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1.0 Purpose

This document outlines the minimum packaging, marking and labeling requirements for movements of material bearing the Halliburton name. The purpose of this guide is to ensure protection of freight from atmospheric elements; allow for safe and efficient handling; reduce waste; and ensure compliance during movements. This guide is specifically designed to ensure materials are packaged to facilitate road, rail, air, and ocean transit. This guide is to be used in conjuncture with any additional regional regulatory requirements if applicable.

2.0 Scope

This guide applies to all movements of goods and covers the minimum requirements for proper preparation and packaging of all bagged, drummed, crated, and canned (pailed) material as well as material packaged in super sacks. These instructions do NOT include all regulatory requirements (e.g. IMDG, IATA, DOT), as those are expected to be adhered to without calling attention to them within this document. Any exceptions to this guide will be noted in the Shipper's Letter of Instructions (SLI).

3.0 References

- www.ista.org – ISTA International Safe Transit Association
- www.astm.org - ASTM International Standards Worldwide
- IMDG and IATA codes
- [49 CFR](#) – Department of Transportation, Code of Federal Regulations

4.0 Responsibility

As required by the U.S. Department of Transportation (DOT), 49 CFR 173.24(b):

- 4.1 The effectiveness of the package will not be substantially reduced; for example, impact resistance, strength, packaging compatibility, etc. must be maintained for the minimum and maximum temperatures, changes in humidity and pressure, and shocks, loading and vibrations normally encountered during transportation.

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- 4.2 There shall be no mixture of gases or vapors in the package which could, through any credible spontaneous increase of heat or pressure, significantly reduce the effectiveness of the packaging.
- 4.3 There shall be no chemical residue adhering to the outside of the package during transport.

5.0 General Requirements

- 5.1 The quality requirements of material must be better than or equal to the minimum requirements in this guide. In order to ensure delivery is in satisfactory condition, all shipments, whether scheduled for immediate use or for delivery to storage, shall be packed in accordance with these requirements. All materials proposed by the seller, in variance to this guide shall be approved by Halliburton.
- 5.2 One of the goals of this guide is to prevent atmospheric elements from entering the interior of the packaging; therefore, the packaging shall NOT be prepared in such a way that will allow water to accumulate/puddle on top of the package. In Figure 1, the shrink wrap would actually cause more damage than it prevents.



Figure 1: Example of poor shrink wrap with possible accumulation of water

- 5.3 For all freight, including small packages not specifically detailed in this guide, the packaging must be robust enough to handle the weight of the materials contained within it. Additionally, the packing material used to fill empty space must be sufficient to prevent the freight from shifting such that damage to the freight or to the container could occur.

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6.0 Labeling on Handling Units

- 6.1** The supplier country of origin shall be clearly identified on each item (i.e. bag, drum, pail, etc.).
- 6.2** Do not put packaging list sleeves over any labels. Any labels must be visibly placed on the side of the box or crate to enable accessible viewing and scanning.



Example of where the labels and document sleeves shall be placed when on a crate.

Figure 2: Example of label and plastic document sleeves

- 6.3** Do not write over bar codes as shown in Figure 3.



Incorrect

Figure 3: Example of incorrect over-written barcode

- 6.4** All labels and plastic document sleeves are to be placed on opposite sides (NOT on top or bottom) of the handling units (HUs) as shown in Figure 4.



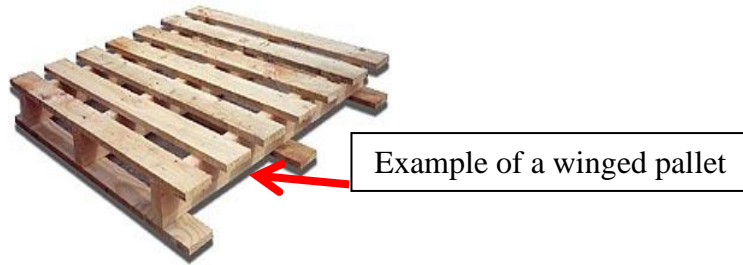
This label would not be visible when another box is stacked on top.

