QUARTERMASTER CORPS
TENTATIVE
SPECIFICATION

C.Q.D. No. 19F
2 August 1944
Superseding
C.Q.D. No. 19E
15 February 1944

RATION, TYPE D*

A. APPLICABLE SPECIFICATIONS.

A-1. The following specifications, of the issue in effect on date of invitation for bids, shall form a part of this specification:

A-1a. Federal Specifications:-

NN-B-621 - Boxes; Wood, Nailed and Lock-Corner.
JJJ-S-791 - Sugar; Beet or Cane.
SS-S-31 - Salt; Table.
QQ-S-781 - Strapping, Flat, Steel.
QQ-S-790 - Strapping, Round; Steel, Bare, and Zinc-Coated.

A-1b. Ordnance Department Tentative Specification:-

AXS-643 - Stain, Water Soluble.

A-1c. Quartermaster Corps Tentative Specifications:-

C.Q.D.No. 166 - Milk, Dry; Whole, and Nonfat Solids.
C.Q.D.No. 201 - Coating; Exterior, Camouflage and Rust-Inhibiting, for Non-Processed Food Cans.

B. TYPE, CLASSES AND GRADE.

B-1. Type. The product shall be of one type as herein specified.

B-2. Classes. The product shall be of two classes as follows:

Class 1. Two Ounce Bars
Class 2. Four Ounce Bars

B-3. Grade. The product shall be of the grade herein indicated.

C. MATERIAL AND WORKMANSHIP.

C-1. Material. All the materials shall be of edible grade, clean, sound, and wholesome, and shall comply in detail with the following requirements:

C-1a. The sugar shall meet the requirements of Type I, Federal Specification JJJ-S-791.

C-1b. Salt, if used, shall meet the requirements of Federal Specification SS-S-31.

C-1c. The nonfat dry milk solids shall meet the requirements for Type II powder as defined in Quartermaster Corps Tentative Specification C.Q.D. No. 166.

C-1d. The added cacao butter shall be only that obtained by hydraulic pressure from roasted cacao beans that are not lower in quality than Main Crop Accra or Superior Bahia types. Cacao butter obtained by chemical extraction, or by any process other than that prescribed, shall not be used.

*This is the approved nomenclature.

C-1e. Chocolate liquor shall be manufactured according to good commercial practice from roasted cacao beans that are not lower in quality than Main Crop Accra or Superior Bahia types. The shell content shall be not greater than 1.0 percent. On a moisture-free basis, the nibs used in preparing the liquor shall test not less than 54 percent cacao fat.

C-1f. The oat flour used shall have been prepared from white milling oats of good quality. The flour shall be of such fineness in texture, whether produced by bolting or by pulverizing, that 100 percent will pass through a U. S. Bureau of Standard sieve #20 and 90 percent will pass through a U. S. Bureau of Standards sieve #88.

C-1g. Thiamin hydrochloride (Vitamin B_1) shall be of United States Pharmacopoeia (U.S.P.) grade.

C-1h. Vanillin shall be of U.S.P. grade. Ethyl vanillin used in lieu of vanillin shall be of good commercial grade.

C-2. Workmanship. The product shall be prepared, processed, and packaged under modern sanitary conditions in accordance with good commercial practice.

D. GENERAL REQUIREMENTS.

D-1. All deliveries shall conform in every respect to the provisions of the Federal Food, Drug, and Cosmetic Act, and regulations promulgated thereunder.

D-2. The bars shall be moulded from properly mixed and refined raw materials. The bars shall be reasonably smooth in texture throughout, relatively free from air holes and free from sugar graininess, grit, and extraneous matter.

D-3. The wrapped bars shall remain semi-solid, free from stickiness and shall not adhere to the wrapper at temperatures up to and including 120° F.

D-4. The bars shall not give a penetration reading of more than 7.0 millimeters when tested for consistency as described in paragraph F-4.

D-5. The paper, paperboard, waxes, adhesives, laminating agents, and other materials used to construct the packages shall impart no objectionable odor or flavor to the product.

