

QUARTERMASTER CORPS  
TENTATIVE  
SPECIFICATION

C.Q.D. No. 28H  
31 August 1945  
Superseding  
C.Q.D. No. 28G  
31 October 1944

ASSEMBLY, PACKAGING AND PACKING  
RATION, TYPE K COMPLETE  
(Stock No. 56-R-10500)

A. APPLICABLE SPECIFICATIONS.

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

A-1a. Federal Specifications:

UU-P-556 - Paper; Toilet, Tissue, Roll, (Round and Oval), and Sheet

NN-B-621 - Boxes; Wood, Nailed and Lock-Corner

QQ-S-781 - Strapping, Flat; Steel

QQ-S-790 - Strapping, Round; Steel, Bare and Zinc-Coated

A-1b. Joint Army-Navy Specifications:

JAN-P-101 - Adhesive, Water-Resistant, for Sealing Fiberboard Boxes

JAN-P-108 - Boxes; Fiberboard (V-Board and W-Board), Exterior and Interior

A-1c. Specifications relating to individual components are noted in paragraph E-1.

B. TYPES AND GRADES:

B-1. Ration K comprises food for one man for one day and shall be assembled in three separate packages, one for each meal.

B-2. The grades of material shall be as herein specified.

C. MATERIAL AND WORKMANSHIP.

C-1. All materials shall be manufactured, packaged, and assembled under modern sanitary conditions, in accordance with good commercial practice.

D. GENERAL REQUIREMENTS.

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

E. DETAIL REQUIREMENTS.

E-1. The breakfast, dinner, and supper menus of Ration K shall be as follows:



**E-1a. Breakfast shall consist of the following components:**

| <u>Product</u>                                  | <u>No. of<br/>Units</u> | <u>Minimum<br/>Net Wt.<br/>of Unit<br/>Ounces</u> | <u>Related (See<br/>Specification A-1)</u> |
|---|-------------------------|---|--|
| Meat and Egg Product,<br>Canned (300 x 106 can) | 1                       | 3-3/4   |  |
| Biscuits, Small Rectangular                     | 1                       | 0.8 - 1.2   | *CQD No. 176 Type I,<br>IV, or V           |
| Cereal, Compr., Premixed                        | 1                       | 1-1/2   | CQD No. 92                                 |
| Coffee Product, Soluble                         | 2                       | 5 (grams)   | CQD No. 322                                |
| Fruit Bar                                       | 1                       | 2   | CQD NO. 323                                |
| Gum, Chewing Stick<br>or                        | 1                       | 1 (stick)   | (  |
| Gum, Tablet, Sugar-Coated                       | 1                       | 2 (tablets)                                       | (CQD No. 324<br>)                          |
| Sugar Tablets                                   | 4                       | 0.2 (ounces)                                      | **JJJ-S-791, Type I                        |
| Cigarettes                                      | 1                       | 4 (cigs.)   | Good Commercial Qual                       |
| Key, Can  | 1                       |   | CQD No. 10, Type II                        |
| Paper, Toilet                                   | 1                       | 12 (sheets)                                       | See E-2f.                                  |
| Spoon or Paddle, Wood                           | 1                       |   | See E-2g.                                  |

\* Chicago Quartermaster Depot Specification  
 \*\* Federal Specification



E-1b. Dinner shall consist of the following components:

| <u>Product</u>                            | <u>No. of Units</u> | <u>Minimum Net Wt. of Unit Ounces</u> | <u>Related Specification</u> (See <u>A-1</u> )                         |
|---|---------------------|---------------------------------------|--|
| Cheese Spread, Canned*<br>(300 x 106 Can) | 1                   | 3-7/8                                 | CQD No. 358, Type I or II, Class 2.<br>Type I or II, Class 3.          |
| Biscuits, Small Rectangular               | 2                   | 0.8 - 1.2 (4 bis-cuits)               | CQD No. 176, Type I, IV, or V.   |
| Candy Bar*                                | 1                   | 1-1/2 - 1-7/8                         | CQD No. 307, Type II Class 2,<br>Type III, Class 3<br>Type IV, Class 2 |
| Gum, Chewing, Stick<br>or                 | 1                   | 1 (stick)                             | (  |
| Gum, Tablet, Sugar-Coated                 | 1                   | 2 (tablets)                           | ( CQD No. 324<br>(   |
| Coffee Product, Soluble*<br>or            | 1                   | 5 (grams)                             | CQD No. 322  |
| Orange Juice Powder, Syn.*<br>or          | 1                   | 7 (grams)                             | CQD No. 165  |
| Grape Beverage Crystals, Syn.*            | 1                   | 7 (grams)                             | CQD No. 142  |
| Sugar, Granulated, Compressed             | 1                   | 1.2                                   | CQD No. 345, Type II   |
| Salt Tablets                              | 1                   | 4 (tablets)                           | CQD 159  |
| Cigarettes                                | 1                   | 4 (cigarettes)                        | Good Commercial Quality  |
| Key, Can                                  | 1                   |                                       | CQD No. 10, Type II  |
| Spoon or Paddle, Wood                     | 1                   |                                       | See E-2g.  |

