

MIL-P-25621B (USAF)  
8 March 1974  
 SUPERSEDING  
 MIL-P-25621A (USAF)  
 11 August 1969

## MILITARY SPECIFICATION

### PRESERVATION, PACKAGING, AND PACKING OF RUBBER AND NYLON FUEL, OIL, AND WATER-ALCOHOL CELLS

This specification is approved for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 This specification covers the general requirements for the preservation, packaging, and packing of new rubber and nylon fuel, oil, and water-alcohol cells (see 6.1).

#### 2. APPLICABLE DOCUMENTS

2.1 The following documents 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.

#### SPECIFICATIONS

##### Federal

QQ-S-781	Strapping, Steel, Flat and Seals
TT-C-598	Calking Compound, Oil and Resin Base Type (For Masonry and other structures)
UU-P-268	Paper, Kraft, Untreated, Wrapping
PPP-B-576	Boxes, Wood, Cleated, Veneer, Paper Overlaid
PPP-B-591	Boxes, Shipping, Fiberboard, Wood-Cleated
PPP-B-601	Boxes, Wood, Cleated - Plywood
PPP-B-636	Box, Fiberboard
PPP-B-640	Boxes, Fiberboard, Corrugated, Triple-Wall
PPP-C-1120	Cushioning Material, Uncompressed Bound Fiber, for Packaging
PPP-C-1797	Cushioning Material, Resilient, Low Density, Unicellular, Polypropylene Foam
PPP-P-291	Paperboard, Wrapping and Cushioning
PPP-T-60	Tape: Packaging, Waterproof
PPP-T-76	Tape, Pressure-Sensitive Adhesive, Paper (For Carton Sealing)

FSC PACK

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Military

- MIL-C-104     Crate, Wood; Lumber and Plywood Sheathed, Nailed and Bolted
- MIL-P-116     Preservation, Method of
- MIL-B-121     Barrier Material, Greaseproofed, Waterproofed, Flexible
- MIL-A-25175   Air Transport, Nontactical, Packing for

STANDARDS

Federal

- FED STD 102    Preservation, Packaging, and Packing Levels
- FED TEST METHOD STD NO 101 Preservation, Packaging, and Packing Materials Test Procedures

Military

- MIL-STD-129    Marking for Shipment and Storage
- MIL-STD-831    Test Reports, Preparation of

(Copies of specifications and standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on the date of invitation for bids or request for proposal shall apply.

UNIFORM CLASSIFICATION COMMITTEE

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, Illinois 60606).

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATIONS, INC.

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Association, Inc., 1616 P Street NW, Washington, DC 20036.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

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### 3. REQUIREMENTS

3.1 First article testing. A first article pack representative in every way to production packs shall be submitted to determine compliance with the requirements of this specification. A first article pack will not be required when: (a) level C packing is specified, (b) detailed packaging instructions are furnished by the procuring activity, or (c) the procuring activity waives first article tests when it has been established that previous first article tests were accepted on a like item similar in all respects to the new item and its packaging details (see 6.2).

3.2 Materials. Materials shall conform to the applicable specifications. Materials which have no governing specification, but are suitable for the purpose intended, shall be submitted to the procuring activity for approval. Material shall be free from all defects and imperfections that may affect the serviceability of the finished preservation, packaging, and packing.

#### 3.3 Temperature precautions.

3.3.1 Handling. Flexing of cells shall not be attempted until cell temperature is above 65°F.

3.3.2 Storage. Cells should not be stored in areas where temperature is below 45°F or above 70°F.

3.4 Preservation and packaging. Preservation and packaging shall be level A or C as specified by the procuring activity (see 6.2).

#### 3.4.1 Level A.

3.4.1.1 Cleaning and drying. All exposed surfaces shall be cleaned of foreign matter that might contribute to corrosion. All surfaces to which a preservative is to be applied shall be first cleaned and dried in accordance with the most applicable method of MIL-P-116.

3.4.1.2 Exposed, unpainted ferrous, and critical nonferrous metal surfaces (except aluminum). These item surfaces shall be coated with type P-3 preservative of MIL-P-116, and wrapped or covered with a greaseproof barrier material conforming to MIL-B-121, type I, grade A, class I. The wrap or cover shall be secured in place with tape conforming to PPP-T-60, type IV or PPP-T-76.

3.4.1.3 Openings. Access openings of 2 inches or less shall be sealed with tape conforming to PPP-T-60, Type III, Class 1. Large access openings shall be closed with the applicable access cover or a temporary cover constructed of aluminum, plywood, or other similiar material. Hygroscopic material shall be separated from metal parts by a layer of barrier material conforming to MIL-B-121, Grade A, Class 2, Type II.