E. DETAIL REQUIREMENTS.

E-1. Ration, Type D shall be prepared according to the following formula:

Chocolate, plain, adjusted to 54 percent cacao fat	160 parts by weight
Milk, Dry; Nonfat Solids	70 " " "
Sucrose	160 " " "
Added cacao butter	30 " " "
Oat flour, raw	20 " " "
Vanillin	0.50 " " "
or	
Ethyl vanillin	0.17 " " "
Thiamin hydrochloride (Vitamin B_1)	0.45 mg. per 4 ozs. of product

E-2. Class 1 (2-ounce) bars shall have overall dimensions (unwrapped) of not to exceed 3-1/8 inches by 1-9/32 inches by 13/16 inch. An over or under weight tolerance of not to exceed 1/12 ounce for individual bars shall be permitted, but the net weight of 100 bars shall be not less than 200 ounces (12.50 pounds).

E-3. Each Class 2 (4-ounce) bar shall conform to the shape and size shown by Figure 1. An over or under weight tolerance of not to exceed 1/8 ounce for individual bars shall be permitted, but the net weight of 50 bars shall be not less than 200 ounces (12.50 pounds).

F. METHODS OF SAMPLING, INSPECTION, AND TEST.

F-1. Unless otherwise specified in the invitation for bids, inspection shall be made at the point of origin during the process of manufacture, packaging, and packing. The product inspected at the point of origin will be subject to inspection at destination for condition only.

F-2. Unless otherwise specified, chemical analyses, if required by the purchaser, shall be made in accordance with the methods of the Association of Official Agricultural Chemists in effect on date of invitation for bids.

F-3. The Thiochrome Assay for Thiamine Hydrochloride described in the First Supplement to the Twelfth Edition of the Pharmacopoeia of the United States shall be used for the determination of vitamin B_1. The validity of this procedure shall be checked periodically by determining the percentage of recovery of a known quantity of thiamin hydrochloride added to the assay solution before it is passed through the base-exchange tube. If the percentage recovery of the added thiamin is less than 90 percent, the results obtained by this method must be considered invalid and all details of the procedure should be checked with particular attention to the base-exchange silicate until recoveries of more than 90 percent are consistently obtained.

F-4. Test for Consistency. The finished product shall be tested for consistency as outlined below:

F-4a. Equipment. A penetrometer satisfactory for performing the tests of bituminous materials, petrolatum, and grease in accordance with American Society for Testing Materials, Methods D-5 and D-217, American Association of State Highway Officials, Method T-49, U. S. Department of Agriculture Bulletin 1216, and American Standards Association, Method No. A 37.1 shall be used.

The special penetration cone conforming to the dimensions prescribed in Figure 2 shall be used. This cone shall weigh 107.65 grams, shall be sharp, and shall be used in combination with a test rod weighing 47.5 grams which is loaded with a 50 gram weight. (The total weight bearing on the bar during the test shall be 205.15 grams.)

F-4b. Selection of bars to be tested. Sample bars shall be taken from each lot produced, and a record shall be kept of the penetrometer readings obtained. Bars fresh from the chilling tunnel may be tested if the manufacturer desires.

F-4c. Preparation of bars for testing. Bars which are to be tested for consistency shall be placed (unwrapped) upon a nonabsorbent plate (glass, tile, etc.) and put in an oven, regulated to maintain a temperature of 120 plus or minus 3 degrees F., for a period of not less than one hour and not more than two hours. They shall not be subjected to jars or vibrations during this softening process.