Figure 4: Example of incorrect placement of label

- 6.5** Each pallet of chemicals shall have labeling with the following information:
- 1). Chemical name (if applicable)
 - 2). Batch/Lot # (Make sure to be visible)
 - 3). Date of Manufacture
 - 4). Total number of packages on pallet (# of pails, bags and drums).
 - 5). Pallet Number shall be printed on each pallet – (example: Pallet 1 of 10, Pallet 2 of 10, Pallet 3 of 10 etc...)
 - 6). Each pallet shall have the Purchase Order # to be made clearly visible on 2 sides the pallet
 - 7.) Each pallet shall have the export marks clearly spelled out as put forth in the text of the purchase order and visible at a distance on 2 sides of the pallet
- 6.6** Additional labels may be required depending on the destination. These requirements will be detailed in the shipper's letter of instructions (SLI). (e.g. CHB labels, over packs on drums and pails, etc.)

7.0 Packaging Procedure – Bagged Material

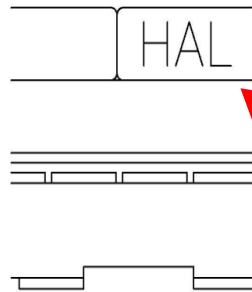
- 7.1** Bags shall be placed on four way entry, heat treated (ISPM 15) pallets, with heat treat stamps visible on both sides. (See Section 16 for additional Pallet Specifications).
- 7.2** Winged pallets, as shown in Figure 5, are NOT tolerable for bagged products but may be used for cans/pails or drums.



Example of a winged pallet

Figure 5: Illustration of a winged pallet

- 7.3** The pallet shall be properly sized for the freight. The stacked bags shall NOT exceed the dimensions of the pallet. (See Figure 6)



The pallet shall be sized so that the bags are as close to flush as possible. NO bags shall overhang for the full stack height.

Figure 7: Illustration of properly sized pallet

- 7.4** Excess pallet space shall be minimized in order to ensure efficient use of container space. The maximum excess pallet that will be allowed is 2 inches on each side. (See Figure 7)

Figure 6: Example of excess pallet space

- 7.5** A plastic or corrugate slip-sheet, same dimensions as the pallet, shall be placed directly on top of the skid and directly underneath the bagged material as shown in Figure 8. This shall be a waterproof/resistant material and suitable for any loads placed on top of it without crushing the slip sheet or loss of water resistance.

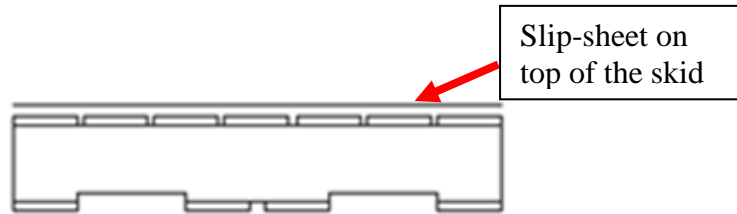


Figure 8: Illustration of a plastic or corrugate slip-sheet

7.6 Each bag shall have below printed data:

- 1) Country of origin
- 2) Chemical name
- 3) Pack size/net weight
- 4) Batch # / Lot # (See example of Lot # below in Figure 9)
- 5) Number of bags per pallet



Figure 9: Example of a Batch and Lot Number

7.7 If there are various lots on a pallet such as in Figure 10 above, this shall be clearly marked on the outside of the shrink wrap (or clearly visible through the shrink wrap) with a lot number consolidation note/paper notifying the shipper/warehouse that there are multiple lot numbers on that pallet.



For multiple lot numbers in a load, the lot numbers shall be visible on the outside edges of the unit load.

Figure 10: Example of placement of multiple lot details

7.8 Material of construction and other specifications of bagged packaging shall be approved by Halliburton.

7.9 Bags which are ripped, torn, or otherwise damaged upon arrival due to a manufacturing defect or inadequate construction will be repaired or removed as necessary. All expenses incurred may be charged to the supplier.

- 7.10** The height from the bottom of the pallet to the top of the bagged material shall not exceed 85" (215 cm) as shown in Figure 11.



Figure 11: Illustration of maximum height of bagged materials

- 7.11** A plastic or corrugated slip-sheet (same dimensions as the pallet) shall be placed directly on top of the bagged material.
- 7.12** Four-way poly or nylon bands shall be used to secure all bagged material. See Section 16 of this guide for banding requirements.