3.4.2 Level C. This level shall afford adequate protection under known favorable conditions during shipment, handling and limited tenure of storage.

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3.5 Blocking, bracing, and cushioning. The blocking, bracing, and cushioning shall be designed not only to support the item but also to protect the part from damage when the container is subjected to the first article tests in 4.5 (see exceptions in 3.1). The blocking, bracing, and cushioning shall be of the lightest design and construction commensurate with its ability to meet the tests specified herein.

3.5.1 Bladder and pliocel cells. Each bladder and pliocel cell shall be enclosed in a snug-fitting wrap conforming to UU-P-268, Type I, Grade A or B, and shall be secured by PPP-T-60 or PPP-T-76 tape applied only to the wrap. All protruding fittings and connections shall be adequately cushioned with neutral barrier material prior to wrapping. Each wrapped bladder cell shall then be folded or rolled so as to occupy a minimum amount of space. Folding shall be accomplished as smoothly and lightly as possible with the least number of folds. A roll of single-faced corrugated fiberboard conforming to PPP-P-291, Type III or PPP-C-1797 cushioning material, measuring not less than 4 inches in diameter shall be inserted inside and adjacent to each fold to prevent creases. Upon completion of folding, or rolling, the outer ends of the package shall be secured with a suitable PPP-T-60 or PPP-T-76 tape.

3.5.2 Self-sealing, collapsible cells. Each self-sealing, collapsible cell shall be blocked to prevent collapse. When integral hangers are provided, support may be effected by use of cross members which are positioned in the container with pocket cleats and holddown blocks. End grain nailing shall not be permitted. When such hangers are not available, the cell shall be blocked internally with a suitable framework. All corners and edges of the internal support framework shall be covered with a sufficient amount of cushioning material. There are some cells that can be shipped in a collapsed position, with cushioning pads conforming to PPP-C-1120 or PPP-C-1797 inserted into the interior to prevent cracking, deformity, or adhesion of the inner liner.

3.5.3 All cells. Shifting or moving of the cells within the containers shall be prevented by blocking with padded restraints of sufficient area to prevent damage or by filling the unused spaces in the containers with cushioning material.

3.6 Packing. Packing shall be level A, B, C, or air shipment as specified (see 6.2).

3.6.1 Level A. Each cell preserved and packaged in accordance with 3.4 and 3.5, shall be packed in an overseas-type exterior container conforming to PPP-B-636, PPP-B-640, PPP-B-576, PPP-B-591, or PPP-B-601. The container shall be of minimum cube and tare consistent with the protection required. Strapping and closure shall be in accordance with the applicable container specification or appendix thereto. The interior surfaces of plywood containers shall be lined with double-faced fiberboard at least two-tenths inch thick, which if attached, shall be glued, not nailed or stapled. Skids shall be used on plywood boxes with gross weights over 200 pounds. Cells requiring containers wider than 44 inches shall be packed in special containers conforming to the requirements specified in 3.7 and subparagraphs thereto. The interior surfaces of special containers shall be lined as specified above.

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3.6.2 Level B. This level shall conform to 3.6.1 except that the exterior container(s) shall be domestic grade and type.

3.6.3 Level C. Level C packing shall afford protection against damage during direct shipment from the supply source to the first receiving activity for immediate use. Containers and packing shall comply with the Uniform Freight Classification Rules and National Motor Freight Classification Rules, as applicable.

3.6.4 Air shipments and covered storage. When specified (see 6.2), packing for air shipment and covered storage shall be accomplished in accordance with MIL-A-25175. Packs shall be subject to all first article inspection tests applicable to level B with the exception of the impact tests.

3.7 Special container. The container for which the requirements are herein specified is a demountable, plywood-sheathed crate. It is intended for fuel cells that require containers wider than 44 inches and is suitable for level A, B, or C packs.

3.7.1 Materials. The requirements for lumber, plywood, nails, bolts, lag screws, and metal strapping shall conform to those requirements in MIL-C-104.

3.7.2 Base. The base shall be composed of cross skids, stringers, and plywood flooring (see fig 1). Cross skids shall be evenly spaced and shall not exceed 36 inches center to center. There shall be at least 4 stringers evenly spaced and not exceeding 24 inches center to center. The flooring shall be plywood of three-eighths inch thickness and the direction of the face grain shall be perpendicular to the stringers.

3.7.3 Sides and ends. The sides and ends shall be constructed with struts and spaced no greater than 24 inches, center to center, and the direction of the grain of the plywood face plies vertical (see fig 2 and 3).

3.7.4 Top. The top shall be constructed in the same manner as the sides (see fig 2). The cross members shall be 1 by 4 inches for tops up to 60 inches wide and 2 by 4 inches for tops over 60 inches wide. For tops 96 inches wide and over, the cross members shall be placed on edge (see fig 4).

