

SECTION C

This document covers dairyshake powder, fortified with calcium and vitamin D packaged in a flexible pouch for use by the Department of Defense as a component of operational rations.

C-1 ITEM DESCRIPTION

PCR-D-002A DAIRYSHAKE POWDER, FORTIFIED WITH CALCIUM AND VITAMIN D, PACKAGED IN A FLEXIBLE POUCH, SHELF STABLE

Flavors.

- Flavor I - Vanilla
- Flavor II - Chocolate
- Flavor III - Strawberry
- Flavor IV - Strawberry banana

Designs.

- Design A - Flat pouch (discontinued)
- Design B - Flat interlocking closure pouch

Packages.

- Package A - Meal, Cold Weather (MCW)
- Package B - Food Packet, Long Range Patrol (LRP)
- Package C - Meal, Ready to Eat (MRE)
- 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 non comparable to the Product Standard, the contractor shall arrange for a new or alternate FA or PDM 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 dairyshake powder shall be a uniform blend of dry homogenous ingredients. The packaged food shall be free from foreign materials.

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

(3) Texture. The packaged food shall be free flowing and be free from hard lumps that do not fall apart under light pressure between fingers.

(4) Instant nonfat dry milk. The dairyshake formula shall contain not less than 35 percent U. S. Extra Grade instant nonfat dry milk.

D. Hydrated product.

(1) Appearance. The hydrated product shall have a color as specified below:

- a. Flavor I. The vanilla dairyshake shall be pale to medium cream color.
- b. Flavor II. The chocolate dairyshake shall be light to medium brown color.
- c. Flavor III. The strawberry dairyshake shall be light to medium pink color.
- d. Flavor IV. The strawberry banana dairyshake shall be light to medium pink 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 I. The vanilla dairyshake shall be a sweet vanilla odor and moderately intense sweet vanilla flavor.

b. Flavor II. The chocolate dairyshake shall be a sweet chocolate odor and moderately intense sweet chocolate flavor.

c. Flavor III. The strawberry dairyshake shall be a sweet strawberry odor and moderately intense sweet strawberry flavor.

d. Flavor IV. The strawberry banana dairyshake shall be a sweet strawberry banana odor and moderately intense sweet strawberry banana flavor.

(3) Texture. The prepared product shall be smooth, creamy, and moderately thick with no discernable lumps, chalkiness or sedimentation.

E. Net weight. The average net weight shall be not less than 3.5 ounces (100 grams). The net weight of an individual pouch shall be not less than 3.4 ounces (95 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. The analytical requirements of the dairyshake powder:

(1) Protein content. The protein content shall be not less than 15.0 percent.

(2) Fat content. The fat content shall be not greater than 21.0 percent.

(3) Salt content. The salt content shall be not greater than 1.0 percent.

(4) Moisture content. The moisture content shall be not greater than 3.5 percent.

(5) Calcium content. The calcium content shall be not less than 400 mg and not greater than 650 mg per pouch.

(6) Vitamin D content. The Vitamin D content shall be not less than 100 IU and not greater than 200 IU per pouch.

H. Microbiological. The aerobic plate count shall be not greater than 50,000 per gram in four of five samples and not greater than 75,000 per gram in any individual sample. The *Eschericia coli* count shall have no positive tubes in the standard 3 tube most probable number (MPN) technique. The *Salmonella* test shall be negative per 25 grams of product.

I. Instant Nonfat Dry Milk. Instant nonfat dry milk shall be U.S. Extra Grade, as defined in the U.S. Standards for Instant Nonfat Dry Milk. The instant nonfat dry milk shall be fortified with vitamin A and vitamin D. The instant nonfat dry milk shall be spray dried not more than six

months prior to the time the finished dairyshake powder is filled into the pouch and the pouch sealed. The instant nonfat dry milk shall be *Salmonella* free.

C-3 MISCELLANEOUS INFORMATION.