Figure 12: Example of the importance of banding

- 7.13** A heat shrink or stretch wrap shall be used to cover all of the bagged material.
- 7.14** The heat shrink or stretch wrap shall be at least 8 mils (8/1000 inch) thick and shall be made from UV resistant, transparent poly. (The 8 mil thickness may be achieved with multiple layers of a thinner stretch wrap.)

7.15 The bottom portion of the shrink/stretch wrap shall tightly adhere to the lip of the pallet.

8.0 Packaging Procedure – Drummed Material

8.1 45” x 45” heat treated (ISPM 15) pallets with heat treat stamps visible on both sides as shown in Figure 13. (See Section 16 for additional Pallet Specifications). Using a 45” x 45” pallet will result in slight overhang; therefore, to reduce the possibility of damage to the drums, it is imperative that the drums are centered so that the overhang is uniform on all sides.

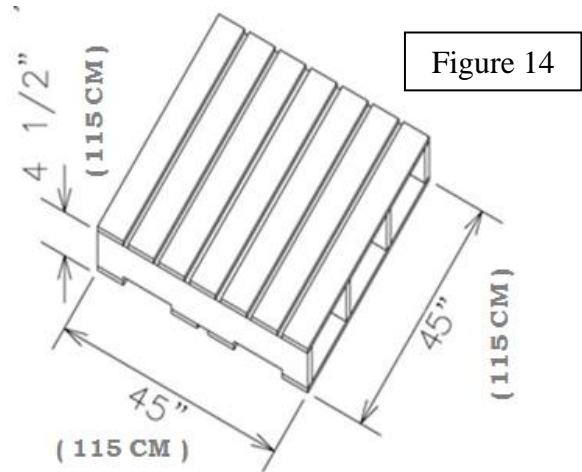


Figure 13: Illustration of pallet dimensions

8.2 If it is a 55 gallon (208 liters) open-head drum with a clamp ring, the drums shall be positioned with the bolts facing the inside of the pallet as shown in Figure 14.

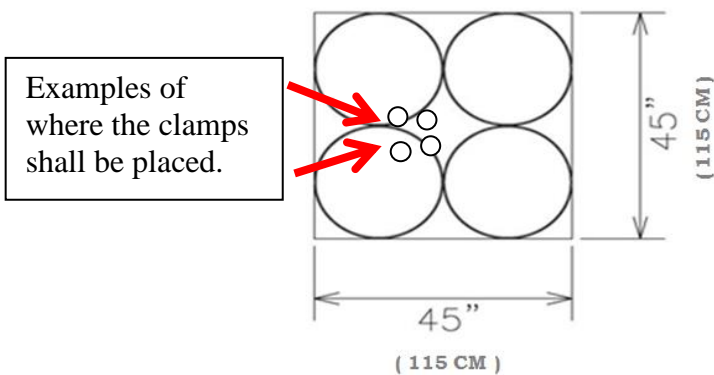


Figure 14: Illustration of proper clamp placement

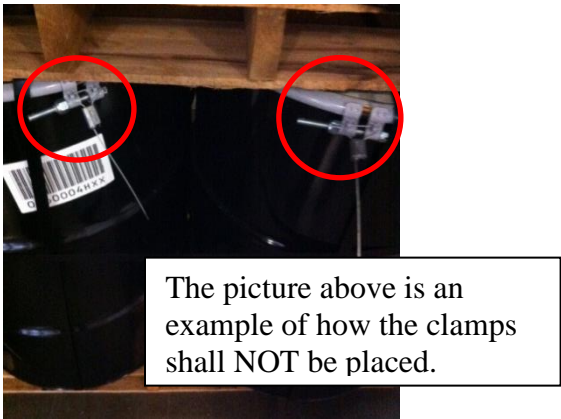


Figure 15: Example of incorrect clamp placement

- 8.3** A plywood cap of at least 3/8 inch (0.95 cm) thickness and the same dimensions as the pallet shall be placed on top of the drums, as shown in Figure 16. (Plywood caps shall NOT exceed the pallet dimensions.)

NOTE: If the pallet is not fully occupied then the cap shall be cut to fit the size of the freight. See Figure 17 for an example.

