

## **SECTION C**

This document covers non-carbohydrate sugar substitutes packaged in paper envelopes/packets 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-20178B, SUGAR SUBSTITUTES, NON-CARBOHYDRATE**

##### Type, style and package.

Type IV - Sucralose (1,6-dichloro-1,6-dideoxy- $\beta$ -D-fructofuranosyl-4-chloro-4-deoxy- $\alpha$ -D-galactopyranoside) (C<sub>12</sub>H<sub>19</sub>Cl<sub>3</sub>O<sub>8</sub>) (21CFR § 172.831)

Style A - Granular

Package 1 - Envelopes/packets

### **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 Packaging Requirements and Quality Assurance Provisions 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. Appearance. The finished product shall be a white to off-white granular powder and shall be free from foreign materials.

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

E. Texture. The sucralose 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/packet of sucralose product shall be not less than 1.0 gram.

## **SECTION D**

### **D-1 PACKAGING**

A. Packaging. Not less than 1.0 gram of sucralose shall be filled into a paper envelope/packet having maximum outside dimensions of 2-3/4 inches long by 1-1/2 inches wide. All four edges of the envelope/packet 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/packet shall exhibit no leakage or seal separation. There shall be no crushed, misshapen or unclean envelopes/packets.

### **D-2 LABELING**

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

### **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-5 MARKING**

A. Shipping containers. Shipping containers shall be marked in accordance with DLA Troop Support 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 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:

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. Six (6) sample units shall be randomly selected from that one production lot. The six (6) 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 A-A-20178C and Section C of this 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/packets. The sample unit shall be the contents of one envelope/packet. 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/

Category		Defect
<u>Major</u>	<u>Minor</u>	<u>General</u>
101		Product not type or not style or not package as specified.
		<u>Appearance</u>
102		Product not a white to off-white granular powder.
		<u>Odor and flavor</u>
103		Sucralose not practically odorless or does not have a very sweet flavor.

TABLE I. Product defects 1/ 2/ - Continued

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Texture</u>
	201	Sucralose not free flowing.
	202	Presence of lumps. <u>3/</u>
		<u>Net weight</u>
	203	Net weight of an individual envelope/packet less than 1.0 gram.

1/ Presence of any foreign material 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.

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 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 envelope/packet shall be determined by weighing each sample on a suitable scale tared with a representative empty envelope/packet. Results shall be reported to the nearest 0.1 gram.

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

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A. Packaging and labeling.

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

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

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

<sup>1/</sup> 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. The lot size shall be expressed

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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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**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

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

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ) [www.asq.org](http://www.asq.org)

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

ASTM INTERNATIONAL [www.astm.org](http://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