

PPP-H-1581A
March 30, 1977
 SUPERSEDING
 PPP-H-1581
 July 27, 1970

FEDERAL SPECIFICATION
 HARDWARE (FASTENERS AND RELATED ITEMS),
 PACKAGING OF

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

1. SCOPE

1.1 Scope. This specification covers preservation, packing and marking of hardware and related items classified as bolts, screws, pins, rivets, keys, nuts, washers, hinges, brackets, door buttons, knobs, blind hardware, storm sash, screen hangers, sash pulleys and miscellaneous other fasteners and components, both metallic and non-metallic (see 6.1).

2. APPLICABLE DOCUMENTS

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

Federal Specifications:

PPP-B- 566	-	Boxes, Folding, Paperboard
PPP-B- 576	-	Boxes, Wood Cleated, Veneer, Paper Over-laid
PPP-B- 585	-	Boxes, Wood, Wirebound
PPP-B- 601	-	Boxes, Wood, Cleated-Plywood
PPP-B- 621	-	Boxes, Wood, Nailed and Lock-Corner
PPP-B- 636	-	Boxes, Shipping, Fiberboard
PPP-B- 640	-	Boxes, Fiberboard, Corrugated, Triple-Wall
PPP-B- 665	-	Boxes, Paperboard, Metal Edged and Components
PPP-B- 676	-	Boxes, Setup
PPP-B-1806	-	Barrels and Kegs: Wood Slack

Federal Standard:

Fed. Std. No. 123	-	Marking for Shipment (Civil Agencies)
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(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 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, DC 20402.

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

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

Military Specifications:

- MIL-P-116 - Preservation-Packaging Methods of.
- MIL-B-117 - Bags, Sleeves and Tubing-Interior Packaging.
- MIL-B-121 - Barrier Material, Greaseproofed, Waterproofed, Flexible.
- MIL-P-3420 - Packaging Materials, Volatile Corrosion Inhibitors, Treated, Opaque.
- MIL-I-8574 - Inhibitors, Corrosion, Volatile, Utilization of.
- MIL-L-10547 - Liners, Case and Sheet Overwrap; Water-Vapor-proof or Waterproof, Flexible.

Military Standards:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-147 - Palletized Unit Loads for 40" x 48" Pallets.'
- MIL-STD-1186 - Cushioning, Anchoring, Bracing, Blocking and Waterproofing; with Appropriate Test Methods.

(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 General. Hardware items shall be prepared for shipment in accordance with the requirements of this specification. Related items

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of hardware not specifically covered herein shall be prepared for shipment in accordance with instructions provided for similar items.

3.1.1 Materials. Materials used in preparation for shipment shall be as specified herein. Materials not covered by specifications shall be of good commercial quality, suitable for the purpose for which intended, and approved by a Government representative. The material shall be free of defects and imperfections which will adversely affect the serviceability of the packaged items.

3.2 Preservatives. Preservatives shall conform to Type P-1, P-2, P-7, P-18 (using MIL-P-3420) or P-19 of MIL-P-116 and shall be applied in accordance with the preservative application criteria in MIL-P-116.

3.2.1 Phosphate or black oxide coated items that have a supplemental oil finish require no preservative application. The unit pack shall be as specified in 3.3.1.4.3.2.

3.3 Preservation. Preservation shall be level A or B, or commercial (level C), as specified (see 6.2).

3.3.1 Level A.

3.3.1.1 Cleaning. Hardware items to which a preservative compound will be applied (see 3.3.1.3) shall be cleaned in accordance with process C-1 or MIL-P-116. Hardware and nonmetallic items not requiring preservative application shall be cleaned so they are free of dirt, grease and foreign matter.

3.3.1.2 Drying. Drying shall be accomplished by one or more of the procedures specified in MIL-P-116, D-1 through D-5, provided the drying procedure is not injurious to the item.

3.3.1.3 Preservative application. When the application of a preservative coating is required, items shall be coated with type P-2 or P-7 preservative with an alternative of P-18. P-1 or P-19 is optional for application only to bulk shipped material.

3.3.1.4 Unit pack.

3.3.1.4.1 Quantity. Unless otherwise specified (see 6.2), the unit pack shall consist of identical items in quantities as specified in Tables II through XI.