3.7.5 Fabrication. The base, sides, ends, and top shall be fabricated as panels except that tops over 60 inches wide shall be fabricated as during assembly on the sides and ends. The stringers of the base shall be attached to the cross skids with at least 1 twenty-penny sinker nail driven through and clinched at each crossing. Interior crossings shall have at least 2 nails (see fig 1). Plywood flooring and sheathing shall be attached to framing members of nominal 2-inch thickness with six-penny nails staggered in 2 rows and spaced 6 inches apart in each row. Plywood sheathing of sides, ends, and top shall be attached to framing members of nominal 1-inch thickness with nails driven through the plywood and clinched on the frame member a minimum of 1/4 inch. The nails shall be staggered in 2 rows for framing 4 inches and narrower, 3 rows for wider framing, and shall be spaced 6 inches apart in each row. Nailing shall be doubled at butt joints of plywood.

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3.7.6 Waterproofing of top. A bead of caulking compound conforming to TT-C-598 shall be applied at all butt joints of the plywood in the top prior to nailing (see fig 4).

3.7.7 Assembly. The sides, ends, and top shall be fastened together with nails and assembled to the base with lag screws. Size and spacing of nails and lag screws shall be in accordance with figure 5. Tops of crates over 60 inches wide shall be constructed by positioning and nailing the cross members in place on the sides and then applying the top sheathing.

3.7.8 Corner reinforcing strap. Reinforcing straps shall be applied (see fig 5). Straps shall be 0.025 by 5/8 by 16-inch (minimum) annealed band, in prepunched or plain style, treated to resist rust and conforming to QQ-S-781. Straps shall be applied: (a) at the corners formed by the juncture of top to side, top to end, and end to side, (b) at the edges formed by the juncture of the top to sides and ends with maximum average spacing of 36 inches, and (c) at the edges formed by the juncture of sides to ends with maximum average spacing of 36 inches. Nails shall be galvanized roofing nails 1-1/8 inches long (maximum). Strapping shall be located so that the nailing is in a frame member and a minimum of three nails shall be used for each strap leg.

3.8 Marking. In addition to any special marking required by the contract or order, each shipping container shall be marked in accordance with MIL-STD-129.

3.8.1 Special Marking. Precautionary marking shall be applied to exterior containers by stencil or label on one end and one side as follows:

"CAUTION - Cell Temperature should be above 65°F before removing or flexing cells".

"CAUTION - Cells should be stored in areas where the temperature is above 45°F and below 70°F.

3.8.2 New cell marking. Cells that have never contained fuel shall be identified on the exterior container with the following legend by stencil or label applied on one end and one side:

"NEW CELL - PURGING NOT REQUIRED".

3.9 Workmanship. All operations involved in accomplishing the preservation, packaging, and packing by the procedures specified herein shall be in accordance with the highest grades of practice associated with this type of work.

#### 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 in the contract or purchase order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified

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herein, unless disapproved by 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 supplies and services conform to prescribed requirements.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.3)
- b. Quality conformance inspection (see 4.4)

4.3 First article inspection.

4.3.1 General. First article inspections are designed to prove the adequacy of the preservation, blocking, bracing, cushioning, and container for protecting the item. To pass the first article inspection, the item and pack, after testing, shall contain no damage which would affect its utility. Waterproof papers, wrappings, interior containers, bracing, blocking, bolting, and cushioning shall be intact and capable of providing the intended protection. Unless otherwise specified, first article inspections shall be witnessed by the appropriate Government agency.

4.3.2 First article inspection sample. The first article inspection sample shall consist of one pack for each different cell.

4.3.3 First article inspection tests. First article inspection test shall consist of all applicable test described in 4.5.

4.3.4 Test report. The contractor shall submit to the procuring activity three (3) complete copies of a report prepared in accordance with MIL-STD-831 outlining the procedures and results of the first article inspection.

4.4 Quality conformance inspection. Each individual pack shall be subjected to the examination of product described in 4.5.1.

4.5 Test methods.

4.5.1 Examination of product. Each completed pack submitted for acceptance shall be carefully examined to determine conformance with the applicable specifications. Each pack submitted under contract shall be identical in every respect to the first article sample tested, except for changes officially approved by the procuring activity. Any unapproved changes from the first article inspection sample shall constitute cause for rejection.

4.5.2 Rough-handling tests.

4.5.2.1 Lightweight or small dimensions. Each first article pack having a gross weight not exceeding 200 pounds or no dimensions greater than 60 inches, closed as for shipment, shall be subjected to the free-fall drop test in accordance with method 5007, procedure B of Federal Test Method Standard No. 101.