\* The item required will be specified in the procurement directive.



E-1c. Supper shall consist of the following components:

| <u>Product</u>  | <u>No. of<br/>Units</u> | <u>Minimum<br/>Net Wt.<br/>of Unit<br/>Ounces</u> | <u>Related<br/>Specification</u> (See<br>A-1) |
|---|-------------------------|---|---|
| Meat Product Canned*<br>or<br>Chicken, Solid Pack*<br>(300 x 106 Can) | 1                       | 4   |   |
| Biscuits, Square  | 1                       | 1.3 - 2.0   | CQD No. 176, Type I,<br>IV, or V.             |
| Bouillon Powder   | 1                       | 10 (grams)  | CQD No. 52, Type III                          |
| Caramels*<br>or<br>Chocolate Bar, Sweet*                              | 1                       | 2   | To be issued by CQD                           |
| Coffee Product, Soluble   | 2                       | 1   | CQD No. 168                                   |
| Gum, Chewing, Stick<br>or<br>Gum, Tablet. Sugar-Coated                | 1                       | 5 (grams)   | CQD No. 322                                   |
| Sugar, Granulated   | 1                       | 1 (stick)   | (<br>CQD No. 324<br>)                         |
| Cigarettes  | 1                       | 2 (tablets)                                       | JJJ-S-791, Type I                             |
| Key, Can  | 1                       | 23 (grams)  | Good Commercial Quality                       |
| Matches, Book   | 1                       | 4 (cigarettes)                                    | CQD No. 10, Type II                           |
| Spoon or Paddle, Wood   | 1                       | 10 (sticks)                                       | CQD No. 127                                   |
|   | 1                       |   | See E-2g.                                     |

\* The item required will be specified in the procurement directive.



## **E-2. Packaging of Components.**

Unless otherwise specified, the color of the packages, both outside and inside (except transparent overwraps) shall be a dull nonreflecting color. All materials used for packaging shall be free from any odor which may be transmitted to the contents.

The packaging of items not specifically described in this section shall be in accordance with the appropriate specifications listed in paragraphs E-1a, E-1b, and E-1c, in effect on the date of invitation for bids.

**E-2a. Cereal, Pre-mixed, Compressed.** One and one-half ounces of premixed cereal shall be compressed into a rectangular block having overall dimensions not to exceed 3-3/16 inches in length by 1-3/16 inches in width by 3/4 inch in depth. Any 100 blocks, selected at random, shall weigh 150 ounces or more, and no block shall weigh less than 1.3 ounces. Sufficient pressure shall be exerted on the cereal to make a block that can be eaten dry without crumbling, and yet reconstitute satisfactorily when crumbled and mixed with hot or cold water.

The compressed cereal block shall be wrapped and sealed in either 450 MSAT-86 or 450 FMR2CSX cellophane. The wrap shall conform closely to the contour of the block.

**E-2b. Fruit Bar.** The two-ounce bar shall be placed either in a wrapper or liner made from wet-waxed glassine or wet-waxed kraft and then in either a dull-colored tray or collar of bending board not less than 0.010 inch thick, made from pulp or papers free from any objectionable materials which would contaminate or impart an odor or flavor to the product; or, in a wet-waxed tray or collar made from 0.015 inch solid manila board, vat lined on the inside with bleached sulphite. Both sides of the board shall have a dull color produced by a nontoxic dye. This board shall be sufficiently wax treated so that the tray or collar can be stripped easily from the product. The tray or collar shall be wrapped and sealed with a sheet of 300 FMS or 300 MSAT-82 cellophane. The bar shall be adequately pasteurized and, after cooling, rewrapped with a sheet of 450 FMS or 450 MST-54 cellophane. All seams and closures shall be tightly sealed against the transmission of water vapor.