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

A. Ingredients and formulation. Ingredients and formulation percentages may be as follows:

Formulation for flavor I vanilla dairyshake 1/

<u>Ingredients</u>	<u>Percent by weight</u>
Milk, nonfat, dry, instant	45.3998
Non-dairy creaming agent	27.2000
Sugar, white, powdered	18.2000
Dry sweet dairy whey	4.5000
Starch, instant	2.7000
Calcium caseinate	1.9000
Titanium dioxide	0.0379
Flavoring, vanilla, artificial	0.0300
Flavoring, French vanilla, natural and artificial	0.0300
Color, Yellow No. 5	0.0018
Color, Red No. 40	0.0005

Formulation for flavor II chocolate dairyshake 1/

<u>Ingredients</u>	<u>Percent by weight</u>
Milk, nonfat, dry, instant	39.0000
Non-dairy creaming agent	23.4400
Sugar, white, powdered	23.4000
Cocoa	6.2000
Dry sweet dairy whey	3.9000
Starch, instant	2.3000
Calcium caseinate	1.6000
Flavoring, chocolate, artificial	0.1200
Flavoring, vanilla, artificial	0.0200
Flavoring, French vanilla, natural and artificial	0.0200

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Formulation for flavor III strawberry dairyshake 1/

<u>Ingredients</u>	<u>Percent by weight</u>
Milk, nonfat, dry, instant	45.3000
Non-dairy creaming agent	27.3010
Sugar, white, powdered	18.1000
Dry sweet dairy whey	4.5000
Starch, instant	2.7000
Calcium caseinate	1.8000
Flavoring, strawberry, artificial	0.2300
Flavoring, vanilla, artificial	0.0300
Flavoring, French vanilla, natural and artificial	0.0300
Color, Red No. 40	0.0090

1/ Vitamin D shall be added to products so that the requirement of 100 I.U. of Vitamin D shall be met.

B. Ingredients for flavor IV strawberry banana dairyshake may be as follows: Nonfat dry milk, non-dairy creamer {partially hydrogenated soybean oil, maltodextrin, sodium caseinate (a milk derivative), dipotassium phosphate, polysorbate 60, and monoglycerides}, sugar, whey, modified food starch, calcium caseinate, cellulose gum, xanthan gum, carrageenan, acacia gum, natural and artificial flavors, red no. 40, and vitamin D.

SECTION D

D-1 PACKAGING

A. Packaging. A net weight of 3.5 ounces (100 grams) of powdered product shall be filled in a preformed barrier pouch as described below. The pouch is to be used as a package and a hydrating pouch for the dairyshake powder.

(1) Design B, Flat interlocking closure 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. 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

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shall not impart an odor or flavor to the product. For package A (MCW), the complete exterior of the pouch shall be colored overall with a color in the range of 37778 through 37886 of FED-STD-595, Colors Used in Government Procurement. For package B (LRP), package C (MRE) and package K (UGR-E), the complete exterior surface of the pouch shall be uniformly colored in the range of 20219, 30219, 30227, 30279, 30313, 30324, or 30450 of FED-STD-595.

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 indicated 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 as specified in E-6,B(1)b. The interlocking closure of the pouch shall not leak more than 15 ml when tested in accordance with E-6,B(2). 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 seals 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 when tested as specified in E-6,B(1)a. Alternatively, the pouch shall exhibit no rupture or seal separation greater than 1/16 inch when tested for internal pressure resistance as specified in E-6,B(1)b.

D-2 LABELING

A. Pouch. 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/

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- (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:
Tear pouch at notch. Open zipper, add 6 ounces of cold water (about 1/4 canteen cup) to fill line. Close zipper, shake to mix (about 60 seconds). Consume promptly (within 1 hour). *Single use only.*
Allow water just chemically purified to stand 30 minutes before adding to dairyshake powder.

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 6-ounce fill at $5\text{-}1/4 \pm 1/4$ inches from the inside edge of the closure seal.

1/ The lot number shall be expressed as a four digit Julian code. The first digit shall indicate the year of production and the next three digits shall indicate the day of the year (Example, 14 February 2007 would be coded as 7045). The Julian code shall represent the day the product was packaged into the pouch and processed. Sub-lotting (when used) shall be represented by an alpha character immediately following the four digit Julian code. Following the four digit Julian code and the alpha character (when used), the other required code information shall be printed in the sequence as listed above.