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4.5.2.2 Heavyweight or large dimensions. Each first article pack having a gross weight exceeding 200 pounds or any dimension greater than 60 inches, closed as for shipment, shall be subjected to all the rotational drop tests and one of the impact tests listed below in accordance with Federal Test Method Standard No. 101.

<u>TITLE</u>	<u>TEST METHOD</u>
Rotational drop tests:	
Edgewise test	5008
Cornerwise test	5005
Impact tests:	
Incline-impact (or)	5023
Pendulum-impact test	5012

4.5.3 Rejection and retest. Packs which have been rejected may be reworked or replaced to correct the defects and resubmitted for acceptance. Before resubmitting, full particulars concerning previous rejection and the action taken to correct the defects found in the original shall be furnished the inspector. Units rejected after retest shall not be resubmitted without the specific approval of the procuring activity.

5. PREPARATION FOR DELIVERY - Not applicable.

6. NOTES

6.1 Intended use. This specification is intended to provide general requirements for the preservation, packaging, and packing of new cells for adequate protection in Level A (maximum), B (limited), C (minimum), or air shipment pack. Cells that have been contaminated by fuel (used cells) would have to be purged, internally preserved, and marked before packaging to this specification. (see TO 00-85A-03-1).

6.2 Ordering data. Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. First article test required, waived, or packaging instructions furnished (see 3.1).
- c. Applicable level of preservation and packaging required (see 3.4).
- d. Applicable level of packing or air shipment and covered storage required (see 3.6).
- e. Special marking or exceptions required (see 3.8).
- f. Location of first article inspection (see 4.3.1).



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CUSTODIAN:

Air Force - 69

Reviewing activities:

Army - SM

Air Force - 70, 71, 80, 82, 84

User activity:

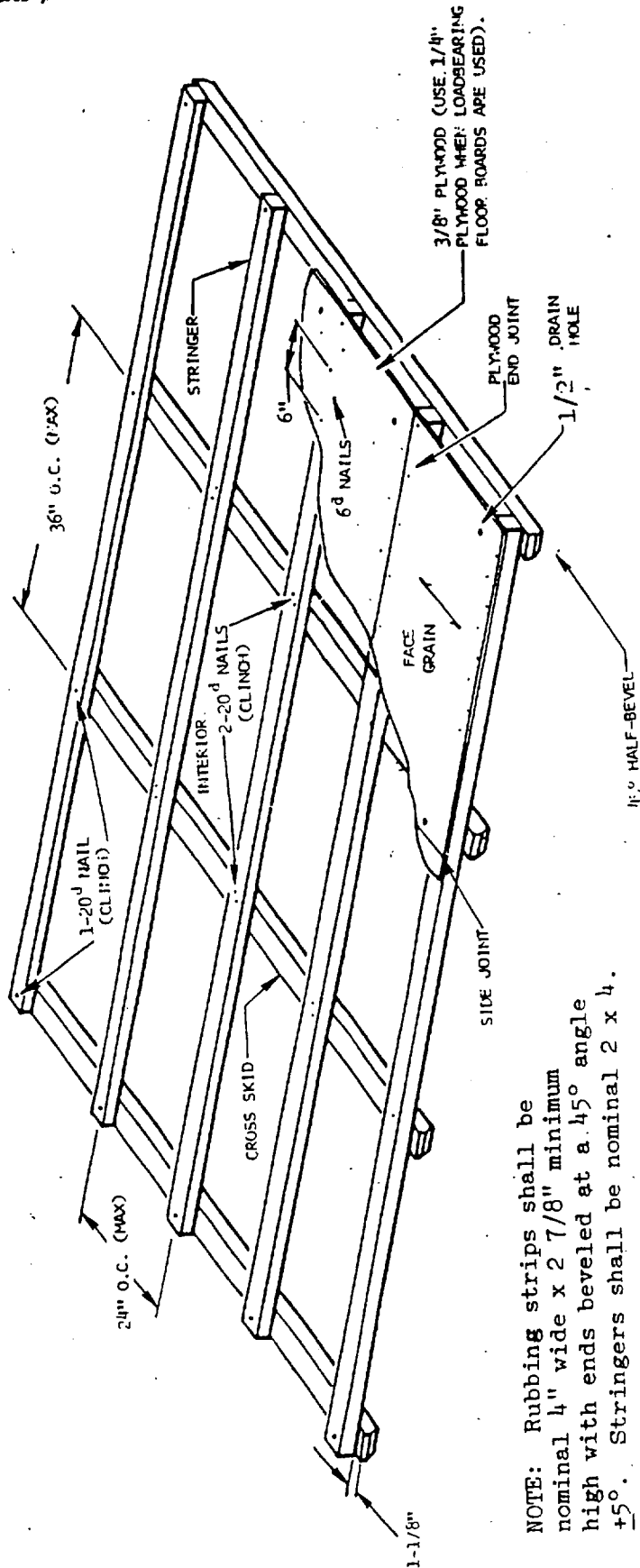
Air Force - 70, 80

Preparing activity:

Air Force - 69

Project Number: PACK-F348

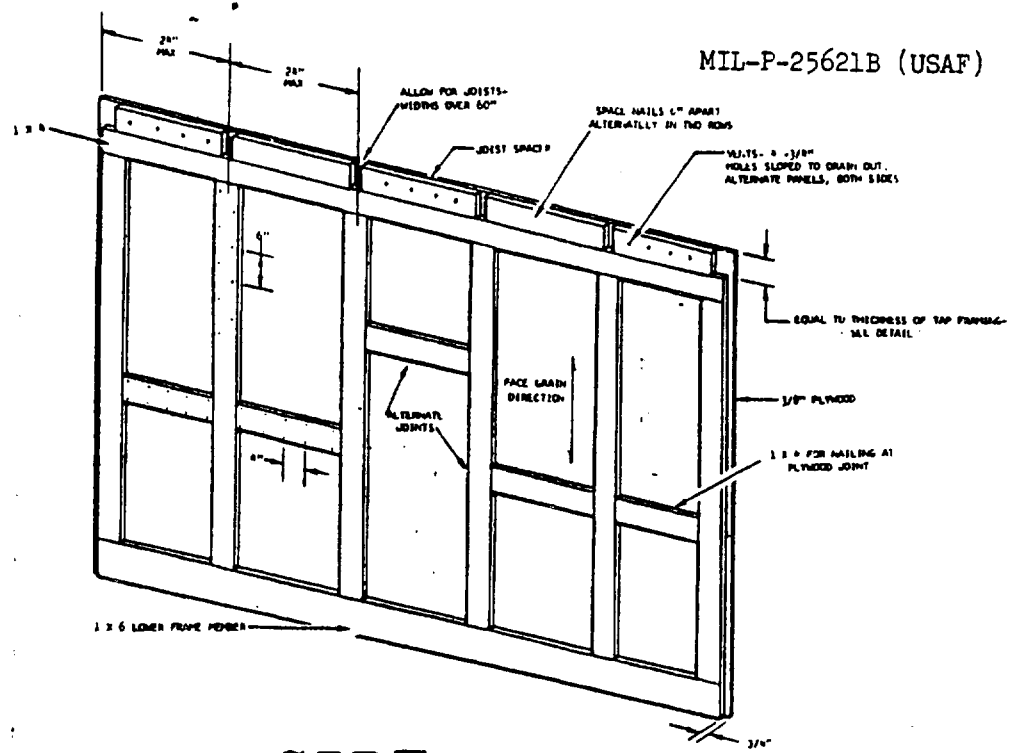
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NOTE: Rubbing strips shall be nominal 4" wide x 2 7/8" minimum high with ends beveled at a 45° angle +5°. Stringers shall be nominal 2 x 4.