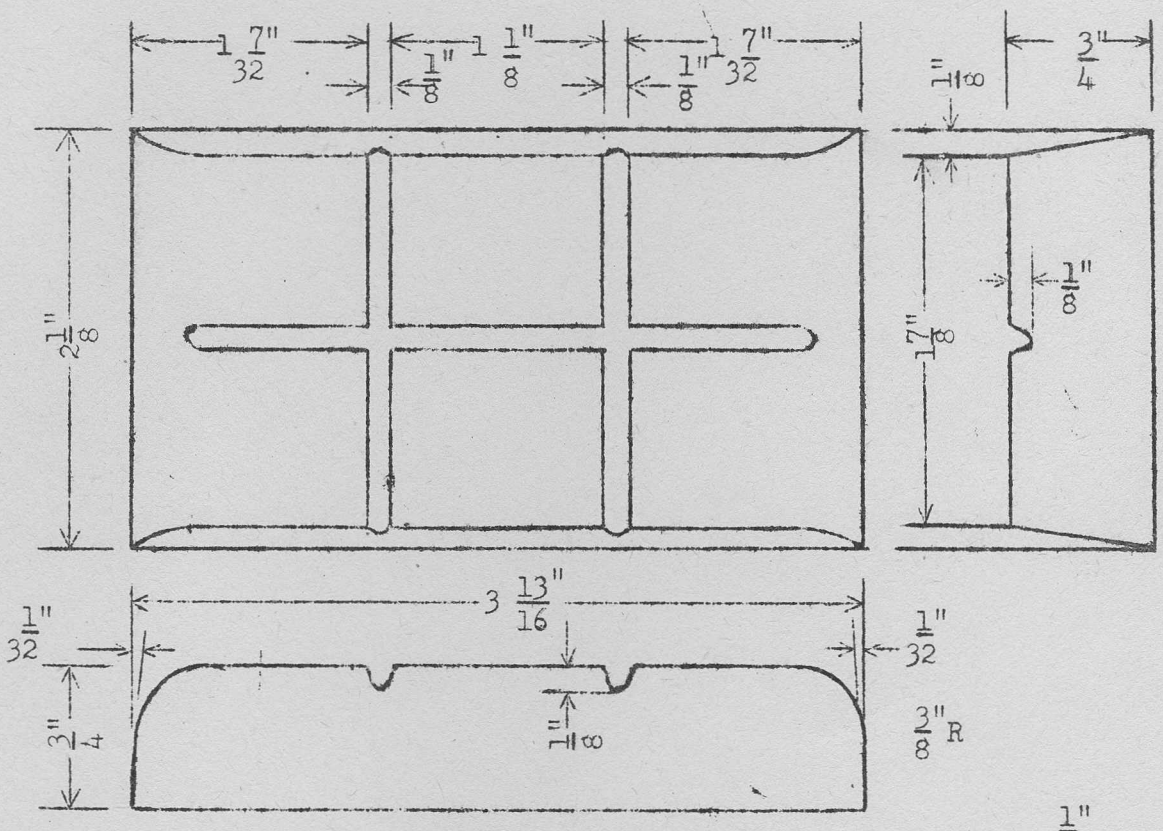
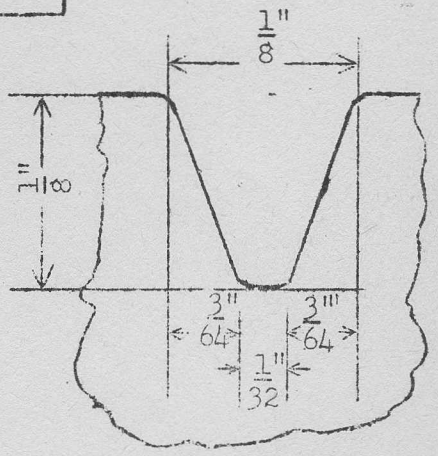