Alternatively, instead of the cellophane specified above, a saran-coated cellophane may be used which conforms to Ordnance Department Tentative Specification AXS-1065.

The overall dimensions of the package shall not exceed 1-5/16 by 7/8 by 3-1/8 inches. The package shall be uniform in contour, and the surfaces shall be squared one with another.

**E-2c. Gum.** The stick gum shall be packaged in accordance with Quarter-master Corps Tentative Specification CQD No. 324, dated 16 March 1945, Gum, Chewing, paragraph G-1a. The two tablets shall be packaged in accordance with paragraphs G-1c(2) or G-1c(3) of CQD No. 324, dated 16 March 1945.

### **E-2d. Sugar.**

**E-2d(1).** Twenty-three grams of granulated sugar, specified in E-1c, shall be packaged in a siftproof seal-end carton with extended glue strip made from bending chipboard having a minimum thickness of 0.014 inch and a No. 2 finish. The carton shall have maximum outside dimensions of 1-1/4 x 9/16 by 2-5/8 inches.



E-2e. Cigarettes. Four cigarettes shall be packaged in a unit and wrapped and sealed with water-vapor-resistant cellophane or an equivalent material, in accordance with good commercial practice.

E-2f. Paper, Toilet. The packet of toilet tissue shall be not greater than 3-1/4 inches long, 1-3/8 inches wide, or when placed under slight pressure, more than 3/8 inch thick. It shall contain twelve sheets of paper, 5 by 9 inches, made in accordance with Federal Specification No. UU-P-556 except that the bursting strength requirement shall be omitted. The paper shall possess a stretch of not less than 8.0 percent in one direction, shall have a basis weight of not less than 13.0 pounds per ream (24 x 36 -- 500), and shall be tan in color. The required number of sheets, folded into the specified dimensions, shall be contained in a glued sleeve made from brown kraft or brown sulphite paper, which shall cover at least half the length of the packet.

E-2g. Spoon or Paddle, Wood. The spoon or paddle shall conform to Type I of Dwg. BW-88, Spoons, Expendible, Wood. It shall be made from smooth, tightly cut veneer, and the edges shall be cleanly cut so that there is no roughness or splintered grain. The spoon or paddle shall be dried to a moisture content of not more than 4 percent at the time of manufacture and shall contain no knots, burls, bark pockets, splints or checks. Selection for color of wood is not required. The following defects will be permitted:

- (1) Light stain which does not obscure the grain of the wood.
- (2) Birdseye or bird pecks, providing grain is not loosened to form an open defect.

The spoon or paddle shall be made of any of the following species of wood:

Birch, paper (white), sweet or yellow  
Beech  
Maple, sugar or black (hard), or red.

The spoon shall be packaged and sealed in a suitable paper sleeve. The packaging shall be performed under modern sanitary conditions in such a manner that either the spoons are not touched by hand after the spoons have been heated to 160° F or the unit is heated after closure so that the spoons reach a temperature of 160° F.

E-3. Labeling of Components.

All component packages shall be labeled plainly with the following information:

Name of product (in letters larger than any others used for the label)  
Net weight  
Instructions for preparation  
Name and address of manufacturer

E-4. Packing of Components. The components of this ration shall be packed for delivery to the assembly plants in containers complying with the requirement of the Consolidated Freight Classification. The product shall be so packed as to insure arrival at the point of assembly in satisfactory condition and free from insect infestation.



**E-5. Marking for Domestic Shipment of Components.** Legible commercial marking of the shipping container is acceptable, provided that the following information is included:

Name of product (in letters larger than any others used for the label)

Number of units packed and net weight of each

Contract number

Date packed

Name and address of manufacturer

**F. METHODS OF SAMPLING, INSPECTION, AND TEST.**

**F-1.** Unless otherwise specified in the invitation for bids, inspection shall be made during the process of assembly and packaging.