3.3.1.4.2 Wrapping.

3.3.1.4.2.1 Preserved with P-1 or P-19. After hardening of the P-1 or P-19 preservative, items may be placed directly into the container selected with no wrapping.

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3.3.1.4.2.2 Preserved with P-2 or P-7. Unit pack quantities of items coated with P-2 or P-7 shall be wrapped in greaseproof barrier material conforming to Grade A of MIL-B-121 and placed in the unit container selected. Items preserved with P-7 shall be drained of excess preservative before wrapping. Items preserved with P-2 or P-7 shall not be wrapped when the unit container is completely lined with greaseproof barrier material. Free movement of items shall be prevented by use of snug fitting containers and suitable cushioning or blocking.

3.3.1.4.2.3 Preserved with P-18. When quantities of an item are to be preserved with P-18, whether in a unit pack or directly in an exterior container, the P-18 preservative shall be applied in the form of a complete wrap without the use of any other preservative and in accordance with MIL-I-8574. Supplemental oil finish on phosphate coated items does not have to be removed.

3.3.1.4.2.4 Unpreserved items. Items not requiring preservatives require no greaseproof wrapping before being placed into containers. However, they shall be wrapped or cushioned with noncorrosive material when necessary to prevent movement within the container.

3.3.1.4.3 Methods.

3.3.1.4.3.1 Preserved items. Unless otherwise specified (see 6.2), the unit pack for preserved items shall be in accordance with Method I of MIL-P-116.

3.3.1.4.3.2 Unpreserved items. Unless otherwise specified (see 6.2), the unit pack for unpreserved items shall be in accordance with Method III of MIL-P-116. The unit pack for nonmetallic items and phosphate or black oxide coated items that have a supplementary oil finish shall be in accordance with Method IC-1 of MIL-P-116.

3.3.1.4.4 Containers.

3.3.1.4.4.1 For unit packs with contents weighing one pound or less. Containers shall conform to one of the following specifications: MIL-B-117, Class C; PPP-B-566; PPP-B-665; or PPP-B-676. The use of bags shall be restricted to small or flat items. Items having sharp edges or protrusions shall be wrapped or cushioned prior to being bagged, in order to prevent damage to bags. Closure of the bags may be by staples, tape, adhesive, heat sealing or other suitable means. For Army shipments, containers shall conform to variety 2 of PPP-B-566, variety 2 of PPP-B-676 or class 2 of PPP-B-665.

3.3.1.4.4.2 For unit packs with contents weighing more than one pound. Containers shall conform to one of the following specifications:

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PPP-B-566; PPP-B-676; PPP-B-636; or PPP-B-665. Gross weight of the unit pack shall not exceed 20 pounds for PPP-B-636 and PPP-B-665 containers, and ten pounds for the other specified containers. For Army shipments, containers shall conform to class weather-resistant of PPP-B-636, variety 2 of PPP-B-566, variety 2 of PPP-B-676 or class 2 of PPP-B-665.

3.3.1.4.3 For hardware assortments. Unless otherwise specified (see 6.2), like items within a hardware assortment shall be placed in a unit pack together and identified, using either compartmented containers or individual inner packages.

3.3.1.5 Intermediate pack. An intermediate pack is required when the container for the unit pack is a bag. Unless otherwise specified (see 6.2), an intermediate pack is required for boxed unit containers which are 0.375 cubic feet or less in size. The intermediate pack shall be accomplished by placing a quantity of unit packs into containers conforming to variety 2 of PPP-B-676, class 2 of PPP-B-665 or class weather-resistant of PPP-B-636. Gross weight shall not exceed 10 pounds for PPP-B-676 containers and 20 pounds for PPP-B-665 containers. The intermediate pack shall provide a snug fit for contents. Quantity of unit packs to an intermediate container shall be uniform in any shipment, except final intermediate container may hold a lesser quantity. Unit packs exceeding either 10 pounds gross weight or 0.375 cubic feet in size need not be placed in an intermediate pack. Intermediate containers shall be closed as specified in the appendices or notes of the applicable container specifications. Intermediate containers shall be limited to a maximum of 100 unit packs with a maximum gross load of 40 pounds and a maximum of 1.5 cubic feet. For Army shipments, two dimensions of the intermediate packs shall not exceed 16 inches.

