

JJJ-S-791L

June 10, 1974

SUPERSEDING

Int. Fed. Spec. JJJ-S-00791K (ARMY-GL)

September 30, 1971 and

Fed. Spec. JJJ-S-791H

April 25, 1968

FEDERAL SPECIFICATION

SUGAR, REFINED AND BROWN: BEET OR CANE

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. The specification covers beet or cane sugar for use by agencies of the Federal Government.

1.2 Classification.

1.2.1 Types. Beet or cane sugar covered by this specification shall be of the following types, as specified (see 6.1):

Type I - White, (Refined)

Class (a) Granulated (fine or extra-fine)

Class (b) Granulated (super-fine)

Class (c) Tablet or cube

Class (d) Powdered or confectioner's

Type II - Brown

Class (a) Light

Class (b) Medium

Class (c) Dark

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

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Federal Specifications:

- L-P-378 - Plastic Film (Polyethylene Thin Gage).
- UU-S-48 - Sacks, Shipping, Paper.
- PPP-B-35 - Bags: Textile, Shipping, Burlap, Cotton and Waterproof, Laminated.
- PPP-B-636 - Boxes, Shipping, Fiberboard.
- PPP-C-96 - Cans, Metal, 28 Gage and Lighter.

Federal Standards:

- FED-STD-101 - Preservation, Packaging, and Packing Materials: Test Procedures.
- FED-STD-123 - Marking for Domestic Shipment (Civil agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers, at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO., Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Specifications:

- MIL-L-1497 - Labeling of Metal Cans for Subsistence Items.
- MIL-L-10547 - Liners, Case, and Sheet, Overwrap: Water-Vaporproof or Waterproof, Flexible.
- MIL-L-35078 - Loads, Unit: Preparation of Nonperishable Subsistence.

Military Standards:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-668 - Sanitary Standards for Food Plants.

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PUBLICATIONS

U.S. Department of Health, Education and Welfare

Federal Food, Drug, and Cosmetic Act and Regulations Promulgated Thereunder

(Application for copies should be addressed to the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.)

U.S. Department of Agriculture

Visual Aids for Inspection of Metal Containers

United States Standards for Condition of Food Containers

(Application for copies should be addressed to the Information Division, Agricultural Marketing Service, US Department of Agriculture, Washington, DC 20250.)

(Copies of specifications, standards, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply:

The American Chemical Society

Industrial and Engineering Chemistry, Analytical Edition

(Application for copies should be addressed to the American Chemical Society, 1155 16th Street, Washington, DC 20002.)

Association of Official Analytical Chemists

Official Methods of Analysis of the Association of Official Analytical Chemists

(Application for copies should be addressed to the Association of Official Analytical Chemists, Box 540, Benjamin Franklin Station, Washington, DC 20044.)

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National Motor Freight Traffic Association, Inc., Agent

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

Uniform Classification Committee, Agent

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Material. The product shall be obtained only from sugar cane or sugar beets.

3.1.1 Type I, class (a) granulated sugar (fine or extra-fine). Type I, class (a) sugar shall be white and refined and shall contain not less than 99.5 percent sucrose, not more than 0.04 percent ash, and not more than 0.07 percent moisture. Not more than 4 percent shall remain on a U.S. Standard No. 20 sieve and not more than 8 percent shall pass through a U.S. Standard No. 100 sieve, when examined in accordance with 4.4.1.2.1. The finished product shall not contain lumps larger than 1/2 inch in their greatest diameter, that cannot be broken by light finger pressure.

3.1.2 Type I, class (b) granulated sugar (super-fine). Type I, class (b) sugar shall be white and refined and shall contain not less than 99.5 percent sucrose, not more than 0.04 percent ash, and not more than 0.10 percent moisture. Not more than 1 percent shall be retained on a U.S. Standard No. 40 sieve and not more than 20 percent shall pass through a U.S. Standard No. 140 sieve, when examined in accordance with 4.4.1.2.1. The finished product shall not contain lumps larger than 1/2 inch in their greatest diameter that cannot be broken by light finger pressure.

3.1.3 Type I, class (c) tablet or cube sugar. Type I, class (c) sugar shall be white and refined and shall contain not less than 99.5 percent sucrose, not more than 0.04 percent ash, and not more than 0.30 percent moisture. The weight of the tablet shall be not less than 4.5 grams (.16 oz.) and cube not less than 3.7 grams (.13 oz.).

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3.1.4 Type I, class (d) powdered or confectioner's sugar. Type I, class (d) sugar shall be white and refined. The finished product shall contain not less than 96.5 percent sucrose, not more than 0.05 percent ash, not more than 0.80 percent moisture, and not less than 2.25 percent nor more than 3.25 percent of clean, edible starch properly mixed, added to prevent caking. Not more than 2 percent shall remain on a U.S. Standard No. 100 sieve and not less than 75 percent shall pass through a U.S. Standard No. 200 sieve when examined in accordance with 4.4.1.2.2. The finished product shall not contain lumps larger than 1/2 inch in their greatest diameter that cannot be broken by light finger pressure.