**F-2.** 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.** Physical tests on packaging and packing materials, if required, 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).

**F-4.** The degree of sizing of the board specified in paragraph G-1c(1)b shall be determined as follows: Weigh a 6-inch square section of the board and hold horizontally under 3 inches of tap water at 73 - 3° F. for ten minutes. Remove the board, quickly wipe off the excess water with a dry, soft, absorbent cloth, using a minimum of pressure, and reweigh the board at once.

**F-5.** The water resistance of the adhesive used for the cartons shall be determined as follows:

Cut two sections approximately 3 inches by 6 inches from the board to be used for the container, the long direction of the sections being perpendicular to the grain of the board. Apply adhesive evenly over the inner surface of one of these sections. Superimpose the outer surface of the other section on the first, maintain under a pressure of 0.5 pounds per square inch for one minute, and allow to dry for twenty-four hours. Prepare at least two combined sections.

Trim each of the combined sections into two two-inch square pieces cut from near the center. Completely immerse these pieces in tap water for twenty-four hours. Remove and bend the entire face of a two-inch square piece alternately into a convex then a concave curve over a rod about 1-1/2 inches in diameter (the exact diameter is not important); then similarly bend it back and forth over the rod at right angles to the previous bends, then back and forth in the original direction, then crosswise, and continue alternating until the piece separates into layers by shearing. For the adhesive to be sufficiently water-resistant for the sample of board used, a shear separation shall not occur at the glued surfaces.

**F-6.** The test for the bursting strength of the board shall consist of at least six punctures by a Mullen or Cady Tester, half from each side of the sheet at least two inches from the edge.



F-7. Sample bags described under paragraph G-1a(1) shall be tested as follows: Open each bag to approximately a circular shape, and submerge it under water at room temperature in such a manner that the bag is trapped full of air. Hold the sealed bottom or top closure of the bag at least two inches below the surface of the water. No escape of air bubbles from the interior of the bag shall be visible.

F-8. The inner cartons described in G-1c and G-1d shall be tested for waterproofness as follows: Take from the line for test one completed unit consisting of an inner carton sealed in the outer carton described in G-1g. Submerge the unit with the major panel horizontal under 2 inches of water at room temperature for a minimum of 20 hours. Remove the outer carton, wipe the water from the surface of the inner carton, cut open and inspect the inner carton for the presence of moisture on its inside surface. Samples may be accumulated and tests started once or twice every shift.

F-9. The test required in paragraph G-1a(4) for the durability of the bag shall be made by storing at least one complete case (36 units) of Ration K at 0° F. for 48 hours, dropping twelve times on a concrete floor from a height of 30 inches on the flat surfaces (two times on each face) and inspecting the inner bags for breakage. Care shall be taken to see that the temperature of the case is  $0 \pm 2^{\circ}$  F. at the time of the dropping, and that the case falls squarely on its flat surfaces. The bags shall be removed from the cartons and permitted to warm to room temperature before inspection. The units not having visible breaks shall be immersed and rotated under water to determine, by escaping air bubbles, whether the bag has a pinhole fracture or a seal failure or if it is sound. The reported results shall include (a) the percentage passing the durability test, (b) the percentage with visible breaks, (c) the percentage with pinholes, and (d) the percentage with seal failures. Units passing the durability tests shall have neither a visible break nor a pinhole break. A seal failure shall not be classed as a failure in durability.

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

##### G-1. Packaging.

The K Ration components shall be packaged together by one of the following methods:

| <u>Method</u> | <u>Inner Carton</u>          | <u>Outer Carton</u> | <u>Fiber Case</u>   | <u>Case Liner</u>              | <u>Shipping Case</u> |
|---------------|------------------------------|---------------------|---------------------|--------------------------------|----------------------|
| I             | Waxed                        | Chip                | W5c or W5s          | None                           | Wood                 |
| II            | Waxed                        | Chip                | 200 Test<br>B Flute | Laminated<br>Kraft Bag         | Wood                 |
| III           | Waxed                        | Chip                | 200 Test<br>B Flute | Laminated<br>Foil Kraft<br>Bag | Wood                 |
| IV            | Foil and Paper<br>Wrapped    | Chip                | W5c or W5s          | None                           | Wood                 |
| V             | Foil Wrapped &<br>Wax Dipped | Chip                | W5c or W5s          | None                           | Wood                 |

