOR GRADES

United States Standards for Grades of Orange Juice

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

U.S. Standards for Condition of Food Containers

NON-GOVERNMENTAL STANDARDS

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

ANSI/ASQ Z1.4-2003 Sampling Procedures and Tables for Inspection
by Attributes

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ASTM INTERNATIONAL www.astm.org

D1974/D1974M	Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
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
B479	Standard Specification for Annealed Aluminum and Aluminum-Alloy Foil for Flexible Barrier, Food Contact, and Other Applications
F88/F88M	Standard Test Method for Seal Strength of Flexible Barrier Materials
D2103	Standard Specification for Polyethylene Film and Sheeting

AOAC INTERNATIONAL www.aoac.org

Official Methods of Analysis (OMA) of AOAC International