

ASSEMBLY AND PACKAGING

U. S. ARMY FIELD RATION K

A. APPLICABLE SPECIFICATIONS.

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

- Federal Specification NN-B-621a - Boxes; Wood, Nailed and Lock-Corner.
- Federal Specification NN-B-631a - Wirebound Boxes.
- Federal Specification LLL-B-631a - Boxes; Fiber, Corrugated.
- Federal Specification QQ-S-781 - Strapping, Flat, Nailless; Steel, Painted and Zinc-Coated (Galvanized).
- Federal Specification JJJ-S-791, as amended - Sugar; Beet or Cane.
- QMC Tentative Specification OQMG No. 12-A - Packing for Overseas Shipment.
- Tentative U. S. Army Specification No. 22-42A - Conditions Governing the Purchase of Subsistence for the U. S. Army.

B. TYPES AND GRADES.

B-1. Packages for U. S. Army Field Ration K shall be of six types as follows:

Type I - Carton coated inside and out with microcrystalline type wax.

Type II - Carton coated outside only with microcrystalline type wax, wrapped in waxed Kraft paper, and again coated on the outside with microcrystalline type wax.

Type III - Carton coated on the outside with microcrystalline type wax, inserted in a second carton, closed, and again coated on the outside with microcrystalline type wax.

Type IV - A setup full-telescoping type carton tite-wrapped with Kraft paper, coated with microcrystalline wax, and overwrapped with waxed Kraft paper.

Type V - An inner-lined unsealed carton double-wrapped with coated Kraft paper.

Type VI - This container shall be a thread-opening fiber-bodied can with metal ends.

B-2. Grades of material shall be as specified herein.

C. MATERIAL AND WORKMANSHIP.

C-1. All material shall be manufactured and the assembly shall be accomplished in a strictly sanitary manner in accordance with the best commercial practice.

D. GENERAL REQUIREMENTS.

D-1. U. S. Army Field Ration K shall consist of three packages hereinafter referred to as serving units, as follows:

- a. Breakfast Unit
- b. Dinner Unit
- c. Supper Unit

D-2. U. S. Army Field Ration K, Breakfast Unit, shall contain the following components:

- 1 Package K-1 Biscuit, C.Q.D. No. 21D, Type I
- 1 Package K-2 Biscuit, C.Q.D. No. 21D, Type II
- 1 Can Veal and Pork Loaf, C.Q.D. No. 20D, Type II
- 1 Package Malted Milk-Dextrose and Dextrose Tablets, Flavored, C.Q.D. No. 22D, Types I and II
- 5 Grams Soluble Coffee, C.Q.D. No. 23D, Type I
- 3 Tablets Sugar, individually wrapped, JJJ-S-791, as amended
- 1 Stick Chewing Gum, C.Q.D. No. 22D, Type IV
- 1 Key - Can, C.Q.D. No. 10A, Type II

D-3. U. S. Army Field Ration K, Dinner Unit, shall contain the following components:

- 1 Package K-1 Biscuit, C.Q.D. No. 21D, Type I
- 1 Package K-2 Biscuit, C.Q.D. No. 21D, Type II
- 1 Can Cheese, Processed American, C.Q.D. No. 20D, Type III
- 1 Fruit Bar, C.Q.D. No. 22D, Type V
- 3 Tablets Sugar, individually wrapped, JJJ-S-791, as amended
- 1 Package Lemon Juice Powder, Synthetic, C.Q.D. No. 23D, Type III
- 1 Stick Chewing Gum, C.Q.D. No. 22D, Type IV
- 1 Key - Can, C.Q.D. No. 10A, Type II

D-4. U. S. Army Field Ration K, Supper Unit, shall contain the following components:

- 1 Package K-1 Biscuit, C.Q.D. No. 21D, Type I
- 1 Package K-2 Biscuit, C.Q.D. No. 21D, Type II
- 1 Can Corned Pork Loaf, C.Q.D. No. 21D, Type I
- 1 Two-ounce Bar U. S. Field Ration D, C.Q.D. No. 22D, Type III
- 1 Package Bouillon Powder, C.Q.D. No. 23D, Type II
- 1 Stick Chewing Gum, C.Q.D. No. 22D, Type IV
- 1 Key - Can, C.Q.D. No. 10A, Type II

D-5. Components of the Breakfast, Dinner, and Supper Units of this ration, respectively, shall be assembled and placed into packages in the most convenient manner.

