

SECTION C

This document covers sugar substitutes packaged in paper envelopes for use by the Department of Defense as a component of operational rations.

C-1 ITEM DESCRIPTION

PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS FOR CID A-A-20178A, SUGAR SUBSTITUTES, NON-CARBOHYDRATE

Type.

Type IV – Sucralose (1,6-dichloro-1,6-dideoxy-β-D-fructofuranosyl-4-chloro-4-deoxy-α-D-galactopyranoside) (C₁₂H₁₉Cl₃O₈) (21CFR § 172.831)

Package.

Package C – Meal, Ready-to-Eat (MRE)

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 the Packaging Requirements and Quality Assurance Provisions. 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. Appearance. The packaged product shall be a white to off-white crystalline powder and shall be free from foreign materials.

D. Odor and flavor. The packaged product shall be practically odorless and have a very sweet flavor. The packaged product shall be free from foreign odors and flavors.

E. Texture. The packaged product shall be free flowing and free from lumps.

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. Net weight. The net weight of one envelope of type IV product shall be not less than 1.0 gram.

SECTION D

D-1 PACKAGING

A. Packaging. Not less than 1.0 gram of type IV sucralose shall be filled into a paper envelope having maximum outside dimensions of 2-3/4 inches long by 1-1/2 inches wide. All four edges of the envelope shall be heat-sealed or on three edges with the fourth edge being formed by folding the material prior to filling. The seals shall be not less than 1/8 inch wide. The sealed envelope shall exhibit no leakage when examined in accordance with E-6,B,(1). There shall be no crushed, misshapen or unclean envelopes.

D-2 LABELING

A. Labeling. Labeling of product shall be in accordance with good commercial practice.

D-3 PACKING

A. Packing for shipment to ration assembler. Not more than 40 pounds of packaged 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-4 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 A-A-20178A and Section C of the Packaging Requirements and Quality Assurance Provisions document utilizing the double sampling plans indicated in ANSI/ASQ Z1.4. The lot size shall be expressed in envelopes. The sample unit shall be the contents of one envelope. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 1.5 for major defects and 4.0 for minor defects. Defects and defect classifications are listed in table I.

TABLE I. Product defects 1/ 2/

<u>Category</u>		<u>Defect</u>
<u>Major</u>	<u>Minor</u>	
		<u>Appearance</u>
101		Product not type IV, sucralose.
102		Type IV, sucralose not a white to off-white crystalline powder.
		<u>Odor and flavor</u>
103		Type IV, sucralose not practically odorless or does not have a very sweet flavor.
		<u>Texture</u>
	201	Product not free flowing.
	202	Presence of lumps. <u>3/</u>
		<u>Net weight</u>
	203	Net weight of type IV sucralose less than 1.0 gram.

1/ Presence of any foreign material 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.

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.

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

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. The net weight of the filled and sealed envelopes shall be determined by weighing each sample on a suitable scale tared with a representative empty envelope. Results shall be reported to the nearest 0.1 gram.

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

A. Packaging and labeling.

(1) Envelope material certification. Conformance of the paper envelope to the requirements shall be determined by CoC.

(2) Filled and sealed envelope examination. The filled and sealed envelopes shall be examined for the defects listed in table II. The sample size shall be expressed in envelopes. The sample unit shall be one envelope. 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 envelope defects 1/

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Tear or hole or open seal.
	201	Envelopes exceed maximum dimensions.
102		Leakage.
103		Seal separation.
104		Unclean.
105		Envelope has foreign odor.
106		Not packaged as specified.
107		Envelope not sealed with minimum 1/8 inch wide seals.
	202	Label missing or incorrect or illegible.
	203	Envelope crushed or misshapen.

1/ Any evidence of rodent or insect infestation 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 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.

SECTION J REFERENCE DOCUMENTS

DSCP FORMS

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

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ)

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

ASTM International

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

D 5118/D 5118M-05ae1 Standard Practice for Fabrication of Fiberboard
Shipping Boxes