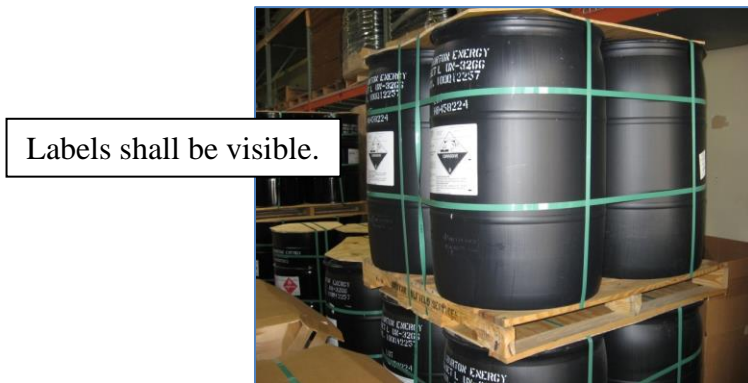


Figure 16: Example of stacking of drums



Figure 17: Example of cut plywood

- 8.4** The drums shall have at least one belly band as shown in Figure 18. Please reference Section 15 for the banding requirements.

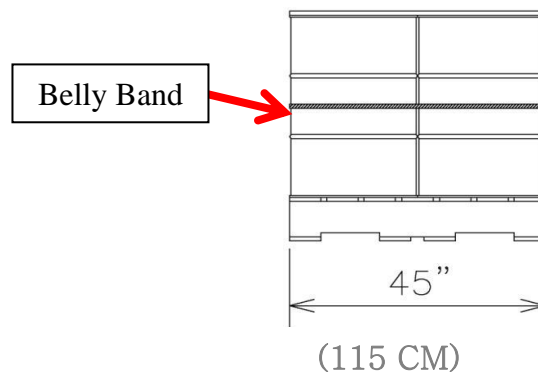


Figure 18: Illustration of belly band

- 8.5** Poly or nylon bands shall be used (two in each direction) laterally and longitudinally with break strength equal to the weight of the load (See Figure 19). Steel bands may be used with metal drums only.

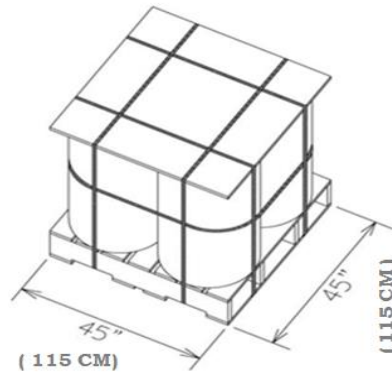


Figure 19: Illustration of banding requirements

9.0 Packaging Procedure – Canned (Pailed) Material

- 9.1** Cans/pails shall be placed on four way entry, heat treated (ISPM 15) pallets, with heat treat stamps visible on both sides. (See Section 16 for additional Pallet Specifications).
- 9.2** In order to prevent damage to the freight, use the appropriate sized pallet to ensure there is no overhang.
- 9.3** When palletizing cans/pails, the strength of the pails must be considered. Stack height must allow for double stacking of pallets without causing damage to the bottom layer.
- 9.4** A plywood top with dimensions matching those of the pallet and at least 3/8 inch (0.95 cm) thick shall be placed on top of the cans. (Plywood caps shall NOT exceed the pallet dimensions.)

NOTE: If the pallet is not fully occupied then the cap shall be cut to fit the size of the freight as shown in Figure 20.



Figure 20: Example of cut to size plywood

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9.5 Poly or nylon bands shall be used (two in each direction) laterally and longitudinally with break strength equal to the weight of the load. Steel bands may be used with metal pails only. (See Section 15 for banding requirements.)

9.6 Each layer of cans shall have a belly band with break strength equal to half of the load's weight as shown in Figure 21.



Figure 21: Example of belly band

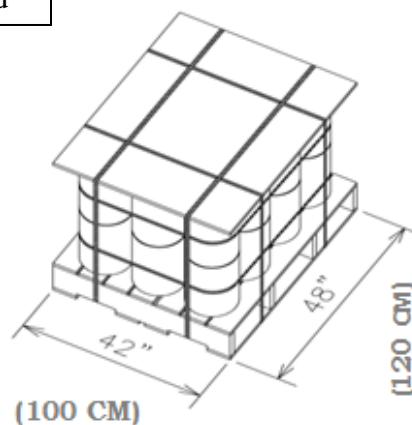


Figure 22: Illustration of belly band

10.0 Packaging Procedure – Super Sack Material

10.1 45" x 45" four way heat treated (ISPM 15) pallets with heat treat stamps visible on both sides shall be used.