Figure 1. MOULD FOR 4-OZ. D BAR

Full Scale



GROOVE DETAIL
Enlarged 8 Times

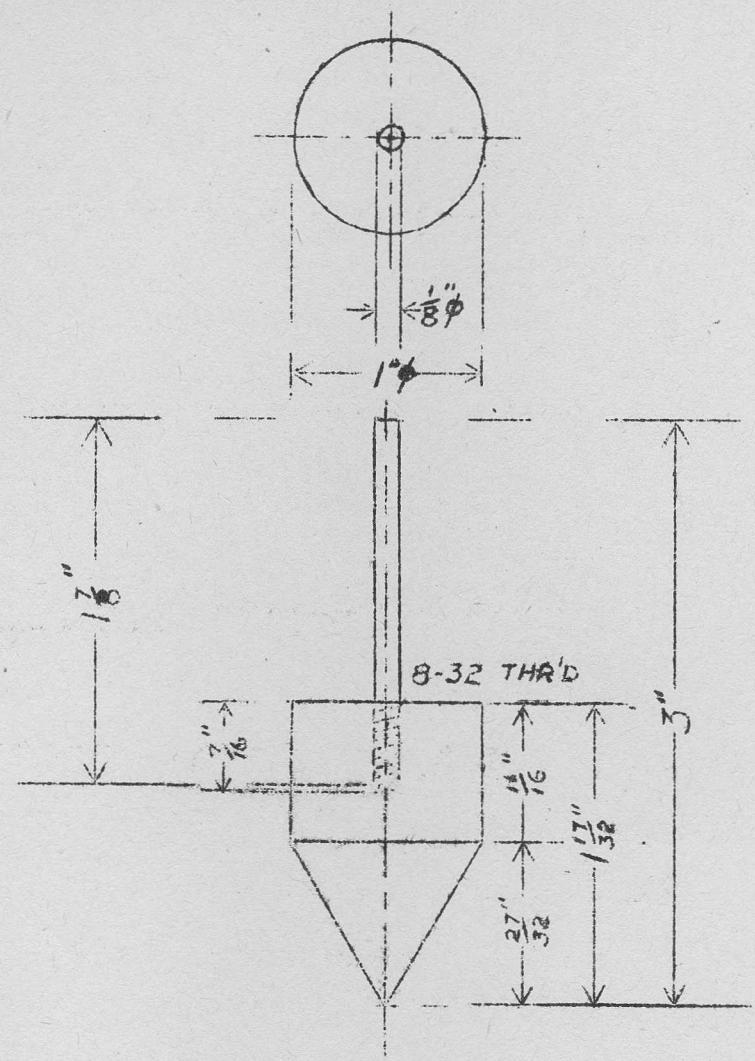


Figure No. 2
PENETROMETER CONE

Material - Red Brass
Weight of Cone - 107.65 Grams

F-4d. Performance of Test. A bar which has been heated as prescribed in F-4b shall be removed from the oven and placed on the penetrometer platform immediately under the penetrometer cone. The point of the cone shall be brought into contact with the surface of the bar, care being taken that the penetrometer has been first set at zero and that the surface of the bar is not broken. When the point of the cone is in proper positionthe penetrometer frame shall be locked and the weighted penetrometer cone subsequently released so that it is free to fall for a period of exactly 20 seconds. At the end of this time the cone shall be locked in place and a reading taken to determine the depth in millimeters to which it has penetrated the bar.

This test shall be repeated on not fewer than three different sections of the bar, allowing not more than five minutes to elapse from the time the bar is removed from the oven until all the readings have been taken.

F-4e. Interpretation of results. Bars which show an average penetration of less than 7.0 millimeters shall be considered satisfactory. Bars which show an average penetration of more than 7.0 millimeters shall be considered unsatisfactory if they are 48 hours or more old at the time of testing. If, however, the bars are fresh, additional bars from the same lot may be allowed to age for 48 hours, and if the bars on the repeat test meet the penetration requirement, the lot shall be considered satisfactory.

F-5. Sample bags described in G-1c(1)a, shall be tested by opening each bag to approximately a circular shape, and submerging it under water at room temperature, in such a manner that the bag is trapped full of air. The sealed bottom or top closure of the bag under test shall be held at least two inches under the surface of the water. There shall be no escape of air bubbles from the bag.

F-6. The wax-dipped cartons, described in G-1c(4), shall be tested for waterproofness by submerging samples under six inches of water at room temperature for a minimum of 20 hours, then wiping dry, opening, and observing the inside surfaces of the carton for the presence of moisture. Samples may be accumulated and tests started once or twice every shift.

F-7. The degree of sizing of the board shall be determined as follows: A 6-inch square section of the board shall be weighed and held horizontally under 3 inches of tap water at 73 plus or minus 3 degrees F. for ten minutes. The board shall then be removed, the excess water quickly wiped off with a dry, soft, absorbent rag, using a minimum of pressure, and the board reweighed at once.

F-8. The adhesive used for both the manufacturer's joint and the end closures shall meet the following requirements.

Two sections of the board used for the container shall be cut approximately 3 inches by 6 inches. The adhesive shall be applied evenly over the inner surface of one of these sections. The outer surface of the other section shall be superimposed on the first and maintained under a pressure of 5 pounds per square inch for one minute and then allowed to dry for twenty-four hours. The combined sections shall then be trimmed into a piece approximately 2 inches square cut from the interior. This shall be immersed in tap water for twenty-four hours. The joint shall then be carefully pried apart from all four edges. To be water-resistant, not less than 75 percent of the surfaces shall show a fiber separation.

F-9. The test required in paragraph G-1c(1)b for the durability of bags shall be made by storing at least one complete case of Ration D at 0° F. for 48 hours, dropping 6 times on a concrete floor from a height of 30 inches on the

flat surfaces (once on each face) and inspecting the inner bags for breakage. Bags failing to stand the test will have visible ruptures or breaks which can be detected by submerging the bags under water. A seal failure shall not be classed as a failure in durability.