3.1.5 Type II, class (a) light brown sugar. Type II, class (a) sugar shall be of typical flavor and uniform, light brown color. The product shall have a polarization of not less than 87 or more than 94 percent sugar (uncorrected). It shall contain not more than 2.25 percent ash and shall contain not more than 4.25 percent moisture. The color reflectance shall be not less than 34 or more than 50 percent. The finished product shall not contain lumps larger than 1/2 inch in their greatest diameter that cannot be broken by light finger pressure.

3.1.6 Type II, class (b) medium brown sugar. Type II, class (b) sugar shall be of typical flavor and medium brown color. The product shall have a polarization of not less than 84.5 or more than 93 percent sugar (uncorrected), and shall contain not more than 3.25 percent ash. It shall contain not more than 4.50 percent moisture. The color reflectance shall be not less than 34 or more than 42 percent. The finished product shall not contain lumps larger than 1/2 inch in their greatest diameter that cannot be broken by light finger pressure.

3.1.7 Type II, class (c) dark brown sugar. Type II, class (c) sugar shall be of typical flavor and dark brown color. The product shall have a polarization of not less than 82 or more than 92 percent sugar (uncorrected). It shall contain not more than 3.25 percent ash and it shall contain not more than 4.50 percent moisture. The color reflectance shall be not less than 18 or more than 34 percent. The finished product shall not contain lumps larger than 1/2 inch in their greatest diameter that cannot be broken by light finger pressure.

3.2 Federal Food, Drug, and Cosmetic Act. All deliveries shall conform to every respect to the provisions of the Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder.

3.3 Workmanship. The product shall be prepared in accordance with part 123 of the Code of Federal Regulations, Title 21, Human Foods; Current Good Manufacturing Practices (Sanitation) in manufacturing, processing, packing or holding. In addition, for Military agencies, the product shall be processed in establishments meeting the requirements of MIL-STD-668.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Preacceptance inspection (plant sanitation inspection).

4.2.1 Civil agencies. When specified (see 6.1), inspection of plants producing the product will be conducted upon request of the contracting officer to the appropriate Government inspection agency. Award of contracts will be limited to establishments known to maintain proper sanitary conditions or which have received prior sanitary approval recommended by the inspection agency.

4.2.2 Military agencies. The product shall be rejected if produced in plants not meeting the requirements of 3.3.

4.3 Acceptance inspection.

4.3.1 Condition inspection of containers. When inspection of product for quality and condition is performed by the U.S. Department of Agriculture, the United States Standards for Condition of Food Containers shall apply. (For applicable criteria governing inspection of containers for the Military, see 4.3.4).

4.3.2 Sampling for inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except as otherwise indicated hereinafter.

4.3.3 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of the referenced specifications, drawings, and standards unless otherwise excluded, amended, modified or qualified in this specification or applicable purchase documents.

4.3.3.1 Testing of components. Testing of components described in this specification and changes to testing of components, described in subsidiary specifications shall be in accordance with table I. Test requirements for the characteristics listed shall be average requirements. A test failure shall indicate an unacceptable component and use of such shall be cause for rejection of the involved end item.

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TABLE I Testing of components (see 4.3.3.1)

Component	Sample unit	Lot size expressed in	Inspection level	Characteristics	Results reported	Test ref and romt para
Cans <u>1/</u>	One 4" x 4" panel w/ end and lid	Cans	S-1	Tin plate	Nearest 0.01 lb/ base box	5.1.2.1.3 4.4
Carton liners or polyethylene bags as applicable	One yd. strip from a roll or equiv. in bags or tubes	Rolls, bags or tubes	S-2	Basis wt of paper	Nearest 1/2 lb/ ream	5.1.1.1 5.1.1.2 (a, b, c, d) 4.4
				Wt of wax or polyethylene as applicable	"	5.1.1.2 (b) 4.4
				Total wt of paper and and polyethylene or wax as applicable	"	5.1.1.2 (a, d) 4.4
				Thickness of polyethylene	Nearest 0.00001 0.0001 0.0001 inch	5.1.1.1 5.1.1.2 (e) 5.1.1.4 4.4
Paper pockets	1 pocket	Pockets	S-2	Wt. per ply	Nearest 1b/ream	5.1.2.1.1 5.1.2.1.1.1 4.4

1/ Can label (Military), shall be tested in accordance with the applicable subsidiary specification except that tests shall be performed on the same cans submitted for tinplate testing.