D-6. Components shall be packaged in type of containers as specified in invitation for bid.

D-7. The microcrystalline type wax used shall have a melting point of not less than 140° F., and at 20 degrees below zero Fahrenheit it shall not crack, chip, or otherwise become separated from the surface on which applied. It shall not be tacky at 120° F. The wax shall be odorless, tasteless, and non-toxic, and shall be one of the following types:

D-7 (a). Type I - The wax shall consist of a mixture of 50 percent of wax "A" and 50 percent of wax "B". The wax "A" shall be a "Fully Refined (Paraffin) Wax" having a melting point not less than 130° F. by the ASTM-D87-37 method. Wax "B" shall be a refined, filtered, odor-free, ductile petroleum wax containing a high percentage of crystallization inhibitor so that when blended with wax "A" in the proportions herein specified, the resulting blend shall be dense, stable, and microcrystalline in structure, and shall be ductile at 20 degrees below zero Fahrenheit without being tacky at 120° F. Wax "B" shall conform to the following physical and chemical specifications:

Specific Gravity at 212° F. (Liquid).....	.78 to .82
Melting Point (ASTM-D 127-30).....	155° F. Minimum
Needle Penetration at 25° C. (ASTM-D5-25).....	15 to 35
Viscosity at 99° C., Centistokes (ASTM-D445-39T).....	8.75 to 16.85
Flash Point (ASTM-D92-33).....	235° C. Minimum
Color, Lovibond, 500 Red Series.....	240 Maximum
Saponification Number.....	1 Maximum
Neutralization Number.....	0.2 Maximum

D-7 (b). Type II. - In lieu of the wax described under D-7 (a), the microcrystalline type wax may be a mixture of waxes, or a mixture of waxes and a crystallization inhibitor which shall give as a final product a microcrystalline type of wax having a melting point of not less than 140° F., and which shall not crack, chip, or otherwise become separated from the surface on which applied when subjected to 20 degrees below zero Fahrenheit. It shall not block at 120° F. The product shall be odorless, tasteless, and non-toxic.

D-8. The moisture-resistant adhesive employed shall be a converted starch product of low reducing sugar content, and shall be free from added glucose, glycerine, glycol and other hygroscopic ingredients. The product may be alkaline and borated.

E. DETAIL REQUIREMENTS.

E-1. Type I. - The required components of each serving unit shall be packed in a carton 3-13/32" in length, by 1-13/32" in width, by 6-19/32" in depth, inside dimensions. This carton shall be a seal-end style paperboard folding box, off-set scored, with extended manufacturer's joint. The manufacturer's joint and one end shall be sealed with the moisture-resistant adhesive described under D-8.

This carton shall be .027" thick paperboard, Kraft two sides, chip center, #3 finish, with no loose fibers exposed. The Kraft top liner shall be dark in color. The paperboard shall have a Mullen bursting strength of five

5) pounds per square inch for each .001" thickness with a minimum of 125 pounds per square inch for the finished board. The top liner shall withstand a 180° bend without breaking. The board shall be surface coated (outside of carton) to retard impregnation by the wax. The liner shall show no discoloration when the board is dipped in the wax, described under D-7, for two seconds at 175° F.

The packaging operation shall be performed as follows:

The carton shall be opened and glued at the bottom end. It then shall be coated inside and out with the microcrystalline type wax described under D-7. The carton then shall be loaded with the proper components and the end heat-sealed.

E-1 (a). One main or front panel shall bear printing with black ink as follows:

FOR BREAKFAST UNIT

U. S. ARMY FIELD RATION K
Breakfast Unit

FOR DINNER UNIT

U. S. ARMY FIELD RATION K
Dinner Unit

FOR SUPPER UNIT

U. S. ARMY FIELD RATION K
Supper Unit

The printing shall be lining Gothic No. 523, 42 point type.