F-10. Other physical tests on packaging materials shall be made in accordance with the methods of the American Society for Testing Materials (ASTM) and the Technical Association of the Pulp and Paper Industry (TAPPI).

G. PACKAGING, LABELING, PACKING, AND MARKING FOR SHIPMENT.

G-1. Packaging. Class 1 and Class 2 bars shall be packaged as follows:

G-1a. Class 1 Bars. The two ounce bar shall be wrapped either in a sheet of 300 cellophane, or in an unbleached glassine or greaseproof paper having a basis weight of not less than 25 pounds per ream (24 x 36 -- 500) and a turpentine test (TAPPI 450 m-42) of not less than 600 seconds. A continuous seal shall be effected along the seam and end closures so that fat will not seep through the seal.

G-1b. Class 2 Bars. The four ounce bars shall be packaged according to the following three methods as specified by the procurement agency:

G-1b(1). Method I. One four ounce bar shall be inserted in a bag as described in G-1c(1), and the bag shall be tightly heat-sealed. It shall then be placed in a seal-end carton as specified in G-1c(3). The carton shall be sealed and then impregnated and coated with a wax as specified in G-1c(4). Twelve of the cartons containing one bar each shall be packaged into a master carton as specified in G-1c(5). Twelve of these master cartons shall be packed in a nailed wood box as specified in G-3b.

G-1b(2). Method II. One four ounce bar shall be inserted in a bag as described in G-1c(1), and the bag shall be tightly heat-sealed. Three of the bars in bags shall then be placed with their long narrow sides nested together in a seal-end carton as specified in G-1c(3). The cartons shall be sealed and then impregnated and coated with a wax as specified in G-1c(4). Eight of the cartons, containing three bars each, shall be packed into a master carton as specified in G-1c(5). Six of these master cartons shall be packed in a nailed wood box as specified in G-3b.

G-1b(3). Method III. One four ounce bar shall be inserted in a bag as described in G-1c(1), and the bag shall be tightly heat-sealed. Twelve bars shall be packed on edge in three layers of four bars each into the metal can described in G-1c(2) and hermetically sealed. Twelve filled cans shall be packed into a nailed wood box as specified in G-3b.

G-1c. Packaging Components.

G-1c(1). Bag. The bag shall be constructed from a laminated material consisting of a sheet of either 300 MSAT-87, or 300 MSAT-83, or 300 PMB20S-K cellophane laminated to a sheet of either 300 MST-53G or 300 PMOSX-K cellophane with a minimum of 12 pounds per ream (24 x 36 -- 500) of a permanently plastic water-vapor-resistant laminating agent. The 300 MSAT-87, or 300 MSAT-83, or 300 PMB20S-K cellophane shall be on the inside of the bag. The laminating agent shall be such that the sheet will not delaminate at minus 20° F. nor shall the agent lose its adhesive characteristics at 120° F. The side folds of the bag shall not be sharply creased during its manufacture.

G-1c(1)a. The sealing of the seams and closures shall be carefully done so that at least 90 percent of the bags shall be air-tight as described in F-. The bagmaker shall furnish a certificate of compliance with this requirement based on tests performed on the bottom and side seam of samples of bags taken from each bag machine every half hour during production. The packer shall comply with this requirement by maintaining records of tests carried out on the top closure of sample bags after filling and sealing. At least one filled bag shall be tested from each lot of 2,000.

G-1c(1)b. The fabricated bag shall have sufficient durability and shock resistance so that not less than 90 percent of the bags pass the test described in F-9. One complete case of rations from every twelve days' production shall be tested.

G-1c(2). Can. The can for twelve individually packaged bars shall be a rectangular, key-opening, hermetically sealed, open-top style, metal can, with compound lined, double seamed ends and soldered side seam, size 4-1/8 x 3-5/8 x 6-3/4 tall, manufactured throughout from commercial hot-dip 1.25 pound tin plate. The can shall be scored with a key-opening band so as to be readily opened with a key. A corrosion-resistant key shall be attached to the bottom of the can by soldering or welding with a noncorrosive flux. The can shall be coated overall outside, including the side seam and key solder or welding area, with an olive-drab corrosion-resistant lacquer or enamel, complying with Quartermaster Corps Tentative Specification C.Q.D. No. 201.