10.2 A plastic or corrugate slip-sheet (same dimensions as the pallet) shall be placed directly on top of the skid and directly underneath the bagged material.

10.3 The slip sheet shall be a waterproof/resistant material and suitable for any loads placed on top of it without damaging the sheet or loss of water resistance.

10.4 Once the bag is stacked on the pallet, a plastic or corrugate slip-sheet (same dimensions as the pallet) shall be placed directly on top of the super sack. This sheet must allow double stacking of similar pallets, without damage to the super sack.

10.5 Do not cover the top of a super sack with shrink wrap. The slip sheet will provide ample coverage to protect the product from the elements during transit, and shrink wrapping the top of the sack will make it difficult to access the loops for lifting once the sack arrives at its destination.

10.6 Poly or nylon bands shall be used (two in each direction) laterally and longitudinally with break strength equal to the weight of the load.

10.7 Lot numbers shall be visible on the outside edges of unit load.

11.0 Packaging - Sensitive Materials

Note: The addition of this step, is to ensure we cover the packaging and delivery of sensitive materials including, but not limited to those identified in the table below.

Item	Description	Packaging
1	Oxygen Analysers	Secure wooden box
2	Flowmeters	Secure wooden box
3	Gas Detectors	Secure wooden box
4	Gauges	Secure wooden box
5	Chart Recorders	Secure wooden box
6	Dewpoint meters	Secure wooden box
7	Densitometers	Secure wooden box
8	Time Domain Reflectometers (TDR)	Secure wooden box
9	Insulation Testers (Megger)	Secure wooden box
10	Ohmmeters (Fluke)	Secure wooden box
11	Optical Time Domain Reflectometers (OTDR)	Secure wooden box
12	Particle Analysis Equipment (LPA, Manual Particle Kit)	Secure wooden box
13	Data Loggers/Recorders	Secure wooden box
14	Battery Chargers	Secure wooden box
15	General Instrumentation	Secure wooden box

Table 1: List of sensitive materials

11.1 All items shall be boxed in a manner to prevent them from internal movement during transportation to location.

- Any items that are sensitive to breakage, fragile or glass should be wrapped and secured in bubble wrap prior to boxing.
- Any items that may require protection from movement should have foam lined boxes.

11.2 Prior to boxing any item, each article within the package shall be covered and sealed to protect them in the event that there is a breach to the external packaging. This will be carried out by inserting individual items into a clear bag and sealing with waterproof tape.

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- Any items that are sensitive to water should be protected by wrapping in a sealed plastic, waterproof bag prior to boxing.
- Any items that are sensitive to humidity/moisture should be protected by vacuum sealing prior to boxing.

11.3 All items will be secured for transport and the wooden transport crate protected by heat shrinking to prevent ingress off water and dust.

12.0 Air Requirements

12.1 Acceptable items shall be banded on all sides of skid (4-way banding). Banding must be made of steel or unbreakable plastic (see Section 15 of this procedure for Halliburton banding requirements). Cargo tendered without proper packaging will be rejected by the airlines.

12.2 Shipper-built (SBU) pallets being transported on the Main Deck can only be accepted if all pieces/cartons contained in the SBU are below 150 lbs. (68 kgs.) actual and/or banded (steel or unbreakable plastic) on all sides to a skid or pallet. Then the SBU must be covered with a clear plastic covering and netting. All cartons/pieces must be able to be seen from the outside of the SBU to verify that the banding on all sides to a skid or pallet has been accomplished.

12.3 SBU pallets that will be transported on the lower deck must meet the following packaging specifications:

- 1). Units must be 64 inches (162.6 cm) or lower in height, weighing five (5) metric tons (11,023 lbs.) or less.
- 2). Units must be contoured to ensure that transport will only be accomplished on the lower deck.
- 3). Accompanied by a statement attached to the AWB (Air Way Bill) attesting that all contents on the lower deck-SBU are able to be transported in the lower holds of the cargo plane.