BASE  
FIGURE 1  
Special Container

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SIDE

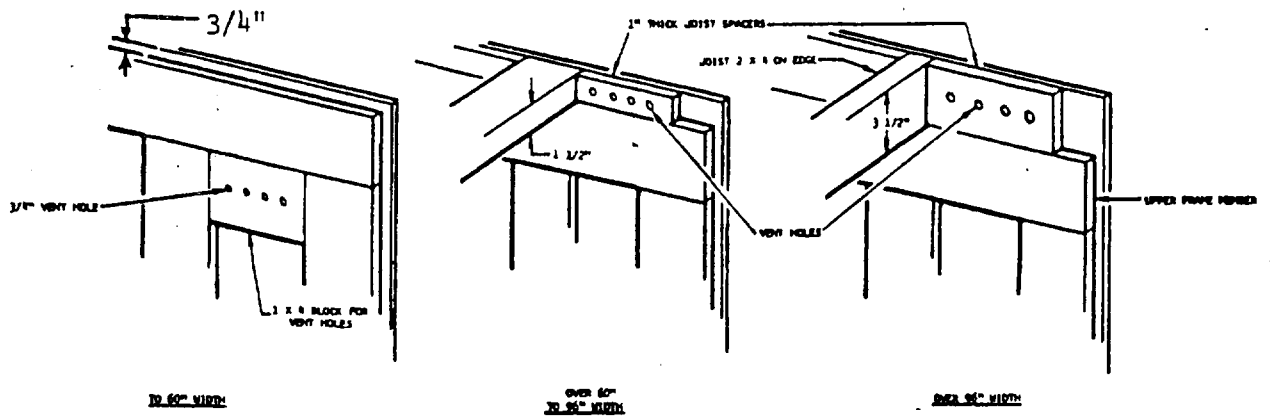
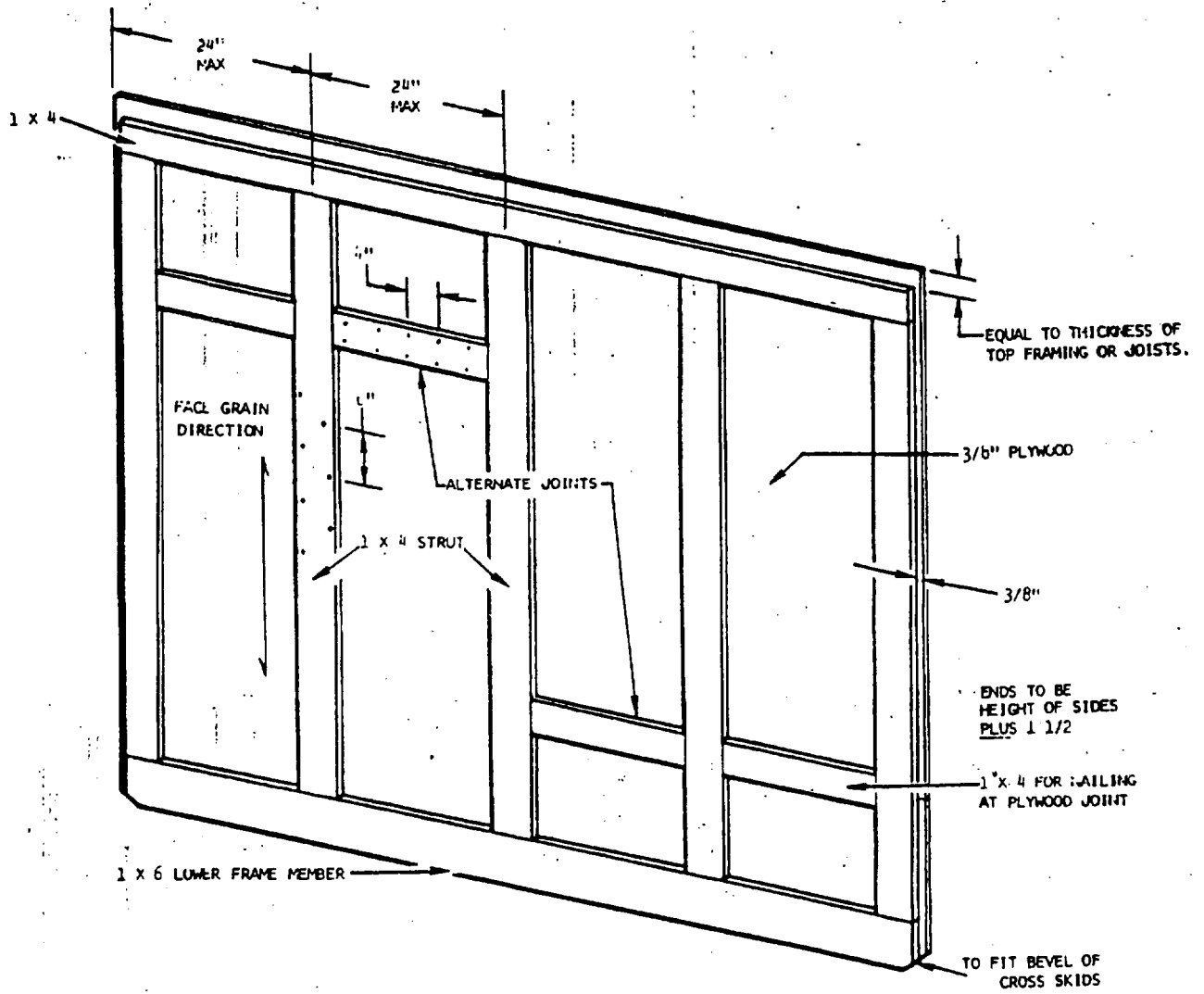


FIGURE 2  
Special Container

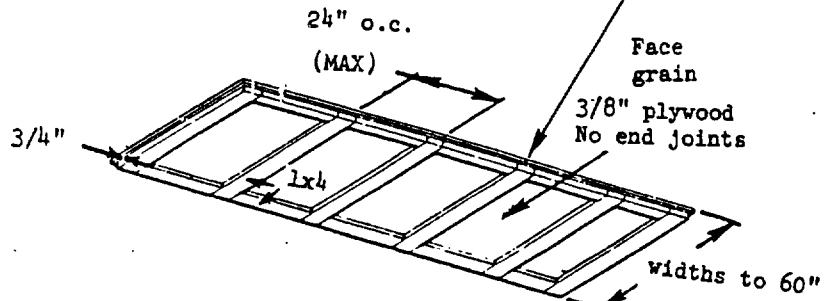
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END  
FIGURE 3  
Special Container

