

NN-K-231e

October 13, 1966

SUPERSEDING

Fed. Spec. NN-K-231d

November 14, 1960

FEDERAL SPECIFICATION**KEGS: WOOD, SLACK**

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. This specification covers the requirements for wood, slack kegs for use as shipping containers for nails, bolts, nuts, and similar items.

1.2 Classification.

1.2.1 Type. Slack kegs covered by this specification shall be of one type.

1.2.2 Size. Slack kegs covered by this specification shall be of the sizes specified in the contract (see 6.2 and 6.3).

2. APPLICABLE DOCUMENTS

2.1 The following specifications and standards, 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:

Federal Specification:

FF-N-105—Nails, Wire, Brads, and Staples.

Federal Standard:

Fed. Std. No. 123—Marking for Domestic Shipment (Civilian 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, U.S.

Government Printing Office, Washington, D.C., 20402.

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Regional Offices in Boston, New York, Washington, D.C., Atlanta, Chicago, Kansas City, Mo., Dallas, Denver, San Francisco, Los Angeles, and Seattle, Wash.

(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 Standards:

MIL-STD-105—Sampling Procedures and Tables for Inspection by Attributes.

MIL-STD-129—Marking for Shipment and Storage.

MIL-STD-731—Quality of Wood Members for Containers and Pallets.

(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS**3.1 Materials.**

3.1.1 Species of wood. Staves, heading, and cleats shall be of any of the following species of wood:

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Group I	Group II	Group III	Group IV
Basswood	Douglas fir	Elm	White ash
Chestnut	Hemlock	Gum mixed timber	Beech
		Soft maple	Birch
Cottonwood		Sycamore	Hackberry
Pine			Hard maple
Spruce			Oak
Willow			
Poplar			

3.1.1.1 *Quality of wood.*

3.1.1.1.1 *Staves.* Staves shall be free of knots at the croze. Elsewhere sound knots 3/4 inch in diameter or smaller shall be permitted. They shall be straight grain and free of unsound knots, holes, splits, slanting shakes longer than 1-1/2 inches, decay, and heavy stain. They shall be of uniform thickness.

3.1.1.1.2 *Heading.* All heading shall be free of holes, shakes, splits, decay, heavy stain, and cross grain (slope of grain) steeper than 1 inch in 10 inches. In addition, heading used for tops shall be free of all knots or other defects which will adversely affect the ability to print thereon. In addition, heading used for bottoms shall be free of unsound knots, and sound knots larger than 3/4 inch in diameter.

3.1.1.1.3 *Cleats.* Cleats shall be no lower in quality than heading used for bottoms.

3.1.1.1.4 *Moisture content.* Moisture content of staves, heading, and cleats shall not exceed 11 percent at time of assembly (see 4.2.2).

3.1.2 *Steel.* Steel used for metal and wire hoops and for steel cleats shall be cooperative grade hoop steel (low carbon, hot rolled, annealed sheet, or strip steel).

3.1.3 *Fastenings.* Nails, staples, and other fastenings shall be in accordance with FF-N-105.

3.1.4 *Rivets.* Rivets shall be standard cooper's rivets.

3.2 *Fabrication.*3.2.1 *Staves.*

3.2.1.1 *Jointing.* Staves shall be either tongued-and-grooved or butt-jointed (plain joint), at the option of the supplier. Wood shall conform to the requirements in 3.1.1.

3.2.1.2 *Thickness.* The minimum thickness of staves shall be 3/8 inch.

3.2.1.3 *Width.* Staves shall be not less than 1-1/2 nor more than 5 inches wide at the bilge.

3.2.1.4 *Croze.* Depth of croze shall be not less than 1/8 nor more than 3/16 inch. The croze shall conform to the bevel of the head.

3.2.2 *Heads.* Heads shall be smooth surfaced on at least one side and shall be turned to size with a standard head bevel. Wood shall conform to the requirements in 3.1.1.

3.2.2.1 *Jointing.* Cants for heads shall be either tongued-and-grooved or butt-jointed (plain joint), at the option of the supplier.

3.2.2.2 *Thickness.* The minimum thickness of heading shall be 1/2 inch.

3.2.2.3 *Width of cants.* No cant shall be less than 2-1/2 inches wide.

3.2.2.4 *Number of cants.* There shall be no more than 2 cants in any head smaller than 11 inches and no more than 3 cants in any head 11 inches and larger.