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4.3.3.2 Envelope material. Conformance of envelope material to 5.1.1.1 or 5.1.2.1.1 as concerns weight of paper and thickness of polyethylene shall be ascertained by examination of pertinent invoices, labels or other valid documents from supplier of envelope material. Nonconformance shall indicate unacceptable envelope material and use of such shall be cause for rejection of the involved end item.

4.3.3.3 Shipping sacks (level B, 50-lb, bulk). Conformance of sacks to 5.2.2.6.1, as concerns number of plies and total basis weight shall be ascertained by examination of pertinent labels, invoices or other valid documents. Use of nonconforming sacks shall be cause for rejection of the involved end item.

4.3.4 Examination of end item. Examination shall be in accordance with tables III through VI and 4.3.4.1 through 4.3.4.6. The sampling plans for the above referenced tables shall be as shown in table II. The acceptable quality levels (AQLs) shall be expressed in terms of defects per hundred units for table VI, and in terms of percent defective for tables III through V.

TABLE II Sampling plans

Table	Inspection level	Sample unit	Lot size expressed in	AQLs		
				Major	Minor	Total
III	S-3	1 filled and sealed 4.5, 6 or 7 gram envelope or can	Envelopes or cans	1.0	--	--
IV	S-3	1 filled and sealed primary container	Primary containers	--	2.5	--
V	S-2	1 filled intermediate carton or bulk filled fiberboard container with envelopes	Cartons or fiberboard containers (as applicable)	--	2.5	--

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TABLE II Sampling plans (cont'd)

Table	Inspection level	Sample unit	Lot size expressed in	AQLs		
				Major	Minor	Total
VI	S-3	<u>1/</u>	Primary containers	2.5	--	6.5

1/ The sample unit for examination shall be the contents of a primary container when the primary container is one pound or less. When the primary container is more than one pound, the sample unit shall be one pound of product drawn from a primary container. For type I, class (c) product, the sample unit shall be 10 tablets or cubes from a primary container.

TABLE III Examination for leakage of envelopes and cans (see 4.4)

Category	Defect
<u>Major</u>	
101	Leakage.

TABLE IV Examination for net weight 1/

Category	Defect
<u>Minor</u>	
201	Net weight more than 5 percent under specified weight (applicable when containers are required to have a net weight of 1 pound or less). <u>2/</u>
202	Net weight more than 2 percent under specified weight (applicable when containers are required to have a net weight of more than 1 pound but not more than 10 pounds). <u>3/</u>
203	Net weight more than 1 percent under specified weight (applicable when containers are required to have a net weight of more than 10 pounds). <u>4/</u>

1/ Lot shall be rejected if the average net weight of the samples is less than specified net weight.

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- 2/ Weight shall be reported to nearest 1/8-ounce for cartons and 0.1 gram for envelopes.
- 3/ Weight shall be reported to the nearest 1/2-ounce.
- 4/ Weight shall be reported to nearest 1/8-ounce for containers required to have a net weight of more than 10 pounds but not more than 35 pounds, and to the nearest 1/2-pound for containers required to have more than 35 pounds.

TABLE V Count of envelopes

Category	Defect
<u>Minor</u>	
201	Less than required quantity.

TABLE VI Examination of product 1/

Category	Defect
<u>Major</u>	<u>Minor</u>
101	Lumps larger than 1/2-inch (in their greatest diameter) that cannot be broken up by light fingertip pressure. <u>2/</u>
102	Not typical color or type specified.
103	Objectionable flavor or odor. <u>3/</u>
	201 More than one tablet or cube broken or crushed into more than 2 pieces.
	202 Weight of tablet or cube less than 4.5 grams or 3.7 grams, as applicable. <u>3/</u>
104	Cube(s) or tablet(s) not completely wrapped.
105	Wrapper(s) on cubes or tablets not clean.

- 1/ Presence of foreign material (e.g., metal, wood, glass, insect, insect fragment or filth) shall be cause for rejection of the entire lot.

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- 2/ Not applicable to type I (c). Measuring device shall be calibrated in 1/16-inch increments.
- 3/ For tablets or cubes; examine 1 tablet or cube from a sample unit. Weighing instrument shall be calibrated down to 0.1 gram increments.

4.3.4.1 Examination of particle size. The sample for examining particle size for type I product (except class c), shall be a one-pound composite of product derived from the number of primary containers indicated by inspection level S-2. Lot size shall be expressed in primary containers. One determination per sample shall be accomplished utilizing 100 grams of granulated or superfine granulated sugar, or 50 grams of confectioner's powdered sugar. Examination procedures shall be in accordance with 4.4. Results shall be reported to the nearest percent. Nonconformance with requirements shall be cause for rejection of the lot.

4.3.4.2 Examination of primary containers. Examination of primary containers (cans, bags, packets, envelopes, cartons, cartons w/liners) for condition and labeling shall be in accordance with the United States Standards for Condition of Food Containers. In the examination of polyethylene bag as specified in 5.1.1.4, the following defect shall be included in the examination; "Excessive air in bag".