3.3.2 Level B. Level B preservation shall be the same as level A (see 3.3.1).

3.3.3 Commercial (level C).

3.3.3.1 Cleaning. Items shall be free from dirt and contaminants which would contribute to deterioration of the item or which would require cleaning prior to use.

3.3.3.2 Preservative application. Items susceptible to corrosion or deterioration shall be protected by the application of a preservative.

3.3.3.3 Cushioning. Items requiring protection from physical and mechanical damage shall be protected by wrapping, cushioning or other means to provide protection during handling and shipment.

3.3.3.4 Unit pack. Unless otherwise specified (see 6.2), the unit pack shall consist of identical items in quantities as specified in Tables II through XI. The unit pack shall afford adequate protection against

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physical damage, corrosion and deterioration during shipment from the contractor to the first receiving activity.

3.3.3.5 Intermediate pack. Unless otherwise specified (see 6.2), placing of unit packs into intermediate packs is not required, but is acceptable.

3.4 Packing. Packing shall be level A or B, or commercial (level C), as specified (see 6.2). Contents of a shipping container shall be items of only one stock number, except as specified in 3.4.7.

3.4.1 Level A. Unit or intermediate packs, as applicable, shall be packed in boxes conforming to overseas class or type of PPP-B-576, PPP-B-585, PPP-B-601 or PPP-B-621 or class weather-resistant of PPP-B-636. For Army, only PPP-B-585, PPP-B-601 and PPP-B-621 boxes shall be authorized. When specified (see 6.2), plywood boxes shall be surface treated in accordance with the requirements of PPP-B-601. Strapping and closure shall be in accordance with the appendix to the applicable container specification. Boxes shall be constructed for Type 2 loads when such construction is included in the box specification, except that PPP-B-585 boxes shall be for Type 3 loads. Bulk shipped items (see 3.4.4) shall be packed in containers conforming to PPP-B-1806, overseas type of PPP-B-601 or class 2 of PPP-B-621. Boxes for bulk shipped items shall be constructed for Type 3 loads when such construction is included in the box specification selected. The gross weight of kegs and wood or wood-cleated boxes shall not exceed the limitations of the applicable box specification. The gross weight of fiberboard boxes shall not exceed 70 pounds. If gross weight exceeds 200 pounds, boxes shall be provided with skids. Except for Army shipments, gross weight of multiple packed items (see 3.4.7) shall not exceed 200 pounds. Closure and strapping shall conform to the box specification and the appendix thereto.

3.4.1.1 Case liners for level A shipment. Unless otherwise specified (see 6.2) containers shall be lined with a case liner conforming to MIL-L-10547 and sealed according to the appendix of that specification, with the exception that no liner shall be required when a shipping container is packed with items meeting the following conditions:

- a. Bulk shipped items which are completely painted and have no unprotected interior surfaces.
- b. Bulk shipped items which are completely coated with type P-1 or P-19 preservative conforming to MIL-P-116.
- c. Items in PPP-B-636 boxes which have been waterproofed by an optional method listed in the appendix of the box specification.

3.4.2 Level B. Unit or intermediate packs, as applicable, shall be packed in domestic type or class boxes conforming to PPP-B-576, PPP-B-585, PPP-B-591, PPP-B-601, PPP-B-621, PPP-B-636 or PPP-B-640.

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When specified (see 6.2), fiberboard boxes shall be class weather-resistant. Closure shall be in accordance with the appendix to the applicable box specification. Boxes shall be constructed for type 2 loads when such construction is included in the box specification, except that PPP-B-585 boxes shall be for type 3 loads. Bulk shipped items (see 3.4.4) shall be packed in containers conforming to PPP-B-1806, domestic type of PPP-B-601 or class 1 of PPP-B-621. Boxes for bulk shipped items shall be constructed for type 3 loads when such construction is included in the box specification selected. The gross weight of boxes shall not exceed the limitations of the box specification, except that the gross weight of fiberboard boxes shall not exceed 70 pounds. If gross weight of wood or wood-cleated boxes exceeds 200 pounds, boxes shall be provided with skids. Except for Army shipments, gross weight of multiple packed items (see 3.4.7) shall not exceed 200 pounds. Closure and strapping shall conform to the box specification and the appendix thereto.