D-3 PACKING

A. Packing for shipment to ration assembler. Not more than 40 pounds of pouched product shall be packed in a fiberboard shipping container constructed in accordance with style RSC-L, class domestic, variety SW, grade 200 of ASTM D 5118/D 5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. Each container shall be securely closed in accordance with ASTM D 1974, 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 DSCP 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 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 Research, Development, and Engineering Command
Natick Soldier Research, Development, and Engineering Center
AMSRD-NSC-CF-F
15 Kansas Street

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 five working days from the end of the production month and upon completion of all USDA inspection requirements. The sample units will be evaluated for the characteristics of appearance, odor, flavor, texture and overall quality.

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

E-5 QUALITY ASSURANCE PROVISIONS (PRODUCT)

A. Product examination. The finished product shall be examined for compliance with the performance requirements specified in Section C of this Performance-based Contract Requirements 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 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>		
<u>Appearance</u>		
101		Powdered product not flavor or not design as specified.
102		Powdered product not uniformly blended or not homogenous.

- 103 Odor
Powdered product not of specified dairyshake odor.
- Texture
201 Powdered product not free flowing.
- 202 Presence of hard lumps. 4/
- Weight
203 Net weight of an individual pouch less than 3.4 ounces (95 grams). 5/
- Hydrated product**
 Appearance
204 Flavor I vanilla not pale to medium cream in color.
- 205 Flavor II chocolate not light to medium brown in color.
- 206 Flavor III strawberry not light to medium pink in color.
- 207 Flavor IV strawberry banana not light to medium pink in color.
- 104 Odor and flavor
Flavor I not a sweet vanilla odor or not a moderately intense sweet vanilla flavor.
- 105 Flavor II not a sweet chocolate odor or not a moderately intense sweet chocolate flavor.

TABLE I. Product defects 1/ 2/ 3/ cont'd

<u>Category</u>		<u>Defect</u>
<u>Major</u>	<u>Minor</u>	
106		Flavor III not a sweet strawberry odor or not a moderately intense sweet strawberry flavor.
107		Flavor IV not a sweet strawberry banana odor or not a moderately intense sweet strawberry banana flavor.

	<u>Texture</u>
108	Hydrated product not smooth, or not creamy, or not moderately thick.
109	Hydrated product has discernable lumps, or chalkiness, or sedimentation.

1/ Presence of any foreign material such as, but not limited to dirt, insect parts, hair, wood, glass, metal, or foreign odors or flavors such as, but not limited to burnt, scorched, rancid, sour, or stale, oxidized milk powder, perfumey or medicinal odor and flavor or indicative of excessive artificial flavors 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/ The percentage of U.S. Extra Grade Instant Nonfat Dry Milk shall be verified by the producers formulation. The producer shall provide a USDA Grading Certificate indicating that the instant nonfat dry milk used in the formulation met all the requirements for U.S. Extra Grade.

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

5/ Sample average net weight less than 3.5 ounces (100 grams) shall be cause for rejection of the lot.

B. Methods of inspection.

(1) Shelf life. The contractor shall provide a Certificate of Conformance (CoC) 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 hedonic scale to be considered acceptable.

(2) Net weight examination of pouches. 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. Results shall be reported to the nearest 0.1 ounce or to the nearest 1 gram.

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(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>
Protein	992.15, 984.13
Fat	932.06A(a) using the extractions
Salt	935.47
Moisture	925.45A, the product shall be dried for 16 hours at 70°C.
Calcium	984.27, 985.35 <u>1/</u>
Vitamin D	981.17 <u>1/</u>

Test results shall be reported to the nearest 0.1 percent for protein, fat, salt and moisture. Verification will be conducted through actual testing by a Government laboratory. Any nonconforming results shall be cause for rejection of the lot.