3.2.3 *Hoops.*

3.2.3.1 *Metal hoops.* Metal hoops shall be constructed of material conforming to 3.1.2 and shall be not less than 0.025 inch (23 gage) thick. Prior to forming the bead, head hoops shall be not less than 1-3/8 inches wide, bilge hoops not less than 1-1/8 inches wide. The ends of each hoop shall be joined

with two rivets not smaller than 0.177 inch (7 gage) diameter. Rivets shall be located at the center of the width of the hoop, not less than 5/8 inch from the ends, and spaced not less than 1 inch on centers. They shall be flush with the inside of the hoop and the outside head shall be flat. Hoops shall be flared and formed to fit snugly when driven into place.

3.2.3.2 Wire hoops. Wire hoops shall be constructed of steel wire which shall conform to minimum requirements of 3.1.2 and be not less than 0.113 inch (11-1/2 gage) diameter wire. The ends of each hoop shall be butt-welded or joined with a twisted splice at the option of the supplier. Wire hoops shall be used as bilge hoops only and shall be formed to fit snugly when driven into place.

3.2.4 Cleats.

3.2.4.1 Wood cleats. Wood cleats, when specified, shall be not less than 3-1/2 inches wide and 1/2 inch thick, shaped and beveled to fit the chime. Wood shall conform to the requirements in 3.1.1.

3.2.4.1.1 Application of wood cleats. When specified, wood cleats shall be applied on the outside of and across the grain of the head and fastened with not less than 8 cement-coated or chemically-etched nails. Nails shall be 0.080 inch (14 gage) no shorter than 1/8 inch less than the combined thickness of head and cleat. The nails shall be staggered in two rows. When possible, nails which extend through the head shall be clinched. Two nails or staples shall be driven through hoop and staves into each end of a cleat. Nails shall be 0.106 (12 gage) by 1-1/8 inches; staples shall be 0.121 inch (11 gage) (see figure 1). Alternatively, the wood cleats may completely cover the head (see figure 2).

3.2.4.2 Steel cleats. Steel cleats shall be fabricated from material conforming to 3.1.2, and when specified shall be not less

than 1 inch wide and 0.025 inch (23 gage) thick. Each cleat shall have a central longitudinal bead no shorter than 1 inch less than the diameter of the head. Cleat ends shall be formed to fit over the chime and under the head hoop extending not less than 7/16 inch beyond the hoop.

3.2.4.2.1 Application of steel cleats. When steel cleats are specified, they shall be applied on the outside of and across the grain of the head and fastened with no less than one 4-penny box nail driven through each cant and clinched. A total of no less than three nails shall be used with each cleat. They shall be staggered. Cleat ends shall be bent back on the head hoop. If the weight of contents is 200 pounds or more and steel cleats are specified, two cleats shall be applied at right angles on each head.

Note: Cleats may be applied as described preceding, to the closed head of an empty keg by the maker of the keg. Cleats may be nailed to loose heads by the maker but the application cannot be completed until the keg is filled and headed. Cleats may be obtained separately for application at the time the keg is filled. In purchasing empty kegs with head cleats, the purchaser is cautioned to state in the purchase order by whom the cleats are to be applied (see 6.2).

3.2.4.3 Strapping of cleats. When specified, strapping shall be applied to wood cleats as described in the appendix herein.

3.3 Assembly. Kegs shall be manufactured of staves, hoops, and heading specified herein (see figures 1 and 2 for illustration).

3.3.1 Staves. Staves of varying widths conforming to 3.2.1, shall be assembled so that the bilge and chime are round and kegs of the same nominal size have approximately the same capacity.

3.3.2 Chime. The top of the head shall be not less than 1/2 nor more than 5/8 inch from the ends of the staves.

3.3.3 Head hoops. Head hoops conforming to 3.2.3.1 shall be placed around the assem-

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bled staves and the head put in place. The head hoops shall be driven into place level and tight and be secured with six 0.106 (12 gage) by 1-1/8 inch nails or 0.121 (11 gage) hoop staples uniformly spaced. Fastenings shall pass through hoop and stave into the head.

3.3.4 Bilge hoops. Bilge hoops conforming to 3.2.3.1 or 3.2.3.2, at the option of the supplier, shall be placed around the assembled staves and driven level and tight. They shall be secured at not less than three points with nails, hoop fastener nails, or staples. Metal hoops may be secured by piercing the hoop with a triangular punch. If points of fastenings extend through the staves, they shall be clinched.

3.4 Workmanship. Kegs shall be manufactured in accordance with high grade commercial practice for this type of work. Kegs shall be free from imperfections which may affect their usefulness.

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, the supplier may utilize his own facilities or any commercial laboratory acceptable to 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 that supplies and services conform to prescribed requirements.