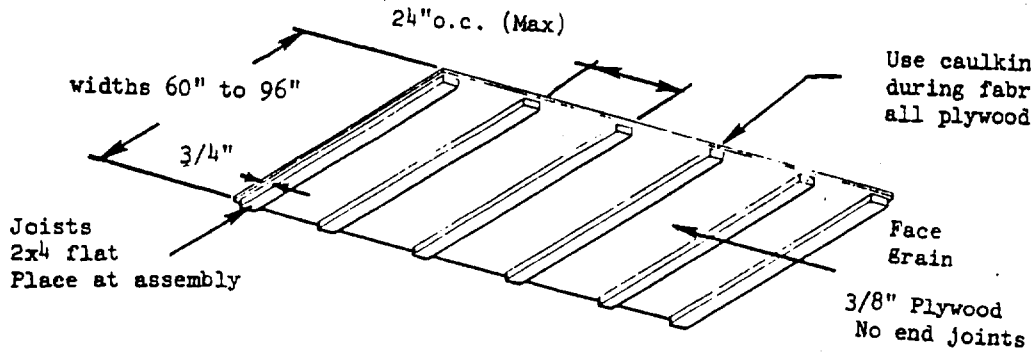
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Use caulking compound during fabrication - all plywood joints



### NARROW TOP

Use caulking compound during fabrication - all plywood joints

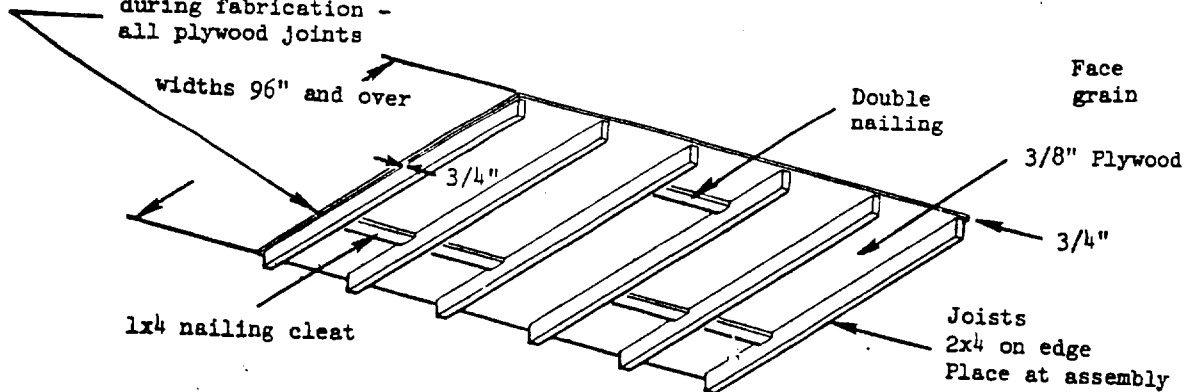


Joists  
2x4 flat  
Place at assembly

3/8" Plywood  
No end joints

### MEDIUM TOP

Use caulking compound during fabrication - all plywood joints



1x4 nailing cleat

Double nailing

Joists  
2x4 on edge  
Place at assembly

WIDE TOP  
FIGURE 4  
Special Container

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- NOTE:
1. TOPS TO 1/2" WIDE  
FRAME PAPERES AND PLYWOOD  
FABRICATED BEFORE ASSEMBLY
  2. TOPS ONLY 1/2" WIDE  
A. JOISTS PLACED AND NAILED  
B. PLYWOOD PLACED AND NAILED  
(CLEAN TO JOISTS WHEN REQUIRED,  
BEFORE ASSEMBLY)

