

## **SECTION C**

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

### **C-1 ITEM DESCRIPTION**

#### **PCR-B-013 BEVERAGE POWDER, CARBOHYDRATE ELECTROLYTE, PACKAGED IN A FLEXIBLE POUCH**

##### Flavors

- |     |             |
|-----|-------------|
| I   | Fruit Punch |
| II  | Grape       |
| III | Lemon Lime  |
| IV  | Orange      |

### **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 food shall meet the minimum shelf life requirement of 24 months at 80°F.

#### C. Powdered product.

(1) Appearance. The beverage powder shall be a free flowing homogenous mixture and have a color typical of the flavor specified. 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.

(1) Appearance.

- a. Flavor I. The fruit punch shall have a bright red color.
- b. Flavor II. The grape shall have a bright blue color.
- c. Flavor III. The lemon lime shall have a light yellow/green color.
- d. Flavor IV. The orange shall have an orange color.

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

a. Flavor I. The odor shall be a well-balanced blend of cherry with orange citrus notes. The flavor shall be a moderate strong, artificial cherry/citrus flavor. The product may be slightly salty.

b. Flavor II. The odor shall be a moderate sweet artificial grape. The flavor shall be a moderate sweet grape flavor. The product may be slightly salty.

c. Flavor III. The odor shall be an artificial lemon lime with some slight citrus notes. The flavor shall be a moderate blend of sweet lime and mild lemon citrus notes. The product may be slightly salty.

d. Flavor IV. The odor shall be a moderate orange citrus. The flavor shall be a moderate orange with artificial orange notes. The product may be slightly salty.

(3) Texture. The prepared beverage shall be sediment free and have no discernible lumps.

E. Net weight. The net weight of the pouch of beverage powder shall be not less than 16 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 content. The moisture content shall be not greater than 3.5 percent.

(2) Nutrient content.

a. Sodium content. The sodium content shall be not less than 55 mg and not greater than 130 mg.

b. Potassium content. The potassium content shall be not less than 20 mg and not greater than 55 mg.

c. Calorie content. The calorie content per serving shall be not less than 60 calories.

d. Carbohydrate content. The carbohydrate content shall be not less than 15 grams.

### **C-3 MISCELLANEOUS INFORMATION.**

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

A. Ingredients for flavor I may be as follows: Sucrose, dextrose, citric acid, salt, sodium citrate, monopotassium phosphate, natural and artificial flavors, calcium silicate, Red 40, partially hydrogenated coconut oil.

B. Ingredients for flavor II may be as follows: Sucrose, dextrose, citric acid, natural and artificial grape flavor, salt, sodium citrate, monopotassium phosphate, calcium silicate, coconut oil, Blue 1, and. Red 40.

C. Ingredients for flavor III may be as follows: Sucrose, dextrose, citric acid, salt, sodium citrate, natural lemon and lime flavors with other natural flavors, monopotassium phosphate, calcium silicate, Yellow 5.

D. Ingredients for flavor IV may be as follows: Sucrose, dextrose, citric acid, salt, sodium citrate, natural orange flavors with other natural flavors, monopotassium phosphate, calcium silicate, partially hydrogenated soybean and cottonseed oils, Yellow 6.

### **SECTION D**

## **D-1 PACKAGING**

A. Packaging. Sixteen (16) grams of powdered product shall be packaged in a preformed barrier pouch as described below. The pouch will be used as a unit pack and as a rehydrating pouch for the beverage.

(1) Preformed pouches.

a. Pouch material. The preformed pouch shall be fabricated from 0.0035 inch thick linear low density polyethylene laminated or extrusion coated to 0.00035 inch thick aluminum foil which is then bonded with 10 pounds per ream low density polyethylene to 0.0006 inch thick biaxially oriented nylon. The three plies shall be laminated with the nylon on the exterior of the pouch. All tolerances for thickness of pouch material shall be plus or minus 20 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 in the range of 20219, 30219, 30279, 30313, 30324, or 30450 of FED-STD-595.

b. Pouch construction. The pouch shall be a flat style preformed pouch having inside dimensions of 5-1/4 inches wide by 9-1/2 inches long ( $\pm 1/4$  inch). The pouch shall be made by heat sealing three edges with 3/8 inch ( $-1/8, +3/16$  inch) wide seals. The heat seals shall be made in a manner that will assure hermetic seals. The side and bottom seals shall have an average seal strength of not less than 6 pounds per inch 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,A,(4),a. A tear notch shall be provided on one or two opposite outside edges of the 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 minimum 1/8-inch wide heat seal. The filled pouch shall be sealed. 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 when tested as specified in E-6,A,(4),b.