4.3.4.3 Examination of fiberboard shipping containers. The filled and closed fiberboard shipping containers shall be examined in accordance with quality assurance provisions contained in the appendix of PPP-B-636. In addition, the following defects shall be included in the examination: Major - Case marking missing, incorrect or illegible; Minor - Number of intermediate cartons containing envelopes not as marked on case; Minor - Total net weight as indicated on case markings, exceeds maximum specified; Minor - Intermediate bulk packed fiberboard container not closed as specified; Minor - Intermediate container not marked as required; Major - Protective pads or tape (in lieu of corner pad), when required, missing, not as specified or not completely covering stitches. For level C pack as specified in 5.2.3.1, only the above referenced defects applicable to case marking and total net weight (when pertinent) shall apply.

4.3.4.4 Examination of shipping sacks. The filled and closed shipping sacks shall be examined in accordance with the applicable quality assurance provisions contained in the appendix of UU-S-48. In addition, the following defects shall be included in the examination: Contractual markings missing, incorrect or illegible; tear, hole, open seam or broken stitches; number of interior bags or pockets not as specified. For level B bulk pack (see 5.2.2.6.1) and level C pack, only the aforementioned defects applicable to tear, hole, open seam or broken stitches, marking and number of interior bags (when pertinent) shall apply. In addition, the following defect shall be included when packing in accordance with 5.2.2.6.1 is specified: closure not as specified; and the following defect shall be included when packing in accordance with 5.2.3.2 is specified: polyethylene sack liner is missing.

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4.3.4.5 Examination of waterproof case liners. Examination of filled and closed liners shall be in accordance with the quality assurance provisions contained in the appendix to MIL-L-10547.

4.3.4.6 Examination of unit loads. Unit loads shall be examined in accordance with the quality assurance provisions of MIL-L-35078.

4.3.5 Testing of finished product. Type I product shall be tested for sucrose, moisture and ash, and in addition, starch for class d product. Type II product shall be tested for moisture, ash, color reflectance and polarization. Test procedures shall be in accordance with 4.4. The sample for testing shall be an 8-ounce composite of product derived from the number of primary containers indicated by inspection level S-2. Notwithstanding the foregoing, the 8-ounce composite for product in envelopes shall be derived from sufficient envelopes to yield that quantity. Each test result shall be reported to the same unit or decimal place as specified for the pertinent requirement. A test failure shall be cause for rejection of the lot.

4.4 Examination and test methods. Examination and test procedures which differ from those specified herein, unless otherwise excepted, may be used by the supplier if they provide a quality assurance equivalent to that specified. If the Government contracting officer determines that such procedures and controls do not provide, as a minimum such quality assurance, the supplier will use the procedures set forth herein. In case of dispute as to examination or test results, the procedures specified herein will govern.

4.4.1 Examination procedures.

4.4.1.1 Leakage, 35-pound can. The filled and closed can shall be examined for leakage by submerging the can in $100^{\circ} F \pm 5^{\circ} F$ water in such a manner that the can is lying on a side with not less than 3 inches over any portion of the can, and not less than 1 inch of water between the lower portion of the can and the bottom of the tank. The can shall be held in this position for 30 seconds and shall then be rotated so that observation for leaks can be made with each of the four sides facing the top of the tank. A leak consists of a steady progression of bubbles. Isolated bubbles caused by air entrapped in the seam shall not be considered as signs of leakage.

4.4.1.2 Sieve.

4.4.1.2.1 Granulated and superfine granulated sugar. Granulated and superfine granulated sugar shall be examined for particle size as follows: Place a 100-gram sample on the top sieve of an appropriately assembled set of U.S. Standard sieves, as indicated in 3.1.1 or 3.1.2 including cover and catch pan. With the left hand hold the sieve assembly at an angle of 30 degrees from the horizontal so that the upper edge of the tilted plane is towards the right

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hand. Shake by striking the right side of the sieve assembly with a short sharp stroke at an angle of 30 degrees from the horizontal so that the upper edge of the tilted plane is towards the right hand. Strike at the rate of about 150 times per minute. After each 25 strokes turn the sieve assembly 1/6 of a revolution in the same direction. Shake for 5 minutes. Weigh the material which remains on the screen or in the catch pan and calculate the percentages of material which was retained or passed.

4.4.1.2.2 Confectioner's powdered sugar. Confectioner's powdered sugar shall be examined for particle size as follows: Place a 50-gram sample on the top sieve of an appropriately assembled set of U.S. Standard sieves as indicated in 3.1.4, including catch pan. Set on a flat, smooth, horizontal surface. Using a soft, 3-inch hair brush, with handle pointing towards the operator at an angle of about 45 degrees, stroke the sample along the perimeter of the sieve by drawing the brush towards the operator in 5 to 7-inch strokes. The full width of the brush should bear firmly upon the mesh and follow the curvature of the perimeter. Rotate the sieve about 1/6 turn after each stroke in a direction opposite to the motion of the brush. Brush at the rate of one stroke per second for 5 minutes, or until the end point has been reached. Weigh the material which remains on the screen or in the catch pan and calculate the percentages of material which was retained or passed.