E-2. Type II. - This container shall be a paperboard carton of the same style and constructed with exactly the same dimensions and using the same paperboard and same adhesive as Type I described under E-1. Components of the ration shall be inserted into the carton and the open ends sealed with the adhesive described under D-8. The completely sealed carton then shall be dipped into the microcrystalline wax compound described under D-7. The dipped carton then shall be wrapped in 30-pound Kraft paper waxed to 60 pounds with Type I or II waxes described in paragraph D-7. All seams shall be heat-sealed. The wrapped package shall be dipped in the same type of wax used in coating the Kraft wrapper

E-2 (a). The Kraft paper wrapper shall bear printing in black ink such that one main or front panel of package will contain the same layout outlined in E-1 (a).

E-3. Type III. - The required components of each serving unit shall be packed in a carton 3-13/32" in length, by 1-13/32" in width, by 6-19/32" in depth, inside dimensions. This carton shall be a sealed-end style paperboard folding box, off-set scored, with extended manufacturer's joint. The manufacturer's joint and both ends shall be sealed with the adhesive described under D-8. This carton shall be .024" paperboard, Kraft lined chip, (Kraft outside), #3 finish with no loose fibers exposed.

The paperboard shall have a Mullen bursting strength of five (5) pounds per square inch for each .001" thickness with a minimum of 110 pounds per square inch for the finished board. The top liner shall withstand a 180° bend without breaking. The board shall be surface coated (outside of carton) to retard impregnation by the wax. The liner shall show no discoloration when the board is dipped in the wax, described under D-7, for two minutes at 175° F.

This sealed carton shall be dipped in the microcrystalline wax described under D-7. It shall be then inserted in a second carton of such dimensions that it fits the first carton snugly on all surfaces. This second carton shall be a sealed-end style paperboard folding box, off-set scored, with extended manufacturer's joint. The manufacturer's joint and both ends shall be sealed with the adhesive described under D-8. This carton shall be constructed of paperboard of quality, strength, and thickness not less than that of .016", Kraft lined chip, (Kraft outside), #3 finish, with no loose fibers exposed. The Kraft top liner shall be dark in color. The paperboard shall have a Mullen bursting strength of five (5) pounds per square inch for each .001" thickness, with a minimum of seventy (70) pounds per square inch for the finished board. The top liner shall withstand a 180° bend without breaking. The board shall be surface coated (outside of carton) to retard impregnation by the wax. The liner shall show no discoloration when the board is dipped in the wax described under D-7, for two seconds at 175° F. After the second carton is sealed, it shall be dipped in a microcrystalline wax described under D-7.

E-3 (a). The outside carton shall bear printing with black ink such that one main or front panel of the package will contain the same layout outlined in E-1 (a).

E-3 (b). In lieu of the microcrystalline waxes described under D-7 for dipping the inside carton, a microcrystalline type wax of the same properties, except more tacky in nature, may be used.

E-4. Type IV. - The required components of each serving unit shall be packed in a carton 6-19/32" in length, by 3-13/32" in width, by 1-13/32" in depth, inside dimensions. This carton shall be a set-up full-telescoping carton manufactured of paperboard of quality, strength, and thickness of not less than that of .030" bending chip board. The Mullen test shall be 3-1/2 lb. per square inch for each .001" of thickness, with a minimum of 100 pounds per square inch for the finished board. All corners shall be stayed with 90-pound or heavier Kraft paper. After closing, the carton shall be overwrapped with 30-pound or heavier Kraft paper, and all corners folded in such a manner that no exposed corners or surfaces of the box are visible. This overwrap shall be completely covered with adhesive on the inside and shall be applied as a tite-wrap. The overwrap may be die-cut to fit the carton if desired. The overwrapped carton shall be dipped in a microcrystalline wax described under D-7. It then shall be wrapped with 30-pound Kraft paper waxed to sixty (60) pounds with a microcrystalline wax described in paragraph D-7.

E-4 (a). The Kraft paper wrapper shall bear printing with black ink such that one main or front panel of package will contain the same layout outlined in E-1 (a).

E-5. Type V. - This package shall consist of an inner liner or sealed bag, a folding or setup full-telescoping carton, and a double overwrap of coated Kraft paper.

