

SECTION C

This document covers dehydrated cottage cheese packaged in a 603 by 700 metal can for use by the Department of Defense as a component of operational rations.

C-1 ITEM DESCRIPTION

PCR-C-053, COTTAGE CHEESE, DEHYDRATED, PACKAGED IN A 603 by 700 METAL CAN, SHELF STABLE

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 36 months at 80°F.

C. Dehydrated product.

(1) General and appearance. The finished product shall be dehydrated cottage cheese. There shall be discernable curd particles of cottage cheese. The product shall be fully dehydrated. The curd particles shall not shatter or pulverize upon slight finger pressure. The cottage cheese curd particles shall have a white to off white color. The packaged food shall be free from foreign materials.

(2) Odor. The packaged food shall have a natural cottage cheese odor. The packaged food shall be free from foreign odors.

(3) Particle size. The dehydrated cheese shall have a lot average particle size where not less than 75.0 percent of the product shall be retained on a U.S. Standard No. 8 sieve, with no individual samples having less than 70.0 percent retained.

D. Rehydrated raw product.

(1) General and appearance. The overall appearance shall be of fresh cottage cheese. The product shall be fully rehydrated within five minutes. The rehydrated product shall be free from foreign materials.

(2) Odor and flavor. The product shall have the odor and flavor of fresh cottage cheese. The rehydrated product shall be free from foreign odors and flavors.

(3) Texture. The rehydrated product shall have a smooth cottage cheese curd texture.

E. Net weight. The average net weight shall be not less than 16.75 ounces. No individual can shall have a net weight of less than 16.25 ounces.

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. Moisture content. The moisture content of the dehydrated product shall not exceed 2.0 percent.

H. Oxygen content. Oxygen content of the headspace gas shall not exceed 2.0 percent. Product shall be tested no more than 48 hours after packaging.

SECTION D

D-1 PACKAGING

A. Commercial packaging. The dehydrated product shall be packaged in a 603 by 700 metal can in accordance with good commercial practice. The filled can shall be hermetically sealed under a vacuum of not less than 20 inches (50.8 cm) of mercury. 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, A, (4).

B. Export packaging. The dehydrated product shall be packaged in a 603 by 700 metal can in accordance with good commercial practice. The filled can shall be hermetically sealed under a vacuum of not less than 20 inches (50.8 cm) of mercury. The can shall be an open-top style, round metal can, with welded side seam and compound-lined, double-seamed ends. The can shall be made throughout from not less than 0.25 pound per base box electrolytic tin plate. Alternatively, the cans may be fabricated from ECCS plate, fully enameled both inside and out. In addition, the cans shall be beaded to provide paneling

resistance. The entire inside area of the can shall be coated with enamel. 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, A, (4).

D-2 LABELING

A. Labeling of metal cans. Labeling of metal cans shall be as specified in DSCP FORM 2997, Labeling of Metal Cans for Subsistence. In addition, the following information, and directions for use, as applicable, shall appear on one end of the can:

THIS PRODUCT IS GAS PACKED.

Cottage Cheese, Dehydrated – Directions for Use.

Water, $70^{\circ} \pm 5^{\circ}\text{F}$, 2-1/8 quarts.

Pour water into a shallow serving pan.

Pour cottage cheese evenly over the water.

Stir gently to wet all particles of cheese.

Let stand 5 minutes and then stir gently.

If more water is needed, sprinkle 1/2 to 1 cup water over cheese.

Chill rehydrated cheese thoroughly before serving (3-4 hours).

Makes 3 quarts, or 24 servings of about 1/4 cup each.

D-3 PACKING

A. Commercial packing. Six cans of product shall be packed in a shipping container complying with ASTM D3951-98, Standard Practice for Commercial Packaging.

B. Export packing. Six cans of product shall be packed in a fiberboard shipping container conforming to style RSC, grade W5c or W5s of ASTM D5118/D5118M-95 (2001), Standard Practice for Fabrication of Fiberboard Shipping Boxes. The cans shall be arranged three in length and two in width within the container. Each shipping container shall be closed and reinforced with nonmetallic strapping or pressure-sensitive adhesive filament-reinforced tape in accordance with ASTM D1974-98, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

D-4 UNITIZATION

A. Unit loads. Unit loads shall be as specified in DSCP FORM 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items.

D-5 MARKING

A. Shipping containers and unit loads. Marking of shipping containers and unit loads shall be as specified in 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/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 Research, Development and Engineering Command,
Natick Soldier Center
AMSRD-NSC-CF-F
15 Kansas Street
Natick, MA 01760-5018

One lot shall be randomly selected during each calendar month of production. Two (2) sample units of each item produced shall be randomly selected from that one production lot. The two (2) 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 product requirements specified in Section C of this document utilizing the double sampling plans indicated in ANSI/ASQC Z1.4 - 1993. The lot size shall be expressed in cans. The sample unit shall be the contents of one 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 for major defects and 6.5 for minor defects. Defects and defect classifications are listed in table I below.

TABLE I. Product defects 1/ 2/

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Dehydrated product</u>
101		Product not dehydrated cottage cheese.
102		Product not fully dehydrated.
103		Product not discernable curd particles of cottage cheese.
104		Curd particles shatter or pulverize upon slight finger pressure.
	201	Surface color not white to off white color.
105		Dehydrated product does not have a natural cottage cheese odor.