The biscuits, beverage, sugar, fruit bar or confection, and wooden spoon shall be assembled and sealed in a laminated cellophane bag described in G-1a. Stick gum and spearmint sugar-coated gum shall not be included in the laminated cellophane bag. The can of meat or cheese product, matches (when speci-



fied), key, and gum shall be placed in a sleeve as specified in G-lb. The filled and sealed bag and remaining components shall be assembled and sealed in the inner carton as specified in G-lc or G-ld and the inner carton inserted in an outer carton as specified in G-lg.

G-la. Bag. The flat envelope style bag shall be made of a laminated sheet consisting of a sheet of 450 MSAT-87 or 450 MSAT-83 or 450 PMCSX-K cellophane laminated to a sheet of either 450 MST 53-G or 450 PMCSX-K cellophane with not less than 12 pounds per ream (24 x 36 -- 500) of a permanently plastic water-vapor-resistant laminating agent. The 450 MSAT-87 or 450 MSAT-83 or 450 PMB2CS-K cellophane shall comprise the inside wall of the bag.

G-la(1). The bag shall have a center seam, and the side folds of the bag shall not be sharply creased during its manufacture. The sealing of the seams and closures shall be carefully done so that at least 90 percent of the bags shall be airtight as described in paragraph F-7.

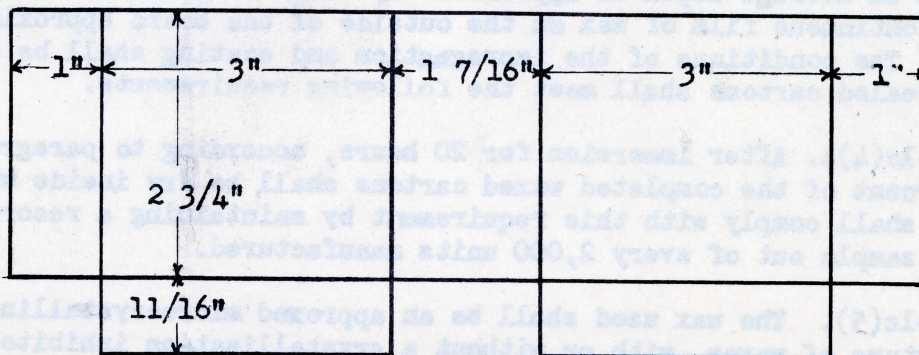
G-la(2). The bag maker shall furnish a certificate of compliance with paragraph G-la(1) based on tests performed on the bottom and side seams of samples taken from each bag machine every half hour during production.

G-la(3). The packer shall comply with paragraph G-la(1) by maintaining a record of tests carried out on the top closure of sample bags after sealing. At least one package shall be taken for test from each lot of 3,000.

G-la(4). The fabricated bag shall have sufficient durability and shock resistance so that not less than 80 percent of the bags pass the durability test described in F-9. One complete case of rations from every twelve days production shall be tested.

G-lb. Can Sleeve. The sleeve shall be made from bending chipboard with a kraft outside liner. The finished board shall have a thickness of not less than 0.020 inch with a No. 2 finish (National Paperboard Association Standards, 1 July 1934). The kraft liner shall be not less than 0.004 inch thick. The sleeve shall have a glued top, one end open, and the other end with meeting flaps. The blank shall be made as shown in Figure 1.

Figure 1



G-lc. Inner Carton Method I, II, and III. The carton shall be of the seal-end style, with fully overlapping outer flaps. The maximum inside dimensions shall be 3-16/32 inches in length by 1-16/32 inches in width by 6-26/32 inches in depth, score-to-score dimensions.



G-lc(1). The folding carton shall be manufactured from single-kraft-lined bending board having an overall thickness of 0.022 inch and weighing not less than 85 pounds per 1,000 square feet. The kraft liner shall be on the outside and shall have a minimum thickness of 0.004 inch. The filler shall contain not less than 65 percent of long fibered chemical pulp in the form of new or reclaimed fibers which will ensure the finished board conforming with the requirements specified below.