4.4.1.3 Leakage envelopes. Procedure for determining leakage in envelopes shall be performed as follows: Submerge the envelope to be examined in water in a vacuum desiccator, Mead tester, or equivalent device. Draw 10 inches of vacuum and hold for at least 10 seconds. Observe the envelope for: (a) air leakage in large quantities from any point, (b) a fine stream of bubbles anywhere in the seal area, and (c) failure to inflate. Envelopes which do not inflate under vacuum should be opened and examined for water penetration. Leakage of air under the first two conditions of wetting of the product under the last condition indicates an unacceptable envelope.

4.4.2 Test procedures.

4.4.2.1 Chemical analyses. Chemical analyses shall be made in accordance with Official Methods of Analysis of the Association of Official Analytical Chemists in effect on the date of invitation for bids.

<u>Test</u>	<u>Chapter & Section</u>	<u>Method</u>
Sucrose - Type I or II	Sugar & Sugar Products; Sugars and Sirups	Sucrose - Polarimetric Methods
Moisture - Type I or II	" "	Vacuum drying
Ash - Type I or II	" "	Ash

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<u>Test</u>	<u>Chapter & Section</u>	<u>Method</u>
Polarization - Type II	Sugars & Sugar Products; Honey	Direct Polarization
Starch - Type I, Class (d)	Sugars & Sugar Products; Confectionery	Starch

4.4.2.2 Color reflectance. Color reflectance shall be determined by the Brice-Keane sugar photometer (Industrial & Engineering Chemistry, Analytical Edition, Vol. 9, page 258, June 1937), or by the Beckman spectrophotometer with attachment for reflectance using magnesium carbonate as the standard of 98 percent reflectance read at a wave length of 590 Nanometers.

4.4.2.3 Tin coating weights. Tin coating weights shall be determined by any method specified in PPP-C-96.

4.4.2.4 Tests for paper and paper laminates. The following tests shall be made in accordance with FED-STD-101:

Basis weight	Method 5022
Wax in paper	Method 6018

4.4.2.5 Polyethylene bag thickness. Thickness of polyethylene bag shall be determined in accordance with L-P-378.

5. PREPARATION FOR DELIVERY

5.1 Packaging. The sugar shall be packaged in accordance with level A, B, or C, as specified (see 6.1). The following minus tolerances from the net weights specified in 5.1.1.1 through 5.1.3 will be allowed in any individual container, provided the average net weight of the containers, inspected in accordance with table IV, is not less than the net weight specified in the aforementioned paragraphs: 5 percent for containers required to have a net weight of 1 pound or less; 2 percent for containers required to have a net weight of more than 1 pound but not more than 10 pounds; and 1 percent for containers required to have a net weight of more than 10 pounds.

5.1.1 Level A. Sugar shall be packaged in accordance with 5.1.1.1 through 5.1.1.4, as applicable.

5.1.1.1 Four and one-half, six and seven gram envelope. As specified (see 6.1), four and one-half, six or 7 grams of type I, class (a) or type I, class (b) sugar shall be packaged in an envelope having a maximum size of 2-1/2 inches square by 3/16-inch thick when filled. The envelope shall be made from 25 pounds

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per ream \pm 5% (24 by 36-500) sulfite pulp, kraft pulp, or a mixture of the two, and having a natural kraft or dull brown color. The paper shall be coated on one side with 0.0005-inch thick polyethylene, and the envelope shall be formed and closed by heat sealing. The envelope shall show no sign of leakage when examined in accordance with 4.4.1.3. When specified (see 6.1), 100 or 200 envelopes shall be placed into a folding or set-up chipboard carton, or 1000 envelopes shall be placed in a non-test fiberboard box closed by gluing or taping.

5.1.1.2 One pound carton. One pound of type I, class (d) or type II sugar shall be packaged in a commercial folding paperboard carton. The carton shall be lined with one of the materials listed below formed into a bag or tube. Test for polyethylene thickness shall be in accordance with 4.4.5. The ends shall be completely closed to obtain a siftproof inner package. Test for paper and paper laminates shall be in accordance with 4.4.4.

(a) Twenty-one pounds per ream \pm 5% (24 by 36-500) sulfite or sulfate paper coated evenly on both sides with wax or polyethylene to a total weight of 32 pounds per ream.

(b) Two sheets of 20 pounds per ream \pm 5% (24 by 36-500) supercalendered kraft, glassine, or sulfite paper laminated together with 7 pounds of micro-crystalline wax per ream.