## **D-2 LABELING**

A. Pouches. Each pouch shall be clearly printed or stamped with permanent black ink or other, dark, contrasting color which is free of carcinogenic elements. Pre-printed information, information printed prior to sealing or information printed by non-contact type printing equipment may be located anywhere on the pouch (in one complete print). Information printed subsequent to sealing by contact type printing equipment may be located anywhere on the pouch, except the closure seal area. 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) Contractor's name and address
- (6) "Nutrition Facts" label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA/USDA regulations
- (7) DIRECTIONS: **TEAR POUCH AT NOTCH, ADD 8 OZ COLD WATER (1/3 CANTEEN CUP) TO POUCH. FOLD OVER TOP OF POUCH. FIRMLY HOLDING TOP OF POUCH, SHAKE 30 SECONDS.**

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, 27 February 2003 would be coded as 3058. The Julian day code shall represent the day the product was packaged into the pouch.

### **D-3 PACKING**

A. Packing for shipment to ration assembler. Not more than 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 D5118/D5118M-95(2001) Standard Practice for Fabrication of Fiberboard Shipping Boxes. Each container shall be securely closed in accordance with ASTM D1974-98 Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

### **D-4 MARKING**

A. Shipping containers. Shipping containers shall be marked in accordance with DSCP FORM 3556, Marking Instructions for Shipping Cases, Sacks and Palletized/Containerized Loads of Perishable and Semiperishable Subsistence.

## **SECTION E INSPECTION AND ACCEPTANCE**

The following quality assurance criteria, utilizing ANSI/ASQC Z1.4-1993, Sampling Procedures and Tables for Inspection by Attributes, are required. Unless otherwise specified, Single Sampling Plans indicated in ANSI/ASQC Z1.4-1993 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 Soldier & Biological Chemical Command  
Soldiers System Ctr., Natick Soldier Center  
Attn: AMSSB-RCF-F(N)  
15 Kansas Street  
Natick, MA 01760-5018

One lot shall be randomly selected during each calendar month of production. 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/ASQC Z1.4-1993. 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/

Category		Defect
<u>Major</u>	<u>Minor</u>	
<u>1</u>	<u>1</u>	
<b><u>Powdered product</u></b>		
101		Product not carbohydrate electrolyte beverage powder of the flavor specified.
		<u>Appearance</u>
	201	Beverage powder not free flowing or not a homogenous mixture.
	202	Powder color not typical of flavor specified.
		<u>Odor</u>
102		Powdered product not typical of odor specified.
		<u>Texture</u>
	203	Presence of hard lumps. 3/
		<u>Weight</u>
	204	Net weight of an individual pouch less than 16 grams.

TABLE I. Product defects 1/ 2/ (cont'd)

Category		Defect
----------	--	--------

---

Majo    Mino  
r        r

**Hydrated product** 4/

Appearance

- 205 Flavor I not bright red color.
- 206 Flavor II not bright true blue color.
- 207 Flavor III not light yellow/green color.
- 208 Flavor IV not orange color.

Odor and flavor

- 103 Flavor I product odor not a well-balanced blend of cherry with orange citrus notes or flavor not a moderate strong, artificial cherry/citrus.
- 104 Flavor II product odor not a moderate sweet artificial grape or flavor not a moderate sweet grape.
- 105 Flavor III product odor not an artificial lemon lime with some slight citrus notes or flavor not a moderate blend of sweet lime and mild lemon citrus notes.
- 104 Flavor IV product odor not a moderate orange citrus or flavor not a moderate orange with artificial orange notes.

Texture

- 106 Product has discernable lumps or exhibits sedimentation.

---

1/ Presence of any foreign materials such as, but not limited to dirt, insect parts, hair, wood, glass, metal, or any foreign odors or flavors such as, but not limited to burnt, scorched, rancid, sour, or stale, shall be cause for rejection of the lot. Foreign flavor is 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 between the fingers shall be scored as a defect.

4/ Prior to conducting the rehydrated product examination, the beverage powder shall be reconstituted per label instructions. Product that does not fully dissolve within 2 minutes with constant stirring 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 2 year shelf life when stored at 80°F. Government verification may include storage for 24 months at 80°F. Upon completion of storage period, the product will be subjected to a sensory evaluation panel for appearance and palatability and must receive an overall score of 5 or higher based on a 9 point hedonic scale to be considered acceptable.

(2) Net weight. The net weight of the filled and sealed pouches shall be determined by weighing each sample unit on a suitable scale tared with a representative empty pouch. Results shall be reported to the nearest 0.1 gram.

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

<u>Test</u>	<u>Method Number</u>
Moisture	925.45A

Test results shall be reported to the nearest 0.1 percent. 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) Nutrient Content. The sodium, potassium, calorie and carbohydrate contents shall be verified by the NLEA “Nutrition Facts” label. Product not conforming to the sodium, potassium, calorie and carbohydrate contents 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. Materials listed below may be accepted on the basis of a contractor's certification of conformance to the indicated requirements. In addition, compliance to the requirements for inside pouch dimensions and dimensions of the manufacturer's seals may be verified by certification of conformance.