G-lc(1)a. No scores shall check or crack when folded through 135 angular degrees when the kraft liner is on the inside of the fold, nor when folded through 180 angular degrees when the kraft liner is on the outside of the fold. The average bursting strength of the board when tested according to F-6 shall be not less than 100 pounds.

G-lc(1)b. The board shall be sufficiently sized throughout to absorb not more than 3.5 grams of water when tested according to F-4.

G-lc(1)c. The board shall permit the penetration of the wax specified in G-lc(5) to an average depth of about 0.012 inch when one side is held in contact with the wax heated to  $190 \pm 5^{\circ}$  F. for between 5 and 10 seconds.

G-lc(2). The glue flap of 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 flap shall be tightly and adequately glued with a water-resistant adhesive (see F-5) applied over practically the entire area of the flap. The side edges of the inner flaps, when folded over into position, shall be in line with, and against the inner surfaces of the adjoining sides with an allowable clearance of not more than 1/32 inch. The score lines shall not be offset.

G-lc(3). The flaps of the carton shall be securely closed by means of a water-resistant adhesive (see F-5). The closure shall be as tight as possible.

G-lc(4). The sealed carton shall be dipped (completely submerged) in molten wax described in G-lc(5) to obtain impregnation. After a cooling period, the carton shall be dipped a second time (completely submerged) in a bath of the same wax at a lower temperature. The first dip shall cause the wax to impregnate the board to an average depth of approximately 0.012 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 the impregnation and coating shall be such that completely sealed cartons shall meet the following requirements.

G-lc(4)a. After immersion for 20 hours, according to paragraph F-8, at least 90 percent of the completed waxed cartons shall be dry inside when opened. The packers shall comply with this requirement by maintaining a record of tests made on one sample out of every 2,000 units manufactured.

G-lc(5). The wax used shall be an approxed microcrystalline type which may be a mixture of waxes, with or without a crystallization inhibitor, which shall give as a final product, an amorphous type of wax having a melting point (ASTM D 127-30) of not less than  $140^{\circ}$  F.



A list of approved waxes may be obtained from the Research and Development Branch, Office of The Quartermaster General, Washington 25, D. C., or the Quartermaster Corps Subsistence Research and Development Laboratory, Chicago Quartermaster Depot, Chicago 9, Illinois.

G-ld. Inner Carton, Method IV and V. The carton shall be of the seal-end style, with fully overlapping outer flaps. The maximum inside dimensions shall be 3-16/32 inches in length by 1-16/32 inches in width by 6-26/32 inches in depth, score-to-score dimensions.

G-ld(1). The carton shall be manufactured from bending board having an overall thickness of 0.022 inch and weighing not less than 85 pounds per 1,000 square feet and having an average bursting strength, when tested according to paragraph F-6, of not less than 100 pounds. The outer liner of the board shall be dyed a blue grey color that can be distinguished from the natural kraft lined cartons specified in G-lc.

G-ld(2). The cartons shall be constructed in accordance with paragraphs G-lc(1)a and G-lc(2) except that the glue specified in G-lc(2) need not meet the test outlined in F-5.

G-ld(3). Laminated Foil Wrap.

G-ld(3)a. The filled and sealed carton specified in G-ld shall be overwrapped and heat-sealed in a triple ply laminated sheet made from sulphite paper, aluminum foil, and kraft paper. This material shall consist of a sheet of dry-waxed sulphite having a finished weight of 13 pounds per ream (24 x 36 — 500) laminated with not less than 15 pounds per ream of a permanently plastic adhesive to a sheet of fully annealed pure aluminum foil substantially free from pinholes and having a thickness of 0.0005 inch, then laminated on the foil side to a sheet of high density steam-finished kraft paper having a basis weight of not less than 25 pounds per ream with not less than 15 pounds per ream of a permanently plastic adhesive. The three ply laminated sheet shall be overwaxed with not less than 18 pounds per ream of a fully refined paraffin having a melting point of not less than 132° F. (ASTM D 87-42).

G-ld(3)b. The laminated sheet shall be placed on the carton with the kraft paper on the exterior and it shall be of sufficient size to provide an overlap at the longitudinal seam of at least 1/2 inch. A continuous heat-seal shall be made along the seam and end closure.