(c) Forty-eight pounds per ream \pm 5% (24 by 36-500) sheet consisting of 3 sulfite or kraft sheets, one of which shall be coated with wax or polyethylene in accordance with good commercial practice.

(d) Twenty-seven pounds per ream \pm 5% (24 by 36-500) glassine paper evenly coated on both sides with wax to a total weight of 35-1/2 pounds per ream.

(e) A bag made of polyethylene not less than 0.002-inch thick. The bag shall be closed with a siftproof closure.

5.1.1.3 Five, ten and fifty pound bag. Five, 10, or 50 pounds of type I, class (a) sugar, as specified (see 6.1), shall be filled into a textile bag, constructed and closed in accordance with type IV, style A, of PPP-B-35.

5.1.1.4 One and two pound bag. One or two pounds of type I, class (d) or 2 pounds of type II sugar as specified (see 6.1), shall be filled into a single-or double-wall polyethylene bag. The total wall thickness shall be not less than 0.002-inch thick for 1-pound quantities and not less than 0.003-inch thick for 2 pound quantities (see 4.4.2.5). The bag shall be closed with a siftproof closure. Prior to closing, care shall be taken to expel excess air. Alternatively, the bag material may be perforated to assist in expulsion of excess air. The perforations shall be of such a size to allow transference of air within the package, but will not permit spillage or sifting of the product.

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5.1.2 Level B. The sugar shall be packaged in accordance with 5.1.2.1 or 5.1.2.2, as applicable.

5.1.2.1 Pockets, envelopes and cans. Sugar shall be packaged in accordance with 5.1.2.1.1, 5.1.2.1.2, or 5.1.2.1.3, as applicable.

5.1.2.1.1 Paper pocket. Five or 10 pounds of type I, class (a) sugar shall be packaged in a paper pocket. The paper used for the pocket shall be heavy duty kraft. When extensible papers are used, a basis weight equal to 90 percent of the specified basis weight shall be acceptable. The paper pocket shall be either pasted bottom, open mouth or sewn bottom, open mouth. The paper requirements are as follows:

Net weight of contents (pounds)	Basis weight per ream \pm 5%	
	Inner ply	Outer ply
5	40	40
10	40	50

Alternatively, 5 or 10 pounds of sugar shall be packaged in a single ply paper pocket of 80 pounds basis weight per ream \pm 5% (24 by 36-500).

5.1.2.1.1.1 When specified (see 6.1 and 6.3), the paper pocket shall be in accordance with 5.1.2.1.1, except that the paper requirements shall be as follows:

Net weight of contents (pounds)	Basis weight per ream \pm 5%	
	Inner ply	Outer ply
5	50	60
10	60	60

5.1.2.1.2 Four and one-half gram envelope. Four and one-half grams of type I, class (a) or (b) sugar shall be packaged in an envelope made of white sulfite paper having a basis weight of 24 pounds per ream \pm 5% (24 by 36-500) and coated on the inside with 0.0005-inch thick polyethylene. Unless otherwise specified (see 6.1), 100 or 200 envelopes shall be placed in a folding or set-up chipboard carton, or 1000 envelopes shall be placed in a non-test fiberboard box closed by gluing or taping.

5.1.2.1.3 Thirty-five pound can. Thirty-five pounds of type I, class (a) sugar shall be packaged in a 5-gallon can having dimensions of 9-3/8 inches by 9-3/8 inches by 13-3/4 or 13-7/8 inches, with soldered side seams and double-seamed soldered or squeezed on soldered top and bottom. The can shall have paneled sides. The can shall be made throughout from not less than commercial

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0.25-pound electrolytic tinplate per base box (see 4.4.2.3) and having a base plate weight and temper sufficient to protect the product during shipment and storage. The can top shall be provided with a cover not less than 6-3/16 inches in diameter, compound-lined and rolled or clinched over a flanged opening. The can shall not leak when examined in accordance with 4.4.1.1.

5.1.3 Level C. Sugar shall be packaged in a manner to protect it from deterioration or damage during shipment from the supply source to the first receiving activity. The supplier may use his standard practice when it meets these requirements. When tablets or cubes are ordered, each tablet or cube shall be inclosed in an individual wrapper.

5.2 Packing. Sugar shall be packed in accordance with level A, B, or C, as specified (see 6.1).

5.2.1 Level A.

5.2.1.1 Envelopes. Not more than 40 pounds of type I, class (a) or type I, class (b) sugar in cartons containing 100 or 200 envelopes, or in fiberboard boxes containing 1000 envelopes, and inclosed in a waterproof case liner fabricated and closed in accordance with MIL-L-10547 for subsistence items, shall be packed in a snug-fitting fiberboard box constructed, closed, and reinforced in accordance with style RSC, V2s of PPP-B-636. If flaps of the shipping container are closed by stitching, the case liner shall be protected from the stitches by placing a chipboard pad between the case liner and the stitched flaps. The case liner shall be protected from stitches in the manufacturer's joint with a chipboard corner pad or a strip of pressure-sensitive tape applied over the stitches.