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

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Particle size</u>
	202	Individual sample less than 70.0 percent. <u>3/</u>
		<u>Rehydrated product</u>
106		Product does not fully rehydrated within five minutes.
107		Overall appearance not of fresh cottage cheese.
		<u>Odor and flavor</u>
108		Product does not the odor or flavor of fresh cottage cheese.
		<u>Texture</u>
	203	Rehydrated product does not have a smooth cottage cheese curd texture.
		<u>Net weight</u>
	204	Net weight of an individual can less than 16.25 ounces. <u>4/</u>

1/ Presence of any foreign materials such as, but not limited to dirt, insect parts, hair, wood, glass, metal, or mold, 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 not applicable to dehydrated 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 dehydrated product.

3/ Sample average particle size less than 75.0 percent shall be cause for rejection of the lot.

4/ Sample average net weight less than 16.75 ounces shall be cause for rejection of the lot.

B. Methods of inspection.

(1) Shelf life. The contractor shall provide a certificate of conformance that the product has a 36 month shelf life when stored at 80⁰F. Government verification may include storage for 6 months at 100⁰F or 36 months at 80⁰F. 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) Particle size. The contents of the filled and sealed can shall be made to determine compliance with the particle size requirement. An 8 inch diameter, U.S. Standard No. 8 sieve, provided with an 8 inch diameter cover lid shall be inserted into an 8 inch diameter bottom catch pan. Remove cover lid and carefully fill the entire sieve surface with approximately 1 inch of product. Replace the lid and agitate the sieve horizontally in a back and forth motion through a distance of approximately 12 inches (1 back and forth motion represents a single cycle) for 5 cycles in a 5-second time period (1 second/cycle). The back and forth motion shall be smooth and continuous and not short, jerky, or abrupt motions. The contents of the sieve and the catch pan shall be carefully emptied into precisely tared separate containers. This procedure shall be repeated until the entire contents of the can of finished product have been similarly treated. The net weight in grams of curd particles retained on the sieve shall be determined and the percentage calculated. Results shall be reported to the nearest 0.1 percent.

(3) Net weight. The net weight of the filled and sealed can shall be determined by weighing each sample unit on a suitable scale tared with a representative empty can and lid. Results shall be reported to the nearest 0.01 ounce.

(4) Moisture content testing. Eight filled and sealed cans shall be selected at random from the lot regardless of lot size. The contents of each can shall be tested for moisture content in accordance with the Official Methods of Analysis of the AOAC method 925.45/A (except that the temperature-time cycle for moisture analysis shall be modified by using a temperature of 70°C for 16 hours at a pressure of not more than 100 mm of mercury). Test results shall be reported to the nearest 0.1 percent. Any result not conforming to the requirements specified in Section C of this Performance-based Contract Requirements document shall be cause for rejection of the lot.

(5) Oxygen content in the headspace gas examination. The determination of the oxygen content in the headspace gas shall be by using an electronic oxygen analyzer which operates on the principle of the difference in partial pressure of oxygen between the oxygen reference and the oxygen content of the sample as detected by a porous zirconia sensor, such as the Illinois Instrument Analyzer or its equivalent: or on the principle of paramagnetic resonance such as the Servomex analyzer, or its equivalent. The oxygen analyzer shall be

calibrated to a known standard prior to testing the headspace gas of the product. Any result not conforming to the oxygen in headspace requirement in C-2, H shall be classified as a major defect. The lot size shall be expressed in units of cans. The sample unit shall be one filled and sealed can. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 1.5. Test results shall be reported to the nearest 0.1 percent.

E-6 QUALITY ASSURANCE PROVISIONS (PACKAGING AND PACKING MATERIALS, 603 x 700 METAL CAN)

A. Packaging.

(1) 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.

(2) 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.

(3) Can vacuum examination. The filled and sealed cans selected for the product examination shall be examined for vacuum. The cans and contents shall be allowed to reach 70° to 80°F. The vacuum reading shall be taken with a puncture-type vacuum gauge making the puncture as near as possible to the double seam to minimize error due to distortion of the end. A correction of 1 inch of vacuum shall be added to the gauge reading for each 1000 feet above sea level at which the determination is made. Failure of any can to meet the vacuum requirement of 5 inches shall be cause for rejection of the lot.

(4) 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 desicator, Mead Tester, or equivalent device, and drawing a vacuum of 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-2 and the AQL, expressed as defects per hundred units, shall be 1.5.

B. Labeling.

(1) Can labeling examination. The can labeling shall be examined in accordance with the requirements of DSCP FORM 2997, Labeling of Metal Cans for Subsistence. Any nonconformance shall be 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 II 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 II. Shipping container and marking defects

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Marking omitted, incorrect, illegible, or improper size, location sequence or method of application.
102		Inadequate workmanship. <u>1/</u>
	201	Number of cans not as specified.

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.

D. Unitization.

(1) Unit load examination. The unit load shall be examined in accordance with the requirements of DSCP FORM 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items. Any nonconformance shall be classified as a major defect.

SECTION J REFERENCE DOCUMENTS

DSCP FORMS

DSCP FORM 2997	Labeling of Metal Cans for Subsistence
DSCP FORM 3507	Loads, Unit: Preparation of Semiperishable Subsistence Items
DSCP FORM 3556	Marking Instructions for Boxes, Sacks and Unit Loads of Perishable and Semiperishable Subsistence

GOVERNMENT PUBLICATIONS

Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder
(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)

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

ASTM INTERNATIONAL

D1974-98 Standard Practice for Methods of Closing, Sealing,
and Reinforcing Fiberboard Boxes
D3951-98 Standard Practice for Commercial Packaging
D5118/D5118M-95 (2001) Standard Practice for Fabrication of Fiberboard
Shipping Boxes

AOAC INTERNATIONAL Official Methods of Analysis of the AOAC International
(OMA)