3.4.3 Commercial (level C). Unit or intermediate packs, as applicable, shall be packed in exterior shipping containers to insure carrier acceptance and provide safe delivery to destination at lowest rates in compliance with carrier rules applicable to the mode of shipment (see 6.4).

3.4.4 Bulk shipment. When specified (see 6.2), items of like size and description shall be bulked shipped, in quantities as specified (see 6.2). When bulk shipment is authorized, only exterior containers specified for bulk shipped items in 3.4.1, 3.4.2 and 3.4.3 shall be used.

3.4.4.1 Shipment of component parts. In bulk shipment of fasteners, component parts such as washers, nuts and pins shall not be furnished loose in the shipping container. The required quantity of such parts shall be enclosed with the bulk shipment in a separate pack. At the option of the contractor, fasteners with nuts may be furnished with the nuts either assembled to the fastener or in a separate pack as described above. The option does not apply when the procurement specification required the nuts to be assembled to the fastener.

3.4.5 Blocking and cushioning. Interior packs or items placed directly into the exterior containers shall be blocked or cushioned in accordance with MIL-STD-1186.

3.4.6 Size of shipping containers. For the purpose of conserving shipping and storage space, shipping containers shall have a minimum cubic displacement based on overall length, width and depth, compatible with the requirements for protection of the items contained.

3.4.7 Multiple packed shipping containers. Multiple packing is permitted when all material of one stock number will not fill one container to capacity. Within a multiple-packed shipping container, packs of identical stock numbers shall be cartonized or wrapped together as a means of separating the material into groups for easy handling and identification.

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3.4.8 Palletization. For Army procurement, hardware packed as specified in 3.4.1, 3.4.2, 3.4.3 and 3.4.4 shall be palletized in accordance with MIL-STD-147, except that palletization shall not be required for containers requiring skids or when quantities per destination do not comprise a pallet load. When specified (see 6.2) shipments to other activities shall be palletized in accordance with MIL-STD-147. If the container is of a size which does not conform to any of the pallet patterns specified in MIL-STD-147, the pallet used shall first be approved by the contracting officer.

3.5 Marking.

3.5.1 Level A and B. Interior packs and shipping containers shall be marked in accordance with the requirements of MIL-STD-129 or Fed. Std. No. 123, as applicable. Bulk shipped items require no interior marking.

3.5.2 Commercial (level C). Unless otherwise specified (see 6.2), unit, intermediate and exterior packs shall, as a minimum, be marked as follows by any means which provides legibility:

- a. National Stock Number (NSN) or part number when NSN is not available.
- b. Noun nomenclature.
- c. Quantity and unit of issue.
- d. Contract, purchase order or delivery order number. (For General Services Administration, required on shipping container only.)
- e. Exterior shipping containers shall be marked with the appropriate address and caution marking except for full carloads or full truckloads to a single CONUS consignee.

4. QUALITY ASSURANCE PROVISIONS

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

4.2 Lot. A lot shall consist of all filled containers on the same contract or order, prepared for shipment under essentially the same conditions and submitted for inspection at the same time and place.

4.3 Sampling.

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4.3.1 For examination. Samples for examination shall be selected at random from each inspection lot in accordance with MIL-STD-105, Inspection Level I. The Acceptable Quality Level (AQL) shall be 2.5 percent defective.

4.3.2 For testing. (Method IC-1, unit packs only.) Samples for testing shall be selected at random from each inspection lot in accordance with MIL-STD-105, Inspection Level S-4. The AQL shall be 4.0 percent defective.

4.4 Quality conformance inspection.

4.4.1 Examination. Each of the sample shipping containers or interior packs selected in accordance with 4.3.1 shall be examined as specified in Table I to verify compliance with this specification. Any shipping container or pack in the sample containing one or more defects shall be rejected, and if the number of defective shipping containers or packs in any sample exceeds the acceptance number or that sample, the lot represented by the sample shall be rejected.