12.4 For each cargo shipment whose contents would be damaged or otherwise compromised if opened and re-built so as to preclude the opening of any

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piece/carton of the shipment, the company tendering the shipment must provide the following information at booking time: **Shipper contact name and 24/7 contact information in order to verify shipping information.**

13.0 Crates

- 13.1 Lumber used to construct crates must be suitable to withstand the rigors of ocean, air and land transportation as well as exposure to the elements while adequately ensuring the safety of material handlers and of the freight itself.
- 13.2 Fasteners used in construction of boxes, tie down of goods on skids, multiple bolting of goods to tie together or for other applicable uses, shall be those used generally by the industry. In all cases, the selection of these materials shall be dictated by weight, size and nature of goods being packed.
- 13.3 Dimensions of wood shall be considered as “nominal”. Lumber used shall be new, sound and well-seasoned, free from loose knots and decay. Moisture content shall not be more than 20% or less than 10% when tested in accordance with commercial standards and of a standard of No.3 lumber or better. Knots in excess of one third (1/3) the width of the board will not be permitted. Knots and knot clusters located so as to weaken boards or so located as to interfere with nailing will not be allowed.
- 13.4 Plywood shall be a minimum of 3/8” (0.95 cm) thickness exterior grade CDX. Plywood will be used as determined by the type of load, weight of contents and estimated worst condition to which the material will be subjected. All plywood must be moisture resistant to prevent degradation and subsequent weakening when exposed to rain. Blocking and bracing should be at least 2 x 4’s lumber or greater, depending on the weight, size and nature of objects being packed.
- 13.5 All lumber used to construct crates must be heat treated and bear the ISPM 15 stamp. This is required for all crates being shipped international. Heat treat stamps must be a deep color (black or brown – NOT red) and visible on two opposite sides. See Figure 28.

- 13.6** Export boxes, framing and flooring, shall be No. 3 lumber or better, at minimum meeting industry standard for applicable situation, commercial grade, free from excessive knots or splits.
- 13.7** Exposed nails and staples present a risk to all material handlers and are unacceptable. Quality checks shall be performed to ensure crates do not pose a risk to downstream personnel.
- 13.8** Specifications – The following examples are the minimum specifications for the construction of crates.

Air, Ocean, HazMat Overpack Guide

Rated: 0 – 1,000 lbs. (0 – 454 kg)

Side and end headers and uprights are to be 2" x 4" (5.1 x 10.2 cm). Side and end sheathing are to be constructed of 3/8" (0.95 cm) CDX plywood. Flooring is to be 1/2" plywood, and the skid must be constructed of notched 2" dimensional boards.

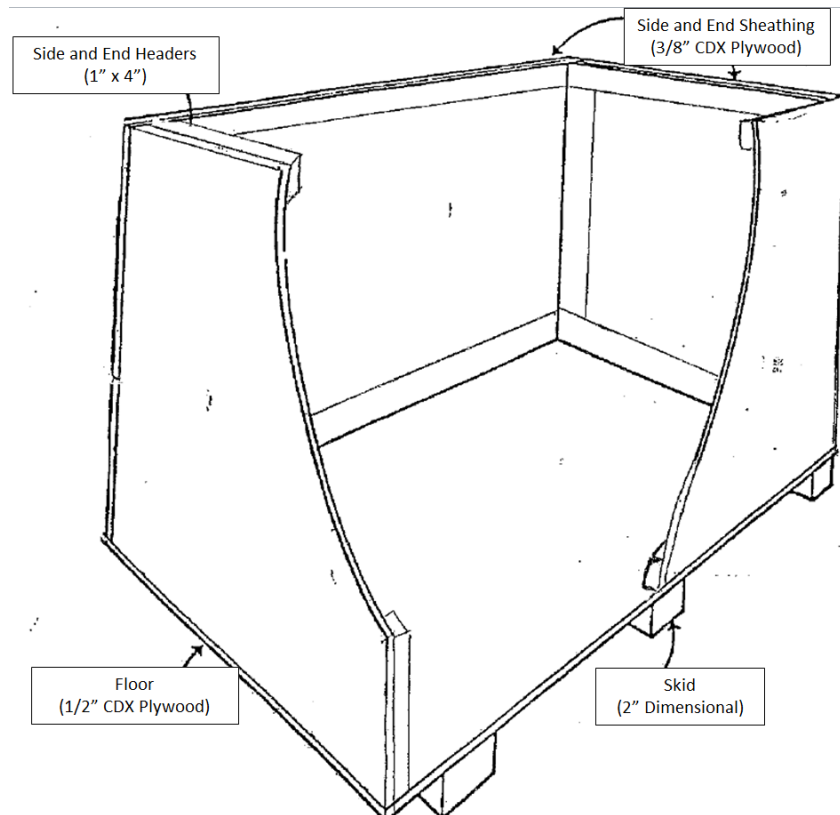


Figure 23: Illustration of Air, Ocean, HazMat Overpack Guide

Medium Duty Guide

Rated: 1,000 – 5,000 lbs. (454 – 2268 kg)