4.2 Sampling for inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated herein.

4.2.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected and tested in accordance with all the requirements of referenced specifications, drawings, and stand-

ards unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

4.2.2 Intermediate testing of components and materials. Tests shall be performed on representative samples selected from each lot or batch of staves, headings, cleats, or headliners used in the fabrication of the end item to determine moisture content as specified in 3.1.1.1.4. Testing shall be performed in accordance with the requirements of MIL-STD-731. The sample unit shall be one stave, heading, cleat, or headliner, and the sample size shall be five. When tested by the moisture meter method, the average of 3 determinations taken on each component shall represent the moisture content for the component. The average of all tests performed shall be not more than the specified limits.

4.3 Inspection of the end item.

4.3.1 Examination of the end item. Defects found during examination shall be in accordance with table I. The sample unit shall be one keg, and the lot size shall be expressed in number of the sample units. The sample size shall be in accordance with inspection level S-2 and the acceptable quality level (AQL) expressed in terms of defects per hundred units (DHU) shall be 6.0.

TABLE I. Examination of the end item

Examine	Defect
Wood	Not material specified. Knot in croze. Sound knot greater than 3/4 inch. Unsound knots, holes, splits, decay, heavy stain. Slanting shakes greater than 1-1/2 inches. Cross grain greater than 1 in 10 inches.
Staves: Dimensions	Less than 3/8-inch thick. Less than 1-1/2 inches wide. More than 5 inches wide at bilge.
Croze	Depth of the croze more than 3/16 or less than 1/8 inch.
Chime	Bevel differs from that of head. More than 5/8 or less than 1/2 inch from end of stave.

TABLE I. *Examination of the end item*
(cont'd)

Examine	Defect
Head:	
Surface	Not smooth one side.
Thickness	Less than 1/2 inch.
Cants	Less than 2-1/2 inches wide. More than 2 cants in kegs smaller than 11 inches in diameter. More than 8 cants in kegs larger than 11 inches in diameter. Not turned to standard head bevel.
Wood cleats (when specified)	Less than 3-1/2 inches wide. Less than 1/2 inch thick. Shape and bevel do not fit chime. Not applied on outside across grain of head. Less than 8 nails per cleat. Length of nail more than 1/8 inch less than combined thickness of head and cleat. Nails not staggered in two rows. Protruding nails not clinched. Less than two nails at each end of cleat through stave. Nail or staple not size specified. Strapping not as specified.
Steel cleats (when specified)	Not material specified. Not size specified. Beading missing or not centered longitudinally. Not formed to fit over chime and under head hoop. Extends less than 7/16 inch beyond hoop. Not applied on outside across grain of head. Size of nail less than specified and not clinched. Less than three nails per cleat. Nails not staggered. Ends of cleat not bent back over hoop. Cleats not at right angles to each other when two cleats are required.
Hoop	
Material	Not as specified.
Dimensions	Less than specified.
Construction	Bead missing. Ends joined with less than 2 rivets. Hoops not flared to fit profile of keg. Wire hoops not joined as specified. Wire hoops used for other than bilge hoops.
Rivets	Rivets less than 0.177 inch in diameter.

Examine	Defect
Rivets (cont'd)	Rivets located off center of hoop. Less than 5/8 inch from ends. Less than 1 inch on centers. Rivets not flush with inside of hoop. Head not flat.
Assembly of keg	Not round. Hoops not level and tight. Less than six nails or staples for each head hoop. Less than three nails or staples for each bilge hoop (triangular punch optional). Nails or staples not size specified. Points of fasteners not clinched where protruding through staves.
Marking	Omitted, incomplete, incorrect, illegible, of improper size, location, sequence, or method of application.

5. PREPARATION FOR DELIVERY

5.1 Packing.

5.1.1 Levels A and B. Not applicable.

5.1.2 *Level C.* Unless otherwise specified (see 6.2), empty kegs, heads, and cleats shall be packed to afford adequate protection against damage during direct shipment from the supply source to the first receiving activity. Containers and packing shall comply with Uniform Freight Classification Rules, or with rules and regulations of other carriers as applicable to the modes of transportation.

5.2 Marking.

5.2.1 *Civil agencies.* In addition to any special markings required by the contract or order, shipments shall be marked in accordance with Fed. Std. No. 123.

5.2.2 *Military requirements.* In addition to any special markings required by the contract or order, shipments shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. Kegs covered by this specification are intended for use by the

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Government or for the shipment of commodities purchased by the Government when prescribed in the applicable commodity specification. Kegs as specified herein are not commonly used for loads heavier than 250 pounds (see 1.1).