1/ Tests will be conducted for calcium and Vitamin D on the first production lot and USDA will verify the formula. A CoC will be provided on all future lots. If the formula is changed or a new contract starts, then another set of tests shall be conducted for calcium and Vitamin D, a CoA will be provided and USDA will verify the formula.

(4) Microbiological testing. Five filled and sealed pouches shall be selected at random from the lot regardless of lot size. The pouched product shall be individually tested for microbiological levels in accordance with the OMA of the AOAC, for aerobic plate count method 966.23 or 990.12 and for E. coli, method 966.24, 992.30 or the methods on page 4.03 Section C and page 4.05, Section F, Chapter 4, 8th edition, FDA Bacteriological Analytical Manual (BAM). The diluent shall be added to each sample and allowed to stand for 15 minutes before blending the sample. *Salmonella* testing shall be in accordance with the OMA of the AOAC, methods 967.26, 967.28, 986.35, 991.13, 996.08, 2003.09 or 2004.03. Any result not conforming to the microbiological requirements shall be cause for rejection of the lot.

NOTE: The following conditions apply for *Salmonella* and microbiological testing:

- (a) For prepackaged product received from a supplier and is not further processed, the contractor will furnish a Certificate of Analysis (CoA) that

the product represented is *Salmonella* negative and meets all microbiological requirements.

- (b) For bulk product received, the contractor is responsible for providing a CoA stating that the bulk product is *Salmonella* negative and meets all microbiological requirements. USDA *Salmonella* and additional microbiological testing is required for each end item lot and shall be the basis for lot acceptance with respect to *Salmonella* and other microbiological testing requirements.

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

A. Packaging.

(1) Pouch material certification. A CoC may be accepted as evidence that the characteristics listed below conform to the specified requirements.

<u>Requirement</u>	<u>Requirement paragraph</u>	<u>Test procedure</u>
Thickness of film 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 Standard Specification for Polyethylene Film and Sheeting

2/ ASTM B 479 Standard Specification for Annealed Aluminum and Aluminum-Alloy Foil for Flexible Barrier, Food Contact, and Other Applications

3/ FED-STD-595 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.

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(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		Fill line missing or does not measure within $\pm 1/4$ inch of 5-1/4 inches from the inside edge of the closure seal.
108		Not packaged as specified.

TABLE II. Filled and sealed pouch defects 1/ cont'd

Category		Defect
<u>Major</u>	<u>Minor</u>	
	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 1/16 inch.
	204	Presence of delamination. <u>3/</u>
	205	Design B pouch does not meet design or dimensions cited in Figure 1.

- 206 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.

B. Methods of inspection.

(1) 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, Standard Test Method for Seal Strength of Flexible Barrier Materials. The lot size shall be expressed in pouches. The sample unit shall be one unfilled 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 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 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

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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 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. 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. 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 ($\pm 5^\circ\text{F}$) 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 a major defect and shall be cause for rejection of the lot.

C. 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

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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