G-1c(3). Inner Carton. The carton shall be of the seal-end style, with fully overlapping outer flaps. The carton containing one bar shall have approximately the following inside dimensions: 2-3/16 inches long, 13/16 inch wide, and 3-7/8 inches deep. The carton containing three bars shall have approximately the following inside dimensions: 3-7/8 inches long, 27/32 inch wide, and 6-1/4 inches deep.

G-1c(3)a. The board used for the inner cartons shall be kraft-lined bending board having an overall thickness of not less than 0.020 inch, the kraft liner being not less than 0.004 inch thick. The filler shall contain not less than 65 percent long-fibered chemical pulp in the form of new or reclaimed fibers. The board shall weigh not less than 80 pounds per thousand square feet and shall have an average bursting strength of not less than 90 pounds. The board shall be sufficiently sized throughout to absorb not more than 4.0 grams of water when tested according to F-7. The board shall permit the penetration of the wax specified in G-1c(4)a to an average depth of 0.007 inch when one side is held in contact with the wax at a temperature of 190° plus or minus 5° F. for 5 to 10 seconds.

G-1c(3)b. The board shall not check or crack when folded at the score line through 135 angular degrees when the kraft liner is on the inside of the fold, or 180 angular degrees when the kraft liner is on the outside of the fold.

G-1c(3)c. The glue flaps on the manufacturer's joint shall be integral with one main panel of the carton blank and shall be on the inside of the carton when folded and glued. The side edges of the inner flaps, when folded over into position, shall be in line with and against the inner surface of the adjoining sides with an allowable clearance of not more than 1/32 inch. The score lines shall not be offset. Both the flaps on the manufacturer's joint and the flaps at the closures shall be tightly and adequately glued over practically their full areas with a waterproof glue (see F-8). There shall be no excess of glue on the outside of the carton.

G-1c(4). Wax Dipping. The sealed carton shall be dipped (completely submerged) in the wax described in G-1c(4)a to obtain impregnation. After a cooling period, the carton shall be dipped a second time (completely submerged) in a bath of the same wax. The first dip shall cause the wax to impregnate the board to an average depth of approximately 0.007 inch, and the second dip shall build up a continuous film of wax on the outside of the board approximately 0.005 inch thick. The conditions of impregnation and coating shall be such that completely sealed cartons shall meet the requirements of paragraph G-1c(4)b.

G-1c(4)a. The wax shall be a microcrystalline type of wax or wax compound, having a melting point (ASTM D127-30) of not less than 140° F. and shall not crack, or become separated from the surface on which applied, when subjected to a temperature of 20° F. below zero. The product shall be odorless, tasteless, and nontoxic. Approval of waxes shall be obtained from the Research and Development Branch, Office of The Quartermaster General, Washington, D. C., or the Quartermaster Corps Subsistence Research and Development Laboratory, Chicago Quartermaster Depot, Chicago 9, Illinois.

G-1c(4)b. At least 90 percent of samples of the completed cartons, waxed as described above, after immersion for 24 hours according to paragraph F-6, shall remain dry inside. The packers shall comply with this requirement by maintaining a record of tests carried out on sample cartons taken during production -- one from each lot of 2,000 completed packages.

G-1c(5). Master Carton. The outer carton holding 12 one-bar waxed cartons shall have approximately the following dimensions: 5-9/16 inches long, 4-9/16 inches wide, and 4-1/8 inches deep, and the outer carton holding 8 three-bar waxed cartons shall be approximately 6-1/2 inches long, 4 inches wide, and 7-3/4 inches deep.

G-1c(5)a. The outer folding carton shall be the regular slotted style, made from bonding chipboard not less than 0.030 inch thick with a No. 2 finish (National Paperboard Association Standards, 1 July 1934) weighing not less than 111 pounds per 1,000 square feet and having a bursting strength of not less than 2½ pounds per point. The board shall be sized so that when tested by the method described in F-7, it shall absorb not more than 4.5 grams of water. The regular slotted style outer folding carton shall be tightly and adequately sealed at each end and at the manufacturer's joint with a water resistant adhesive complying with F-

G-2. Labeling.

G-2a. Class 1. The wrapper for the 2 ounce bar shall be printed with the name of the product, the net weight, and the name and address of the manufacturer. It shall also bear the following:

"STORAGE CONDITIONS MAY CAUSE THE SURDACE OF THE BAR TO WHITEN.