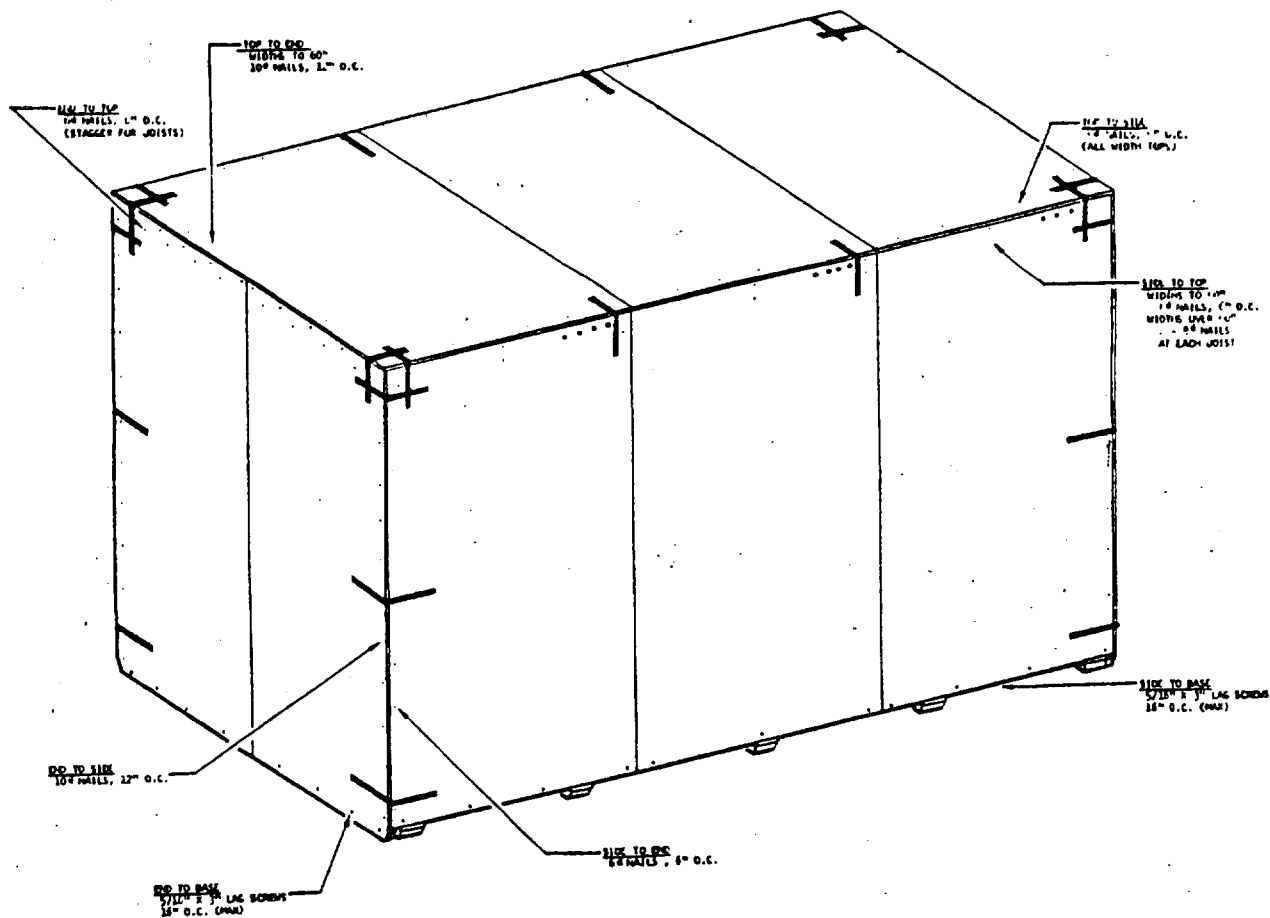


FIGURE 5  
Special Container

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 22-R255
<p><b>INSTRUCTIONS:</b> This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.</p>		
<p><b>SPECIFICATION</b> MIL-P-25621B (USAF), Preservation, Packaging, and Packing Of Rubber and Nylon Fuel, Oil, and Water-Alcohol Cells</p>		
<p><b>ORGANIZATION</b></p>		
<p><b>CITY AND STATE</b></p>		<p><b>CONTRACT NUMBER</b></p>
<p><b>MATERIAL PROCURED UNDER A</b>  <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT      <input type="checkbox"/> SUBCONTRACT</p>		
<p><b>1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?</b>  <b>A. GIVE PARAGRAPH NUMBER AND WORDING.</b></p>		
<p><b>B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES</b></p>		
<p><b>2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID</b></p>		
<p><b>3. IS THE SPECIFICATION RESTRICTIVE?</b>  <input type="checkbox"/> YES      <input type="checkbox"/> NO (If "yes", in what way?)</p>		
<p><b>4. REMARKS</b> (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)</p>		
<p><b>SUBMITTED BY</b> (Printed or typed name and activity - Optional)</p>		<p><b>DATE</b></p>

DD FORM 1426  
1 JAN 66

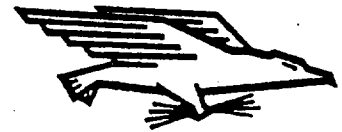
REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED.

AFLC-WPAFB-NOV 69 3M

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OFFICIAL BUSINESS



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Department of the Air Force

HQ AFLC  
Directorate of Packaging (DSP)  
Wright-Patterson AFB OH 45433

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