The required components of each serving unit shall be packed in a carton 3-13/32" in length by 1-13/32" in width by 6-19/32" in depth, inside dimensions. Slight variations in these dimensions (not over 1/16" are permitted if required in order to accommodate the inner liner. The inner liner shall be constructed of a laminated film consisting of 300 P.M.S. or 300 M.S.T. cellophane laminated with moisture-vapor-resistant, permanently plastic adhesive applied six (6) pounds per 1,000 square feet to 30-pound parchment or sulphite paper, or the film may consist of 300 P.M.S. or 300 M.S.T. cellophane laminated to a second sheet of the same material with approximately six (6) pounds of permanently plastic adhesive per 1,000 square feet. This liner shall be constructed similar to a flat bag. The longitudinal seam shall overlap at least 3/4" and shall be sealed with a moisture-resistant thermoplastic adhesive. If a bag is used, it shall be of either flat or gusset style. The liner or bag need not be secured to the carton.

The container shall be a reverse-tuck folding carton with lock or double-lock, manufactured from paperboard of the same quality, strength, and thickness described for the carton under E-1, or shall be a setup full-telescoping carton as described in E-4.

The carton shall be overwrapped twice with a 30-pound Kraft waxed to sixty (60) pounds with a microcrystalline wax described under D-7. The seal of the second overwrap shall be on the opposite side of the carton from that of the first.

E-5. (a). The Kraft paper wrapper shall bear printing with black ink such that one main or front panel of package will contain the same layout outlined in E-1 (a).

E-6. Type VI. - The required components of each serving unit shall be packed in a fiber bodied can 3-13/32" by 1-13/32" by 6-19/32" in height, inside dimensions. Slight variations in dimensions are permitted (not over 1/8") to compensate for the rounded corners of the can.

This container shall be a fiber can constructed of four (4) plies of .008" chip board or heavier convolutely wound with an odor-free adhesive. A label of 40-pound plain Kraft paper shall be applied in such a manner that it completely covers the body of the can, and shall cover the full length of the body before the ends are seamed on.

The body of the can shall be made in two (2) sections, the top section of which shall be 1" high. At the joint of these two sections a No. 16 four-cord thread shall be placed around the can under the label in such a manner that it constitutes a tear string. Before the metal ends are seamed on the body, the can shall be uniformly coated inside and out with a microcrystalline-type wax described under D-7. The metal ends shall be of 80-pound black metal plate lacquered both sides. The ends shall be seamed on the can with a flat seam.

E-6 (a). The Kraft paper label shall bear printing with black ink such that one main or front panel of the package will contain the same layout outlined in E-1 (a).

F-1. Unless otherwise specified in the invitation for bid, inspection for compliance with this specification shall be made at point of origin during the process of assembly and packaging.

F-2. Awards will be made only after samples of packages and packaging materials have been approved by the Subsistence Research Laboratory of the Chicago Quartermaster Depot.

G. PACKAGING, PACKING AND MARKING.

G-1. Packaging. - Packaging shall be accomplished in accordance with the specification and in the type of package specified in the invitation for bid.

G-2. Packing. - Shipping container shall hold twelve (12) rations or thirty-six (36) individual serving units per case. Unit packages shall be packed in a shipping container in three (3) rows of twelve (12) unit packages one row each for Breakfast, Dinner, and Supper Units, respectively. The unit packages shall be packed on end with three (3) rows standing beside each other.

G-2 (a). For Overseas Shipment.

The U. S. Army Field Ration K may be packed in shipping cases conforming to Specification NN-B-621a, Boxes; Wood, Nailed and Lock-Corner - Specification NN-B-631a, Wirebound Boxes, - or QMC Tentative Specification OQMG No. 12-A, Packing for Overseas Shipment, as may be specified in the invitation for bid. If the wirebound boxes or solid fiberboard boxes are used, they shall be lined sides, ends, top and bottom with non-test corrugated sheeting. The top and bottom pads shall fit over the side and end liners. If wood boxes or solid fiber boxes are used, they shall be steel strapped in accordance with Federal Specification No. QQ-S-781, Strapping, Flat, Nailless; Steel, Painted and Zinc-Coated (Galvanized).

G-2 (b) For Domestic Use.

The U. S. Army Field Ration K may be packed in shipping cases conforming to Specification LLL-B-631a, Boxes; Fiber Corrugated. The case shall be lined sides, ends, top and bottom with non-test corrugated sheeting. The shipping cases shall be closed with an adhesive.

G-3. Marking. - Shipping containers shall be marked on one end as follows:

12 - U. S. Army Field Rations K
Date Packed (Month and Year)
Contract No. or Order
Name and Address of Packer.