6.2 Ordering data. Purchasers should select the preferred options offered herein and include the following data in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Quantity of kegs required.
- (c) Weight of contents.
- (d) Keg size by head diameter and stave length (see 6.3).
- (e) Cleats if required, stating kind and whether to be shipped separately or attached to heads (see note under 3.2.4.2.1).
- (f) Marking required (see 5.2).
- (g) When strapping is required (see 3.2.4.3).

6.3 Sizes of kegs. Slack kegs are made in many sizes. Commonly, kegs for loads of 200 pounds or less will have head diameters from 9-1/4 to 11-1/4 inches and staves from 15 to 19 inches long. Large kegs of 200-pound capacity may have head diameters as large as 11-3/4 inches with stave lengths from 15 to 21 inches. Kegs for loads of 200 to 250 pounds will have head diameters from 12 to 18-5/8 inches and stave lengths from 15 to 21 inches.

6.4 Definitions.

6.4.1 *Slack kegs*. A slack keg is a round, bulging, coopered wooden container with sides consisting of staves and ends of round, flat heads, the staves and heads being held together with hoops. It is so constructed that its joints are not necessarily tight to the passage of liquids.

6.4.2 *Stave*. A stave is an arched, vertical member used to form the sides of a keg.

6.4.3 *Croze*. The croze is a V-shaped groove cut into the inside circumference of the keg near the ends of the staves to receive the beveled edge of the head.

6.4.4 *Head*. The head is a formed, circular member that fits into the croze to form the ends (top and bottom) of a keg.

6.4.5 *Cant*. A cant is any board forming part of a head.

6.4.6 *Chime*. The chime is that portion of the staves extending beyond the outside surface of the head.

6.4.7 *Bilge*. The bilge is the largest circumference of a keg.

6.4.8 *Hoop*. A hoop is an annular ring of steel or wire fastened to the staves around the circumference of the keg to hold the keg together. The head hoops are those at the end; the bilge hoops are those nearest the bilge.

6.4.9 *Cleat*. A cleat (or batten) is a piece of wood or steel of specified dimensions placed across the head of a keg and fastened to the keg for reinforcement purposes (see 3.2.4).

6.4.10 *Slanting shake*. A slanting shake is a separation along the grain extending through the piece at an angle of less than 45°.

6.4.11 *Heavy stain*. Heavy stain is a difference in color so pronounced as practically to obscure the grain of the wood.

MILITARY CUSTODIANS:

Army—GL
Navy—SA
Air Force—69

Review activities:

Army—GL, WC, SM
Navy—WP, SA
Air Force—69

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User activities:

Army—MO, MU

Navy—SH

Air Force—26

Preparing activities:

Army—GL

CIVIL AGENCIES INTEREST:

Agr

Com

GSA-FSS

HEW

Jus

VA

Review and user information is current as of the date of this document. For future coordination of changes to this document, draft circulation should be based on the information in the current Federal Supply Classification Listing of DOD Standardization Documents.

APPENDIX
REQUIREMENTS FOR STEEL STRAPPING

10. SCOPE

10.1 This appendix covers requirements for steel strapping and specifications for the application of strapping to kegs when strapping is specified to provide additional protection to commodities packed therein.

20. APPLICABLE SPECIFICATIONS

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

Federal Specifications:

- QQ-S-781—Steel, Strapping, Flat.
- QQ-S-790—Steel Strapping, Round (Bare and Zinc-Coated).

30. REQUIREMENTS

30.1 General. Strapping shall be performed by the activity where the keg is packed. The strapping shall not be furnished by the cooper unless specifically required

by the contract or order. Special cleats as illustrated in figures 1 and 2 shall be of the type specified and shall be furnished by the cooper (see 6.2).

30.2 Strapping. Kegs with wood cleats (see 3.2.4.3), shall be reinforced by two tension tied flat or round wire steel straps running lengthwise at right angles to each other around the kegs, centered over the cleats, and stapled at intervals of approximately 6 inches (see figures 1 and 2). Staples shall be cement-coated not less than 0.0800 inch in diameter (14 gage). Flat steel strapping shall be treated to prevent rust and shall conform to the requirements for type I of QQ-S-781; round steel strapping shall be zinc-coated conforming to the requirements for class A or class B of QQ-S-790 as shown in table Ia.