TABLE I

<u>Characteristics</u>	<u>Inspection Method</u>
1. Packaging materials, defective or damaged (3.1.1).	Visual
2. Incorrect preservative applied, preservative applied when not required or omitted when required (3.2 and 3.3).	Visual
3. Unit pack quantities, not as specified (3.3.1.4.1 and 3.3.3.4).	Visual
4. Unit pack wrapping and methods, not as specified (3.3.1.4.2, 3.3.1.4.3 and 3.3.3).	Visual
5. Unit pack containers, closure and weight, not as specified (3.3.1.4.4 and 3.3.3.4).	Visual
6. Intermediate pack, not as specified (3.3.1.5 and 3.3.3.5).	Visual
7. Packing containers, closure and weight, not as specified (3.4).	Visual
8. Case liner, not as specified (3.4.1.1).	Visual
9. Bulk shipment, not as specified (3.4.4).	Visual
10. Blocking and cushioning, not as specified (3.4.5).	Visual
11. Shipping container size, not as specified (3.4.6).	Visual
12. Multiple packed containers, not as specified (3.4.7).	Visual
13. Palletization, not as specified (3.4.8).	Visual
14. Marking, not as specified (3.5).	Visual

NOTE: When applicable, "Visual" examination includes measuring and weighing.

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4.4.2 Tests.

4.4.2.1 Unit pack. Method IC-1 unit packs selected in accordance with 4.3.2 shall be subjected to a leak test (vacuum chamber test) and a heat seal test conducted in accordance with MIL-P-116.

5. PREPARATION FOR DELIVERY (Not applicable)

6. NOTES.

6.1 Intended use. This specification is intended to be used for direct reference in contracts or orders, for reference in Section 5 of commodity specifications and for use in preparation of packaging data sheets for the preservation and packing of Hardware (Fasteners and Related Items). General hardware items not specifically listed in this specification should be preserved and packed for shipment and storage as described herein for material of similar composition and construction.

6.2 Ordering data. Purchasers should exercise any desired options offered herein, and procurement documents should specify the following:

- a. Title, number and date of this specification.
- b. Selection of applicable degree of protection (Level A or B), or commercial (level C) (see 3.3 and 3.4).
- c. Quantity per unit pack, if other than specified (see 3.3.1.4, 3.3.3.4 and Table VIII).
- d. Unit pack method, if other than specified (see 3.3.1.4.3).
- e. Hardware assortment unit pack, if other than specified (see 3.3.1.4.4.3).
- f. Intermediate pack, if other than specified (see 3.3.1.5 and 3.3.3.5).
- g. Surface treatment of plywood boxes, when required (see 3.4.1).
- h. When case liner is not required (see 3.4.1.1).
- i. When class weather-resistant fiberboard boxes are required for Level B packing (see 3.4.2).
- j. Bulk shipment, when required, and quantity (see 3.4.4).
- k. Palletization, when required (see 3.4.8).
- l. Commercial marking, if other than as specified (see 3.5.2).

6.3 Supersession data. This specification includes the requirements of MIL-H-3982C, dated 25 June 1969.

6.4 Common carrier acceptance of shipping containers is based on Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable (see 3.4.3).

6.5 Environmental. Environmental pollution preventive measures are contained in the material specifications referenced herein. Refer to material specification or preparing activity for recommended disposability methods.

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TABLE 11. Bolts, Lag or Machine; Studs; Setscrews; Screws, Cap
(Includes items with nuts, washers, etc.)

(Numbers indicate the quantity of items to be placed in a unit pack; Asterisks (*) indicate sizes to be packed directly into the exterior container without interior packs.)