G-le. Method IV. The foil wrapped carton specified in G-ld(3) shall have a second wrap applied over the first wrap and sealed in a similar manner. The second wrap shall consist of a sheet of No. 1 kraft paper having a basis weight of not less than 30 pounds per ream (24 x 36 -- 500) waxed to 60 pounds per ream with a 50-50 mixture of fully refined paraffin and microcrystalline wax. The longitudinal seams of the two wraps shall be located on the opposite sides of the carton.



G-1f. Method V. The foil wrapped carton specified in G-1d(3) shall be dipped once (completely submerged) in molten wax described in G-1c(5). The wax shall completely fill any small wrinkles which may appear in the seam of the foil wrap. Great care shall be taken to see that the temperature of the wax and the length of dip are not such that the seals of the foil wrap are destroyed.

G-1g. Outer carton. The outer carton shall be either a seal-end or a notched-tuck-end style and shall have inside dimensions of 3-5/8 inches in length, 1-5/8 inches in width, and 6-15/16 inches in depth.

G-1g(1). The outer carton shall be made from a skim news lined bending chip not less than 0.018 inch thick and weighing not less than 72 pounds per 1000 square feet. The board shall be sized so that when tested by the method described in F-4, it shall absorb not more than 5.0 grams of water.

G-1g(2). The manufacturer's joints and the end flaps of the seal-end cartons shall be tightly and adequately glued over practically their entire areas with a water-resistant adhesive (see F-5.)

G-2. Labeling.

G-2a. Inner Carton. Labeling of the wax-dipped carton described in G-1c is optional.

G-2b. Outer Carton. The outer carton shall be printed with an approved design and color as specified in the contract.

G-3. Packing. Twelve K Rations shall be packed as specified in G-3a or G-3b, and G-3c.

The arrangement of the cartons shall be 12 in length (major panels facing), 3 in width, and 1 in depth.

One row of 12 cartons shall be for breakfast, one row for dinner and one row for supper.

G-3a. Methods I, IV, and V. Twelve K Rations shall be packed on end in a snug-fitting fiberboard container as specified in G-3a(1) and overpacked in a nailed wood box as specified in G-3c.

G-3a(1). The fiberboard container shall be made and sealed in accordance with Joint Army-Navy Specification JAN-P-108, Style RSC, Compliance Symbols, W5c or W5s.

All flaps of the box shall be closed securely by means of a water-resistant adhesive, complying with Joint Army-Navy Specification JAN-P-101, which shall be applied throughout the entire area of contact between the flaps at the top and bottom. However, one set of flaps may be closed with metal stitches prior to packing.

G-3b. Methods II and III. Twelve K Rations shall be packed on end in a corrugated fiberboard box as specified in G-3b(1) which is sealed in a waterproof bag as specified in G-3b(2)a for Method II and G-3b(2)b for Method III and overpacked in a nailed wood box as specified in G-3c.



G-3b(1). The corrugated fiberboard box shall be the regular slotted style made from 200 pound test, B flute, corrugated board with a two-inch wide regular cloth taped manufacturer's joint. The flaps of the box shall be closed securely with a suitable glue applied throughout the entire area of contact between the flaps at the top and the bottom. After filling and closing, any sharpness of the corners shall be removed.

G-3b(2). The corrugated box shall be inserted and sealed into a flat bag of adequate size made as follows:

G-3b(2)a. A creped kraft, triple-ply, asphalt-laminated material consisting of three sheets of well sized No. 1 kraft paper having a minimum basis weight of 30 pounds per ream (24 x 36 — 500) before creping, creped in one direction, or creped or finely corrugated in the other, laminated together with a total of not less than 180 pounds per ream of special asphalt on any one square foot section of the finished sheet. The stretch of the combined sheet (TAPPI T 457 m-42) shall be not less than 20 percent in one direction and 6 percent in the other.

The bag seams shall be made with a moistureproof adhesive in a strip not less than one-half inch wide at any point. Asphalt used for laminating and sealing shall be essentially odorless. The asphalt shall withstand a temperature of 145° F. for five hours without running and shall retain some plasticity at a temperature of minus 20° F. The mouth of the bag shall be lined with a continuous strip of pressure-sensitive waterproof adhesive, covered with an easily removable protective film which, upon removal of the film permits a secure closure of the bag to be made by means of pressure rollers at as low a temperature as 60° F. The seals and closures of the bag shall not break when bent to a 180 degree fold.