Side and end headers and uprights are to be 2" x 4" (5.1 x 10.2 cm). Side and end sheathing are to be constructed of 3/8" (0.95 cm) CDX plywood. Flooring is to be 2" (5.1 cm) dimensional boards.

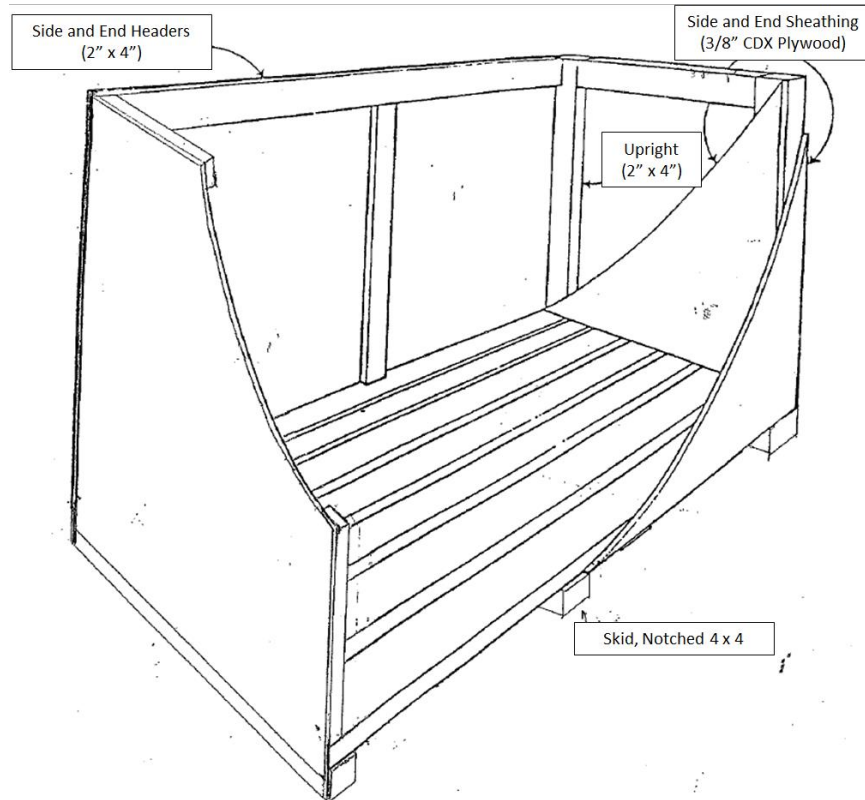


Figure 24: Illustration of Medium Duty Guide

Heavy Duty Guide

Rated: >5,000 lbs. (2268 kg)

Side and end sheathing must be 3/8" (0.95 cm) CDX plywood. Uprights and lower frame members must be 2" (5.1 cm) dimensional boards. Flooring must be 2" (5.1 cm) dimensional with 1/2" – 1 1/2" (1.3 x 3.8 cm) ventilation spaces. The skid must be constructed of 4" x 4" (10.2 x 10.2 cm) runners.