Nominal Diameter (Inches)	Nominal Length (Inches)						
	0 To 1.00	Over 1.00 To 2.00	Over 2.00 To 3.00	Over 3.00 To 4.00	Over 4.00 To 8.00	Over 8.00 To 12.00	Over 12.00
.062	100						A L L D I A M E T E R S *
.073	100						
.086	100	100	100				
.099	100	100	100				
.112	100	100	100	100			
.125	100	100	100	100			
.138	100	100	100	100			
.164	100	100	100	100			
.190	100	100	100	100	100	50	
.216	100	100	100	100	100	50	
.250	100	100	100	100	100	50	
.3125	100	100	100	50	50	25	
.375	100	100	50	50	50	25	
.4375	100	50	50	50	25	25	
.500	50	50	50	25	25	25	
.5625	50	50	25	25	25	*	
.625	25	25	25	25	25	*	
.750	20	20	20	20	20	*	
.875	15	15	15	15	15	*	
1.000	10	10	10	10	10	*	
1.125		*	*	*	*	*	
1.250		*	*	*	*	*	

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TABLE III. Pins; Cotter, Straight, Grooved, Shoulder,
Spring or Tapered

(Numbers indicate the quantity of items to be placed in a unit pack)

Nominal Diameter (Inches)	Nominal Length (Inches)											
	0	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
	To 1.00	To 1.25	To 2.00	To 3.00	To 3.25	To 4.00	To 4.50	To 5.00	To 5.50	To 6.00	To 6.50	To 8.00
.016	100											
.031	100	100	100	100								
.047	100	100	100									
.062	100	100	100	100	100	100	100	100				
.078	100	100	100	100								
.093	100	100	100	100	100	100	100	100	100	100	100	100
.109	100	100	100	100	100	100	100	100	100	100	100	100
.125	100	100	100	100	100	100	100	100	100	100	100	100
.140	100	100	100									
.156	100	100	100	100	100	100	100					
.171	100	100	100									
.187	100	100	100	100	100	100	100	100	100	100	50	50
.203	100	100	100									
.218	100	100	100	100	100	100	100	100	100	50	50	50
.250	100	100	100	100	100	100	100	100	50	50	50	25
.281	100	100	100									
.312	100	100	100	100	100	100	100	50	50	25	25	25
.343	100	100	100	50	50	50						
.375	100	100	50	50	50	50	25	25	25	25	10	10
.406	100	100	50	50								
.437	100	50	50	50	50	50	25	25	10	10		
.500	50	50	50	50	50	50	25	25	10	10	10	10
.563	50	50	50	25	25	25	10	10	10	10	10	10
.593	50	25	25	25	25	10	10	10				
.625	50	25	25	25	10	10	10	10	10	10	10	10
.656	50	25	25	25	10	10	10	10	10	10	10	10
.718	25	25	25	10	10	10	10	10	10	10	10	5
.750	25	10	10	10	10	10	10	10	10	10	5	5
.875	25	10	10	10	10	10	10	10	10	10	5	5
.937	25	10	10	10	10	10	10	10	10	10	5	5
.984	10	10	10	10	10	10	10	10	10	10	5	5
1.000	10	10	10	10	10	10	10	10	10	10	5	5

Over 1.000 Inch -- All lengths: One per pack.

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TABLE IV. Rivets; Solid, Split or Tubular;
and Pins, Rivet

(Numbers indicate the quantity of items to be placed in a unit pack; asterisks (*) indicate sizes to be packed directly into the exterior container without interior packs.

When specified, rivets shall be packed in one pound, or greater, unit packs).

Nominal Diameter (Inches)		Nominal Length (Inches)								
		0 To .50	Over .50 To 1.00	Over 1.00 To 1.50	Over 1.50 To 1.75	Over 1.75 To 2.00	Over 2.00 To 2.50	Over 2.50 To 3.00	Over 3.00 To 4.00	Over 4.00 To 6.00
Fraction	Decimal	.50	1.00	1.50	1.75	2.00	2.50	3.00	4.00	6.00
3/64	.048	1000								
1/16	.063	1000								
3/32	.093	1000	500	250	250	250				
7/64	.109	500	250	250						
1/8	.125	500	250	100	100	100	100	100		
9/64	.141	250	100							
5/32	.156	250	100	100	100	100	100	100		
3/16	.187	250	100	100	100	100	100	100	100	100
7/32	.218	100	100	100	100	100	100			
1/4	.250	100	100	100	100	100	100	100	50	50
9/32	.281	100	100	100	100	100				
5/16	.312	100	100	100	100	50	50	50	50	*
3/8	.375	100	100	50	50	50	50	25	*	*
13/32	.406	100	50	50	50	25	25	25	*	*
7/16	.437	100	50	50	25	25	25	25	*	*
1/2	.500	50	25	25	25	25	25	25	*	*
5/8	.625	25	25	25	25	25	*	*	*	*
3/4	.750									

And Over - All Lengths*

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TABLE V. Screws; Drive, Assembled Washer, Machine,
Tapping or Wood; Thumbscrews

(Numbers indicate the quantity of items to be placed in a unit pack.)