THIS DOES NOT AFFECT THE EATING QUALITY."

G-2b. Class 2.

G-2b(1). The bag containing the 4 ounce bar need not be printed when the bar is packaged in a carton. When the bar is packaged in a metal can, the bag shall be legibly printed as follows:

RATION, TYPE D

ONE 4 OZ BAR

EAT VERY SLOWLY

THE BAR MAY BE USED FOR MAKING A BEVERAGE BY CRUMBLING AND DISSOLVING IN ABOUT A PINT OF BOILING WATER.

STORAGE CONDITIONS MAY CAUSE THE SURFACE OF THE BAR TO WHITEN. THIS DOES NOT AFFECT ITS EATING QUALITIES.

*PACKAGED BY ---------- (Optional)

NOTICE: Mosquito bites cause malaria. If you are in malaria zone, keep your shirt on and your sleeves rolled down. Use mosquito repellent out of doors between sunset and sunrise

G-2b(2). The top of the can containing twelve bars shall be plainly lithographed with the following information:

RATION, TYPE D (3/8 INCH LETTERS)

TWELVE 4-OUNCE BARS (3/16 INCH LETTERS)

IN INDIVIDUAL BAGS (3/16 INCH LETTERS)

INGREDIENTS: CHOCOLATE, SUGAR, NONFAT DRY MILK SOLIDS, COCOA FAT, OAT FLOUR, ARTIFICIAL FLAVORING, 0.45 MG. VITAMIN B_1 (1/8 INCH LETTERS)

*PACKAGED BY ----------(5/32 INCH LETTERS)

G-2b(3). One main panel of the waxed carton containing one four-ounce bar shall be printed on bold Gothic with the following:

RATION, TYPE D (14 point type)

ONE 4-OZ BAR (10 point type)

EAT VERY SLOWLY (10 point type)

THE BAR MAY BE USED FOR MAKING A BEVERAGE BY CRUMBLING AND DISSOLVING IN ABOUT A PINT OF BOILING WATER. (10 point type)

STORAGE CONDITIONS MAY CAUSE THE SURFACE OF THE BAR TO WHITEN. (12 point type) THIS DOES NOT AFFECT ITS EATING QUALITY.

G-2b(3)a. The name and address of the contractor shall be placed on one side panel in 8 point type.* The list of ingredients shall be printed on the other side panel in 6 point type as follows:

* If the manufacturer of the chocolate bar and the packager are not the same, the name of both companies may appear here at the option of the packager.

INGREDIENTS: CHOCOLATE, SUGAR, NONFAT DRY MILK SOLIDS, COCOA FAT, OAT FLOUR, ARTIFICIAL FLAVORING, 0.45 MG. VITAMIN B_1

G-2b(3)b. The opposite major panel shall be printed in 12 point bold Gothic type with the following:

NOTICE: Mosquito bites cause malaria.
If you are in a malaria zone, keep your shirt on and your sleeves rolled down.
Use mosquito repellent out of doors between sunset and sunrise.

G-2b(4). The printing on the waxed carton containing three four-ounce bars shall be the same as is specified in G-2b(3) with the exception that THREE 4-OZ BARS shall replace the line ONE 4-OZ BAR.

G-2b(5). One panel of each master carton containing twelve one-bar waxed cartons shall be printed in bold Gothic type as follows:

RATION, TYPE D (24 point type)

TWELVE 4-OUNCE BARS (18 point type)

IN INDIVIDUAL CARTONS (18 point type)

PACKAGED BY -------- (14 point type)

G-2b(6). The master carton containing eight waxed cartons of three 4-ounce bars each shall be printed as specified in G-2b(5), with the exception that the second line shall read TWENTY-FOUR 4-OUNCE BARS and the third line PACKED 3 PER CARTON.

G-3. Packing.

G-3a. Domestic. Unless otherwise specified, not more than 500 two-ounce bars or 250 four-ounce bars shall be packed in a container complying with all the rules of the Consolidated Freight Classification. The inner packing shall be adequate to insure arrival of the product at point of assembly in prime condition.