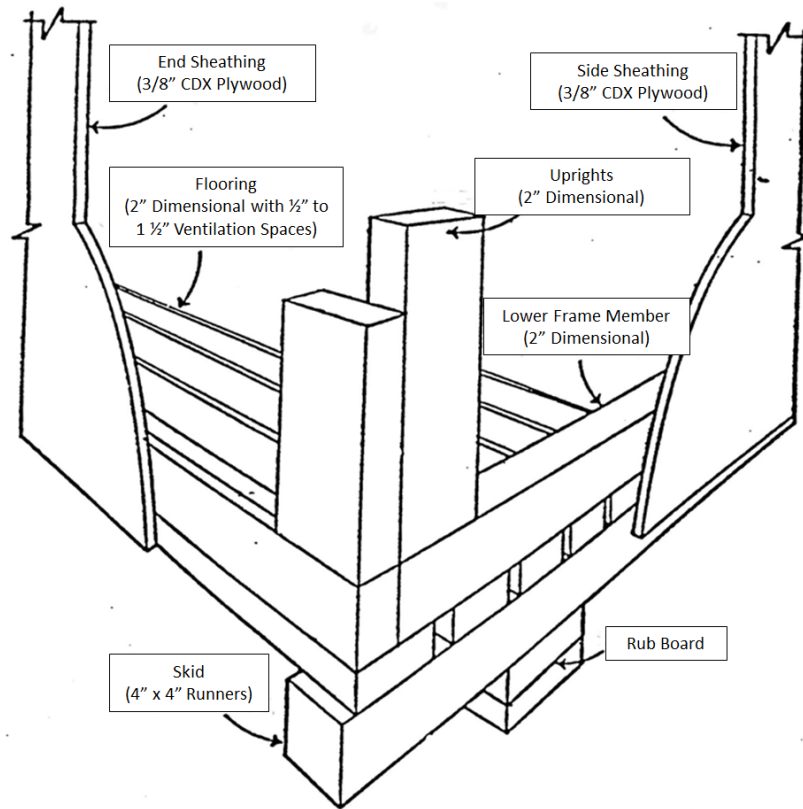


Figure 25: Illustration of Heavy Duty Guide

13.9 To ensure efficient use of truck/container space, crates should be custom-built for the size of the freight being transported without excess or unnecessary packing or dunnage.

13.10 Blocking and bracing within containers, skids, boxes is required to hold material and prevent movement and sliding. Braces and blocks will be placed against the structure being held in position in all directions.

13.11 “**HALLIBURTON**” shall be stenciled in RED block letters on three (3) sides of each crate along with a freight forwarder label to identify the forwarding agent for the movement (if applicable) as shown in Figure 26.

NOTE: This stenciling requirement is for crates only.

13.12 “Old” labels shall be removed from the crate or rendered illegible (i.e., blacked out) prior to forwarding.



Example of a Freight
Forwarder label

Figure 26: Example of Halliburton Stencil and Freight Forwarder Label

13.13 If the nature of the freight (tool construction, liquid content, etc.) necessitates the need for the crate to remain upright, orientation arrows must be clearly marked on two opposite sides of the crate.

13.14 Crates shall have stenciled or labeled (See Figure 27 for an example):

- Date
- Shipment Number
- Box Number
- Weights and Dimensions
- Ship-to Party



Figure 27: Example of crate label/stencil information

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14.0 Documentation

- 14.1** When a certificate of quality/conformity/analysis (CQ, COC, or COA) is required, the documentation must accompany the materials upon arrival (at the cross dock or alternate destination) or be available upon request, per the contract agreement.
- 14.2** For all hazardous material shipments, a Safety Data Sheet (SDS) shall be located with the packaging list.

15.0 Banding Requirements

- 15.1** Steel banding shall NOT be used on poly drums, poly pails, or bags. Poly or nylon banding shall be for these items.
- 15.2** The total strength of the banding shall be equal to or greater than the load both laterally and longitudinally. For example, if a load weighs 1,000 lbs. (453.59 kg), the banding must equal 1,000 lbs. (453.59 kg). Thus, two bands with a break strength of at least 500 lbs. (226.80 kg) each will be sufficient laterally, and the same banding is required longitudinally.

16.0 Pallet Specifications

- 16.1** The thickness of the deck boards shall be at least 5/8" (1.71 cm).
- 16.2** The height of the pallet shall be at least 4 ½ inches (11.43 cm).
- 16.3** The maximum space between the deck boards shall not exceed 1 ½ inches (3.8 cm).
- 16.4** The bottom deck boards must also be at least 5/8" (1.71 cm) thick, and at least 3 ½" (8.9 cm) wide.
- 16.5** The grade of the wood shall be Grade #4 or better.
- 16.6** All pallets must be four way entry types.
- 16.7** Heat treated (ISPM 15) pallets are required for all international moves. Heat treat stamps must be a deep color (black or brown – NOT red) and visible on two opposite sides. See Figure 28.



Figure 28: Illustration of heat treat stamp