Nominal Diameter (Inches)	Nominal Length (Inches)			
	0 To 2.75	Over 2.75 To 3.00	Over 3.00 To 4.00	Over 4.00 To 6.00
.060	100			
.073	100			
.086	100			
.099	100			
.112	100			
.125	100			
.138	100			
.151	100			
.164	100	100	100	
.177	100	100	100	
.190	100	100	100	
.203	100	100	100	
.216	100	100	100	100
.242	100	100	100	50
.250	100	100	100	50
.268	100	100	100	50
.294	100	100	100	50
.3125	100	100	100	50
.320	100	100	100	50
.346	100	100	50	50
.375	100	50	50	50

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TABLE VI. Keys; Woodruff, Machine or Gib

(Numbers indicate the quantity of items to be placed in a unit pack; asterisks (*) indicate sizes to be packed directly into the exterior container without interior packs.)

Nominal Width (Inches)	Nominal Length (Inches)								
	0	Over	Over	Over	Over	Over	Over	Over	Over
	To	To	To	To	To	To	To	To	To
	1.00	1.50	1.75	2.00	2.50	3.00	4.00	5.00	6.00
.062	100	100	100	100	100	100	100	100	100
.094	100	100	100	100	100	100	100	100	100
.125	100	100	100	100	100	100	100	100	100
.156	100	100	100	100	100	100	100	100	100
.188	100	100	100	100	100	100	100	50	50
.219	100	100	100	100	100	100	100	50	50
.250	100	100	100	100	100	100	50	50	50
.3125	100	100	100	100	100	50	50	50	50
.375	100	100	50	50	50	50	25	25	25
.4375	100	100	50	50	50	50	25	25	25
.500	100	100	50	50	50	25	25	25	25
.625	100	50	50	50	25	25	25	25	10
.750	50	50	50	50	25	25	25	10	10
.875	50	25	25	25	25	10	10	10	10
1.000		25	25	25	10	10	10	10	*
1.125			25	10	10	10	10	*	*

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TABLE VII. Nuts

(Numbers indicate the quantity of items to be placed in a unit pack; asterisks (*) indicate sizes to be packed directly into the exterior container without interior packs.)

Nominal Thread Diameter (Inches)	Nuts; Hex, Square, Plain, Machine, Slotted and Castellated, (Full and Jam Thickness)	Nuts, Hex, Lock		Nuts		
		Heavy	Light	Cap and Plate	Stamped	Welding and Wing
.073	100					
.086	100					
.099	100				100	
.112	100				100	
.125	100				100	100
.138	100				100	100
.164	100			100	100	100
.190	100			100	100	100
.212	100	100	100	100	100	100
.250	100	100	100	100	100	100
.3125	100	100	100	100	100	100
.375	100	100	100	100	100	100
.4375	50	100	100	100	100	100
.500	50	100	100	100	100	50
.5625	50	50	50	50	100	50
.625	25	50	50	50	100	25
.750	20	50	50	50	100	25
.875	15	25	25	25	100	
1.000	10	25	25	25	50	
1.125	*	20	20		50	
1.250	*	20	20		50	
1.375	*	*	20		50	
1.500	*	*	10		25	
1.625	*	*			25	
1.750	*	*			25	
1.875	*	*			25	
2.000	*	*			10	
2.250	*	*			10	
2.500	*	*			10	

TABLE VIII. Washers

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(Numbers indicate the quantity of items to be placed in a unit pack. Asterisks (*) indicate sizes to be packed directly into the exterior container without interior packs. When specified (see 6.2), washers shall be placed in 1, 5, 10 or 25 pound packs.

Washers having an inside diameter not listed in the table shall use quantities given for the next larger size.