G-3b(2)b. A kraft, metal foil, cellophane, triple-ply laminated material consisting of a sheet of well sized, well beaten, No. 1 kraft paper having a minimum basis weight of 40 pounds per ream (24 x 36 — 500), laminated with not less than 15 pounds per ream of an approved asphalt compound having a softening point (ASTM D 36-26) of about 145° F., or any other approved compound, to a metallic foil having a thickness of not less than 0.00055 inch, then laminated on the foil side to a sheet made of 450 MSAT-82 or 450 PMB2CS cellophane, and coated with a film of heat-sealing compound on its inside surface.

After the box is inserted, the top of the bag shall be properly sealed across, meanwhile exhausting the excess air from the interior of the bag without leaving an appreciable vacuum. After sealing, the closures and ears shall be neatly folded over the top of the package.

G-3c. The fiberboard container specified in G-3a; or the filled and sealed laminated bag specified in G-3b, shall be overpacked in a snug-fitting nailed wood box, preferably tongue and groove, complying with Federal Specification NN-B-621, Style 1 or 4, except as follows:

Style 1 Nailed Wood Box. The top, bottom, and sides shall be not less than 11/32 inch thick, and the ends shall be not less than 3/4 inch thick. Cement-coated sixpenny nails shall be used throughout. If the ends are not in



one piece or Linderman jointed, they shall be fastened securely together with corrugated fasteners. When the sides and ends are made from more than one piece, 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 be not less than  $11/32$  inch thick, the ends not less than  $5/8$  inch thick, and the cleats not less than  $5/8 \times 1-3/4$  inches. Cement-coated sixpenny nails shall be used for fastening the sides, top, and bottom to the ends or cleats. However, fivepenny nails may be used throughout in place of sixpenny nails for wood groups II, III, and IV, provided that the spacing of the side nails is reduced to  $1-1/2$  inches and the spacing of the top and bottom nails reduced to  $1-3/4$  inches. The cleats shall be 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-3d. Strapping. The boxes shall be strapped with rust-resistant coated steel straps complying with Federal Specification QQ-S-781, Type 1, Class A or B, or QQ-S-790, Class A or B, Zinc-Coated. If practicable, the strapping of the boxes shall be delayed until 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:

| <u>Gauge</u>  | <u>Minimum Ultimate<br/>Tensile Strength</u><br>(Lbs. per Square Inch) |
|---------------|--|
| ROUND STRAPS  |  |
| 15            | 100,000  |
| 16            | 140,000  |
| FLAT STRAPS   |  |
| <u>Size</u>   |  |
| 3/8" x 0.015" | 80,000   |

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

Style 1 Nailed Wood Box - 3 straps: The first strap applied shall be centered over the ends, at right angles to the grain of the wood in the end pieces. The second and third straps shall be applied around the top, sides, and bottom at right angles to the first, with a strap located approximately one-sixth the length of the box from each end.

Style 4 Nailed Wood Box - 2 straps: The 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.      The upper two-thirds of one end of the nailed wood box shall be printed in bold Gothic capital letters as follows:**

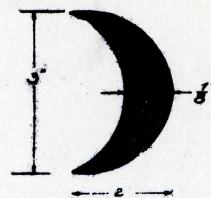
**CONT ----- (Contract No.) (3/4 inch letters)**

**RATION K (2 inch letters)**

**12 RATIONS (3/4 inch letters)**

**WT 43\* CU 1.3 (3/4 inch letters)**

**\*Weight for the pack specified in G-3b  
will be 41 pounds.**



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

**----- (Name of contractor)**

**----- (Month and year packed) (In addition, if desired  
by the packer, identifying code  
marks)**

**REQ. ----- (Requisition No.) (Required on at least 10 containers  
nearest each door of the conveyance or on all  
containers sent as L.C.L. shipments.)**

**G-4b(1).      Lengthwise along the approximate center of both the top and the bottom of the shipping container the letter K shall be printed or stenciled in a bold capital letter approximately 3 inches high.**

**G-4b(2).      No other markings except consignor-consignee data or those required by statute shall appear.**

**G-4c.      The markings shall be jet black, shall take on wood, and shall be sunfast and waterfast.**