<u>Requirement</u>	<u>Requirement paragraph</u>	<u>Test procedure</u>
Thickness of laminated material	D-1,A,(1),a	As specified in ASTM D2103 <u>1/</u>
Aluminum foil thickness	D-1,A,(1),a	As specified in 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	Visual evaluation by FED-STD-595 <u>3/</u>

1/ ASTM D2103-97 Standard Specification for Polyethylene Film and Sheeting

2/ ASTM B479-00 Standard Specification for Annealed Aluminum and Aluminum-Alloy Foil for Flexible Barrier, Food Contact, and Other Applications for Annealed Aluminum Foil for Flexible Barrier Application

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

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

(3) Filled and sealed pouch examination. The filled and sealed pouches shall be examined for the defects listed in Table II. The lot size shall be expressed in pouches. The sample unit shall be one pouch. The inspection level shall be I and the AQL, expressed in terms of defects per hundred units, shall be 0.65 for major defects and 2.5 for minor defects.

TABLE II. Filled and sealed pouch defects 1/

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

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

---

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

2/ The effective closure seal is defined as any uncontaminated, fusion bonded, continuous path, minimum 1/16 inch wide, from side seal to side seal that produces a hermetically sealed pouch.

3/ Delamination defect classification:

Major - Delamination of the outer ply in the pouch seal area that can be propagated to expose aluminum foil at the food product edge of the pouch after manual flexing of the delaminated area. To flex, the delaminated area shall be held between the thumb and forefinger of each hand with both thumbs and forefingers touching each other. The delaminated area shall then be rapidly flexed 10 times by rotating both hands in alternating clockwise- counterclockwise directions. Care shall be exercised when flexing delaminated areas near the tear notches to avoid tearing the pouch material.

After flexing, the separated outer ply shall be grasped between thumb and forefinger and gently lifted toward the food product edge of the seal or if the separated area is too small to

be held between thumb and forefinger, a number two stylus shall be inserted into the delaminated area and a gentle lifting force applied against the outer ply. If separation of the outer ply can be made to extend to the product edge of the seal with no discernible resistance to the gentle lifting, the delamination shall be classified as a major defect. Additionally, spot delamination of the outer ply in the body of the pouch that is able to be propagated beyond its initial borders is also a major defect. To determine if the laminated area is a defect, use the following procedure: Mark the outside edges of the delaminated area using a bold permanent marking pen. Open the pouch and remove the contents. Cut the pouch transversely not closer than 1/4 inch ( $\pm 1/16$  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).

c. Water spots.

5/ If doubt exists as to whether or not the sealing equipment leaves an impression or design on the closure seal surface that could conceal or impair visual detection of seal defects, samples shall be furnished to the contracting officer for a determination as to acceptability.

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

a. Unfilled preformed pouch seal testing. The seals of the unfilled preformed pouch shall be tested for seal strength in accordance with ASTM F88-00, Standard Test Method for Seal Strength of Flexible Barrier Materials. The lot size shall be expressed in pouches. The sample size shall be the number of pouches indicated by inspection level S-1. Three adjacent specimens shall be cut from each of the three sealed sides of each pouch in the sample. The average seal strength of any side shall be calculated by averaging the three specimens cut from that side. Any average seal strength of less than 6 pounds per inch of width or any test specimen with a seal strength of less than 5 pounds per inch of width shall be 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 F88-00. The lot size shall be expressed in pouches. The sample size shall be the number of pouches indicated by inspection level S-1. 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. Packing.

(1) Shipping container and marking examination. The filled and sealed shipping containers shall be examined for the defects listed in Table III below. The lot size shall be expressed in shipping containers. The sample unit shall be one shipping container fully packed. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 4.0 for major defects and 10.0 for total defects.

TABLE III. Shipping container and marking defects

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Marking omitted, incorrect, illegible, or of improper size, location sequence or method of application.
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.

**SECTION J REFERENCE DOCUMENTS**

DSCP FORMS

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

FEDERAL STANDARD

FED-STD-595 Colors Used in Government Procurement

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ)

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

B479-00	Standard Specification for Annealed Aluminum and Aluminum-Alloy Foil for Flexible Barrier, Food Contact, and Other Applications
D1974-98	Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
D2103-97	Standard Specification for Polyethylene Film and Sheeting
D5118/D5118M-95 (2001)	Standard Practice for Fabrication of Fiberboard Shipping Boxes
F88-00	Standard Test Method for Seal Strength of Flexible Barrier Materials

AOAC INTERNATIONAL Official Methods of Analysis of the Association of Official Analytical Chemists International