Inside Diameter Ref (Inches)	Flat			
	Round			Square
	Machine Standard	Rivet Burs	Beveled, Shouldered	Beveled, Standard
.14	1000	1000		100
.21	1000	500	500	100
.38	1000	500	250	100
.44	1000	100	100	50
.50	500	100	100	50
.56	250	100	100	50
.75	250	50	50	50
.88	100	50	50	25
1.00	50	50	50	10
1.25	*	*	*	10
Over 1.25	*	*	*	*

Inside Diameter Ref (Inches)	Lock			Miscellaneous		
	Split	Tooth	Spring	Clinch Ring, Finishing and Non-Metallic	Reducing	Key
.21	1000	1000	50	100	100	100
.31	1000	1000	25	100	100	50
.34	1000	1000	10	100	100	50
.38	1000	500	10	100	100	50
.46	500	500	10	100	100	25
.56	250	250	10	50	50	25
.62	100	100	10	50	50	25
.94	100	100	5	50	50	25
1.00	100	50	5	50	50	25
1.50	50	50	5	25	25	25
1.75	*	*	5	25	25	25
2.12	*	*	*	25	25	25
2.62	*	*	*	10	*	25
3.25	*	*	*	10	*	10
Over 3.25	*	*	*	*	*	*

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TABLE IX. Fasteners

(Numbers indicate the quantity of items to be placed in a unit pack.)

Non Dia or Length	Insert Screw Thread <u>4/</u>	Post, Snap Fas- tener <u>2/</u>	Fastener, Spring Tension Trim <u>3/</u>	Grommet Metallic <u>4/</u>	Clinch Plate; Push Button Fastener, Snap Fastener or Turnbutton Fastener <u>4/</u>	Socket, Stud or Cap, Snap Fastener; and Cap Rivet <u>1/</u>
.60 To .250	100	100	100	100	100	100
Over .250 To .375	50	100	100	100	100	100
Over .375 To .625	25	100	100	100	100	100
Over .625	10	100	100	100	100	100

- 1 Nominal dimension represents the outside diameter.
- 2 Nominal dimension represents the length.
- 3 Nominal dimension represents the hole diameter.
- 4 Nominal dimension represents the inside diameter.

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TABLE X. Hinge, Butt; Spring, Ring or Offset: Hinge; Cabinet, Tee or Strap: Hasps; Hooks: Lock, Door: Lock, Cabinet: Catch, Cupboard: Closure, Door: Brackets

Nominal Width (Inches)		Nominal Length (Inches)				
		0 To 1.00	Over 1.00 To 2.00	Over 2.00 To 3.00	Over 3.00 To 5.00	Over 5.00
Over	To					
0	.50	10	10	10	10	ALL WIDTHS *
.50	1.00	10	10	10	10	
1.00	1.50	10	10	10	10	
1.50	2.00	10	10	10	5	
2.00	2.50	10	10	10	5	
2.50	3.00	10	10	10	5	
3.00	3.50	10	10	5	5	
3.50	4.00	10	5	*	*	
4.00		*	*	*	*	

TABLE XI. Knobs and Pulls; Blind Hardware; Storm Sash and Screen Hangers; Hangers; Pulleys; Pulleys, Sash; Scuttle and Skylite Operators; Buttons, Door

Nominal Width (Inches)		Nominal Length (Inches)			
		0 To 1.00	Over 1.00 To 1.50	Over 1.50 To 4.00	Over 4.00
Over	To				
0	.50	10	10	10	ALL WIDTHS *
.50	1.00	10	10	10	
1.00	1.50	10	10	10	
1.50	2.00	10	10	5	
2.00	2.50	10	5	5	
2.50	3.00	10	5	*	
3.00	3.50	10	5	*	
3.50	4.00	10	5	*	
4.00		*	*	*	

(Numbers indicate the quantity of items to be placed in a unit pack; Asterisks (*) indicate sizes to be packed one to a unit container, except that items exceeding 4 pounds in weight shall be packed into exterior containers without interior packs.)

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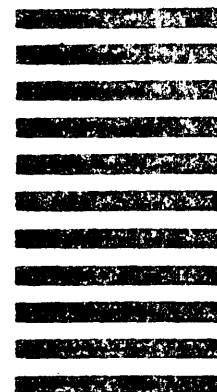
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