5.2.1.2 Cartons. Not more than 50 pounds of type I, class (d) or type II sugar in cartons, inclosed in a waterproof case liner fabricated and closed in accordance with MIL-L-10547 for subsistence items, shall be packed in a snug-fitting fiberboard box, constructed, closed, and reinforced in accordance with style RSC, V2s of PPP-B-636. The case liner shall be protected from stitches as specified in 5.2.1.1.

5.2.1.3 Elastic bags. Not more than 50 pounds of type I, class (d) or type II sugar in plastic bags shall be packed in a snug-fitting fiberboard box with liner, constructed, closed, and reinforced in accordance with style RSC-L, V2s of PPP-B-636. Sugar in bags shall be inclosed in a waterproof case liner, constructed and closed in accordance with MIL-L-10547 for subsistence items. The case liner shall be protected from stitches as specified in 5.2.1.1.

5.2.1.4 Bags. Twelve 5-pound bags, six 10-pound bags, or one 50-pound bag, shall be packed in a multiwall paper shipping sack, constructed and closed in accordance with type I, style B or type II, style A or B, construction 9 or 9X, MB 2 of UU-S-48.

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5.2.2 Level B.

5.2.2.1 Thirty-five pound can. One 35-pound can of sugar shall be packed on end in a snug-fitting fiberboard box, constructed, closed, and reinforced in accordance with style RSC, V3c, V3s, or V4s of PPP-B-636.

5.2.2.2 Envelopes. Not more than 40 pounds of type I, class (a) or type I, class (b) sugar in cartons containing 100 or 200 envelopes or in fiberboard boxes containing 1000 envelopes, and inclosed in a waterproof case liner fabricated and closed in accordance with MIL-L-10547 for subsistence items, shall be packed in a snug-fitting fiberboard box, constructed, closed, and reinforced in accordance with style RSC, V3c, V3s, or V4s of PPP-B-636. The case liner shall be protected from stitches as specified in 5.2.1.1.

5.2.2.3 Cartons. Not more than 50 pounds of type I, class (d) or type II sugar in cartons, inclosed in a waterproof case liner fabricated and closed in accordance with MIL-L-10547 for subsistence items, shall be packed in a snug-fitting fiberboard box, constructed, closed, and reinforced in accordance with style RSC, V3c, V3s, or V4s of PPP-B-636. The case liner shall be protected from stitches as specified in 5.2.1.1.

5.2.2.4 Plastic bags. Not more than 50 pounds of type I, class (d) or type II sugar in plastic bags shall be packed in a snug-fitting fiberboard box with liner, constructed, closed, and reinforced in accordance with style RSC-L, V3c, V3s, or V4s of PPP-B-636. The bags shall be protected from stitches as specified in 5.2.1.1.

5.2.2.5 When specified (see 6.1 and 6.3), the shipping container specified in 5.2.2.1 through 5.2.2.4 shall be reinforced with nonmetallic strapping or pressure-sensitive adhesive, filament reinforced tape in accordance with the appendix of PPP-B-636, except that two reinforcing bands shall be used, one lengthwise and one girthwise.

5.2.2.6 Shipping sack. Twelve 5-pound bags, six 10-pound bags, 25 or 50 pounds bulk sugar, shall be packed in a multiwall paper shipping sack constructed and closed in accordance with type I, style B or type II, style A or B, construction 4 or 4X, MB 1 of UU-S-48. One hundred pounds of sugar shall be packed in a sack complying with the level B requirements of UU-S-48.

5.2.2.6.1 When specified (see 6.1), 50 pounds of bulk sugar shall be packed in a 4-ply multiwall shipping sack, having a minimum total basis weight of 170 pounds with SOT (stitches over tape) closure.

5.2.3 Level C. Not more than 50 pounds of sugar in cartons, bags, cans or 4-1/2 gram envelopes shall be packed in a snug-fitting fiberboard box, constructed and closed in accordance with style RSC, type CF or SF, class domestic,

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method II closure of PPP-B-636. For polyethylene bags, the fiberboard box shall comply with the above except that the box shall be style RSC-L and the bags shall be protected from stitches in the flaps as specified in 5.2.1.1.

5.2.3.1 When specified (see 6.1 and 6.4), sugar shall be packed in shipping containers complying with Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable. For shipment to ration assembly, not more than 40 pounds of envelopes, tablets or cubes shall be packed in the shipping container.

5.2.3.2 Twenty-five pounds of type I, class (a) or (d) or type II, class (a), (b) or (c) sugar shall be packed directly in a multiwall paper shipping sack with a polyethylene liner in accordance with Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.