G-3b. Overseas. Unless otherwise specified, twelve cans or twelve cartons of 12 bars each, or six cartons of 24 bars each, shall be packed in a snug-fitting nailed wood box as specified in G-3b(1). The arrangement of the cans or cartons in the box shall be as follows:

Twelve 12-bar cans	Twelve 12-bar cartons	Six 24-bar cartons
4 in length	3 in length	2 in length
3 in width	2 in width	3 in width
1 in depth	2 in depth	1 in depth
Approximate case size*	Approximate case size*	Approximate case size*
16-5/8 x 11 x 6-7/8 deep	14-1/4 x 11-3/8 x 8-5/8 deep	13-3/8 x 12-5/8 x 8-1/4 deep

* These are approximate dimensions. Each contractor is required to check the shipping case to insure that the master carton or cans fit properly.

G-3b(1). The nailed wood box, preferably tongue and groove, shall be Style 4 for cans and either Style 1 or Style 4 for cartons. All boxes shall comply with Federal Specification NN-B-621, except as follows:

Style 1 Nailed Wood Box: The top, bottom, and sides shall be not less than 11/32 inch, and the ends shall be not less than 3/4 inch thick. Sixpenny cement-coated nails shall be used throughout. If the ends are not in one piece or Lindeman jointed, they shall be fastened securely together with corrugated fasteners. When the sides and ends are made from more than one piec the joints shall be staggered so that the vertical distance between the end and side joints shall be not less than one inch. At least one nail shall be driven through the side boards and into the ends between all side and end joints.

Style 4 Nailed Wood Box: The top, bottom, and sides shall not less tha 11/32 inch, the ends not less than 5/8 inch thick, and the cleats not less than 5/8 x 1-3/4 inch. Sixpenny cement-coated nails shall be used for fastening the sides, top, and bottom to the ends or cleats. The cleats shall b fastened to the ends with either cement-coated or uncoated nails which shall be of sufficient length to pass through both cleat and end and be clinched not less than 1/8 inch.

G-3b(1)a. Strapping. The boxes shall be strapped with steel straps protected with a rust-resistant coating, complying with Federal Specification QQ-S-781 or QQ-S-790. If possible, the strapping of the boxes shall be delayed till just prior to shipment to minimize the loosening of the straps caused by shrinkage of the wood. The straps shall be applied straight and tightened so as to sink into all the edges. The minimum size of the straps shall be as specified in the following table:

Gauge	Minimum Ultimate Tensile Strength (Lbs. per Sq. Inch)
ROUND STRAPS	
15	100,000
16	140,000
FLAT STRAPS	
Size	
3/8" x .015"	80,000

Seals shall provide a joint breaking strength of not less than 75 percent of the strap breaking strength.

Style 1 Box - 3 Straps. Two straps shall be applied around the top, sides, and bottom with a strap located approximately one-sixth the length of the box from each end, and one strap shall be centered around the top, ends, and bottom, at right angles to the other two straps. The longest strap shall be applied first.

Style 4 Box - 2 Straps. Two straps shall be applied around the top, sides and bottom with a strap located approximately one-sixth the length of the box from each end.

G-4. Marking.

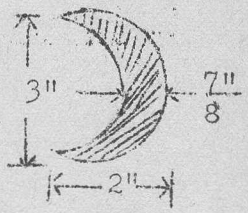
G-4a. Domestic. Unless otherwise specified, legible commercial marking of the shipping container is acceptable, provided that the following information is included.

RATION D
Number of units packed and net weight of each
Contract or requisition number
Name and address of manufacturer

G-4b. Overseas. The following information shall be printed on one end of the nailed wood box:

(1/2" space from top of container left blank)

(Letters 1" high) RATION D (In letter 2" high)
144 BARS
1 PER CARTON (or 3 PER CARTON or
12 PER CAN, whichever is applicable)
(1/2" space left blank)
WT — CU — (in letters 1/2" high)



G-4b(1). Near the upper right-hand corner of the front side of the shipping container, the marked end being to the right, the following informatio shall be printed or legibly stenciled as shown, in letters between 1/2 and 1 inch high, the space occupied having an area not greater than 42 square inches.

———————(Name of Contractor)
———————(Contract No.)
———— ————(Month and Year Packed) (In addition, if desired by the packer, identifying code marks.
REQ. ————(Requisition No.) (Required on at least 10 containers nearest the door of the conveyance or on all containers sent as L.C.L. shipments.)

G-4b(2). No other markings except those required by statute, shall appear.

G-4b(3). The markings shall be jet black, shall take on fiber or wood, and shall be sunfast and waterfast.