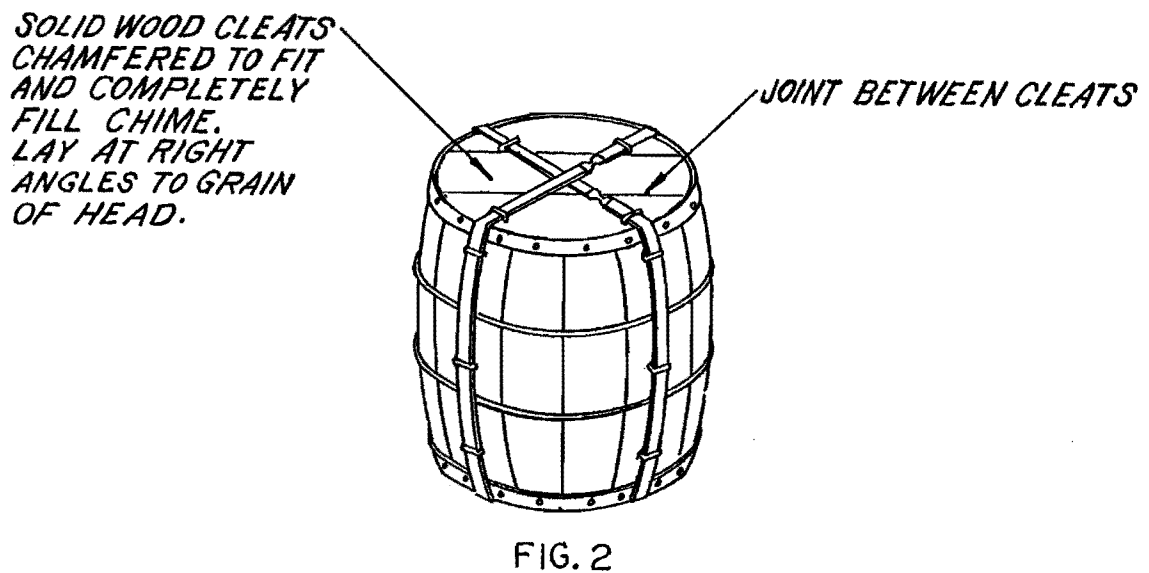
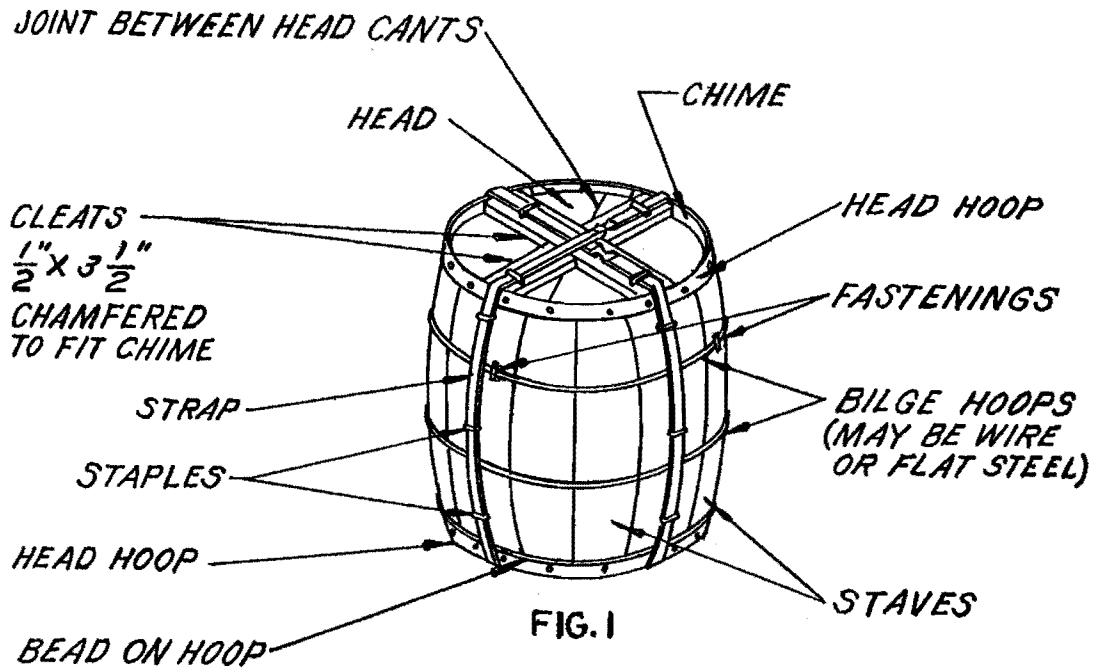
40. INSPECTION

40.1 The strapping of filled kegs shall be examined to determine compliance with the requirements of the appendix to this specification.

TABLE Ia. Strapping

Net weight of contents	Flat strapping		Round strapping (diameter)	
	Width	Thickness	Class A	Class B
	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>
<i>Pounds</i>				
Up to 175	5/8	0.020	0.0800 (14 gage)	0.0915 (13 gage)
175 to 250	3/4	.023	.0915 (13 gage)	.1055 (12 gage)

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