5.2.3.3 When specified (see 6.1 and 6.4), twelve 2-pound polyethylene bags of type I, class (d) or type II sugar shall be packed in a multiwall paper shipping sack in accordance with Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.

5.3 When specified (see 6.1), sugar, packed as specified in 5.2, shall be arranged in unit loads in accordance with MIL-L-35078 for the type and class of load specified.

5.4 Labeling and marking.

5.4.1 Civil agencies.

5.4.1.1 Unit containers. Labeling that complies with the Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder, is acceptable.

5.4.1.2 Interior boxes, bags or packages. Interior boxes, bags, or packages shall be marked with the name of the commodity, the net weight of contents, and in the case of envelopes, the quantity of envelopes contained, in addition to the labeling required in 5.4.1.1. Individual envelopes require no marking other than the word, SUGAR, in large print and labeling required in 5.4.1.1.

5.4.1.3 Shipping containers. In addition to any special marking required by the contract or order, shipping containers shall be marked in accordance with FED-STD-123.

5.4.2 Military agencies.

5.4.2.1 Unit containers.

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5.4.2.1.1 Six or seven gram envelopes. The following information shall be legibly printed in black on one side of the envelope:

SUGAR (in letters larger than others used for the label).

Net weight.

Name and address of packer.

5.4.2.1.2 Tablet, cube or 4-1/2 gram envelope. Any labeling that complies with the Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder, is acceptable except that the labeling or decorative design shall not reflect or advertise a seasonal holiday.

5.4.2.1.3 Interior boxes, bags or cartons. Labeling in accordance with 5.4.1.1 and 5.4.1.2 is acceptable.

5.4.2.1.4 Thirty-five pound cans. The cans shall be labeled in accordance with MIL-L-1497.

5.4.2.2 Shipping containers. Shipping containers shall be marked in accordance with MIL-STD-129.

5.4.2.3 Unit loads. Unit loads shall be marked in accordance with MIL-L-35 and MIL-STD-129.

6. NOTES

6.1 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number and date of this specification.
- (b) Type and class of product required (see 1.2.1).
- (c) When inspection of plants is required by Civil agencies (see 4.2.5.1).
- (d) Levels of packaging and packing (see 5.1 and 5.2).
- (e) Whether 4.5, 6 or 7-gram envelopes are required (see 5.1.1.1 and 5.1.2.1.2).
- (f) Whether 100, 200, 1000 or other amount of envelopes are to be packaged in an intermediate carton or box, as applicable, (see 5.1.1.1 and 5.1.2.1.2).
- (g) Whether 5, 10, or 50 pound bags are required (see 5.1.1.3).
- (h) Whether 1 or 2 pounds of type I, class (d) or 2 pounds of type II sugar are to be packaged in polyethylene bag (see 5.1.1.4).
- (i) When packaging specified in 5.1.2.1.1.1 is required.
- (j) When packing specified in 5.2.2.5, 5.2.3.1, or 5.2.3.3 is required.
- (k) When 50 pounds of bulk sugar is to be packed as specified in 5.2.2.6.1.
- (l) Type and class of unit load when unit loading is specified (see 5.3).

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6.2 Military agencies. Based on conditions known or expected to be encountered during shipment, handling, and storage of the specific item being procured, the contracting officer should select the appropriate level of pack in accordance with the criteria established in AR 700-15, NAVSUPINST 4030.28, AFR 71-6, MCO 4030.14D or DSAR 4145.7, as applicable.

6.3 Packaging specified in 5.1.2.1.1.1 and packing specified in 5.2.2.5 are intended for transfer at sea operations or specific overseas operations.

6.4 Packing specified in 5.2.3.1, 5.2.3.2, or 5.2.3.3 is intended for direct shipment from the supply source to the consumer for immediate use within CONUS. Packing for envelopes, tablets, and cubes as specified in 5.2.3.1 is intended for shipment to a ration assembly.

6.5 Supplier's inspection. The supplier should be required to assure that the product conforms with the specification prior to submission to the Government for final inspection.

6.6 Destination inspection (for civil agencies only). When the finished product has been inspected and passed at point other than destination, the contract should require that product be inspected at destination for condition and quantity only.

6.7 Level B packaging is intended to provide an economical but limited protection and should be specified only when it is determined that the product packaging provides protection against damage during multiple shipments in which shipping and handling will be under cover, and storage will be in warehouses or other structures providing equivalent protection from weather.

Custodians:

Army - GL
Navy - SA
Air Force - 45

Preparing activity:

Army - GL

CIVIL AGENCY COORDINATING ACTIVITIES:

Review activities:

Army - MD
Navy - MC, MS
DP - SS

AGRIC - AMS
VA - DMS
HEW - FLA, NIH

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