<u>Category</u>		<u>Defect</u>
<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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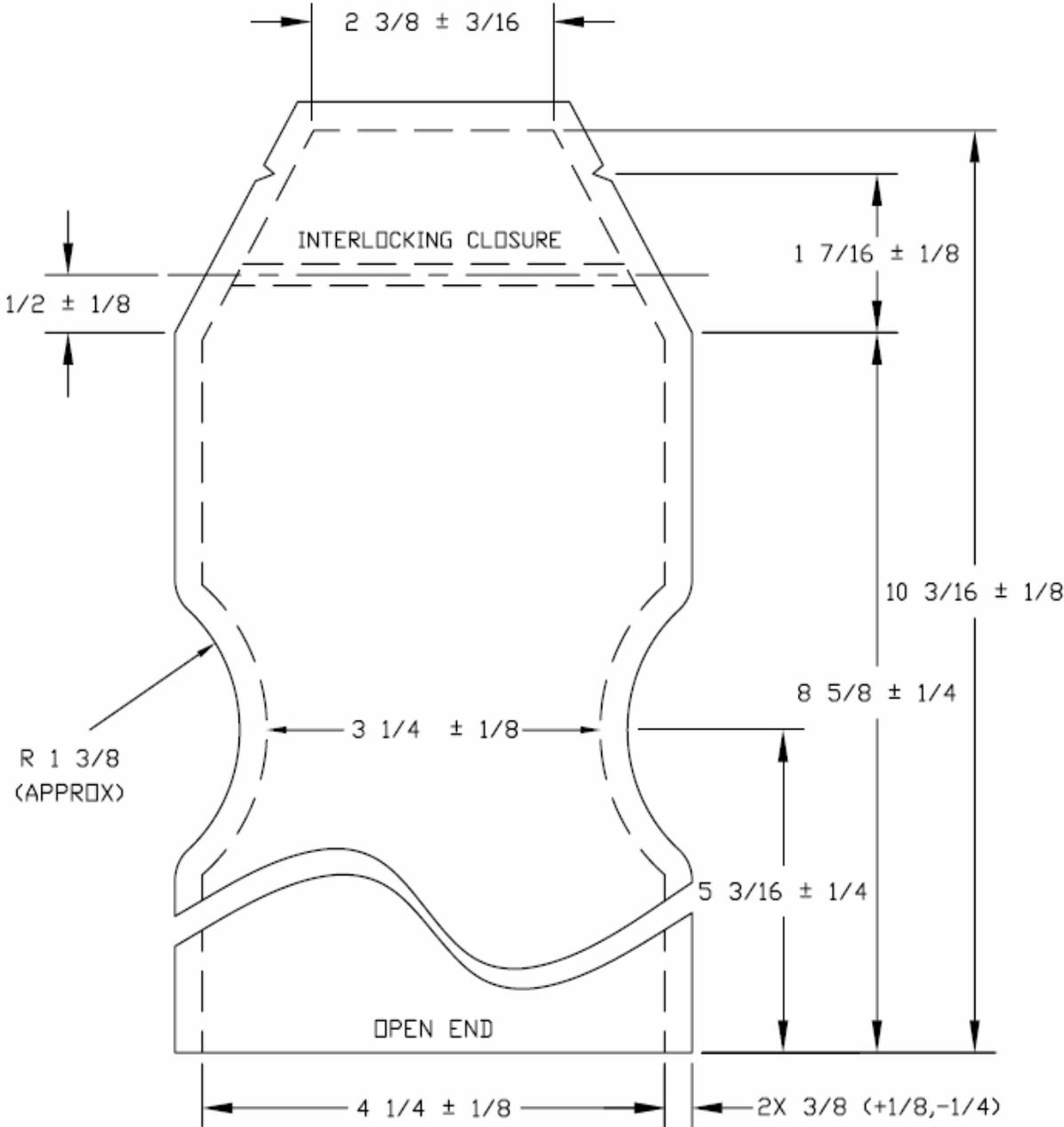


FIGURE 1. Design B Flat, Interlocking Closure Pouch
(Not actual size)

SECTION J REFERENCE DOCUMENTS

U.S. STANDARDS FOR GRADES

U.S. Standards for Instant Nonfat Dry Milk

DSCP FORMS

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

GOVERNMENT STANDARD

FOOD AND DRUG ADMINISTRATION BACTERIOLOGICAL
ANALYTICAL MANUAL (BAM)

FEDERAL STANDARD

FED-STD-595 Colors Used in Government Procurement

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ)

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

ASTM International

B 479-06 Standard Specification for Annealed Aluminum and
Aluminum-Alloy Foil for Flexible Barrier, Food Contact,
and Other Applications

D 1974-98 (2003) Standard Practice for Methods of Closing, Sealing, and
Reinforcing Fiberboard Boxes

D 2103-05 Standard Specification for Polyethylene Film and Sheeting

D5118/D5118M-05ae1 Standard Practice for Fabrication of Fiberboard Shipping
Boxes

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F 88-07

Standard Test Method for Seal Strength of Flexible Barrier
Material

AOAC INTERNATIONAL

Official Methods of Analysis (OMA) of the AOAC
International