
Construction of Crates, Skids and Boxes

Wood Materials

The species of wood, which shall be used for, lumber or plywood crates are as follows:

- a. Southern yellow pine
- b. Hardwood (Oak, Maple)

Lumber Materials

Lumber used shall be Heat-treated, free from loose knots and decay, and of a standard grade No. 4 pine or better. Knots in excess of one-third (1/3) the widths of the board are not permitted. Knots and knot clusters located so as to weaken boards or so located as to interfere with nailing or result in structural weaknesses will not be allowed.

Plywood

Minimum 3/8" thickness exterior grade CDX plywood will be used as determined by type of load, weight of contents and estimated worse condition to which the material will be subjected. Blocking and bracing should be of at least 2-in x 4-in nominal lumber or greater depending on the weight and nature of items or objects being packed.

Nails and Staples

Nails are for fastening plywood to frame members. Sometimes, staples may be used in place of nails. Follow general industry rules to determine the size, placement, and quantity of nails, when not specifically covered in detail requirements.

Bases (Skid Type)

Skid type bases shall consist of longitudinal skids and rubbing strips, headers, load-bearing floorboards and/or flooring. Bases shall be designed to support the weight of the crated article.

Skids

Skidding will be used, as applicable, to provide a foundation for heavy items that are not protected by other methods of packing. Specific style and lumber will vary with material.

Palletizing

Items that could be palletized include steel drums, heavy-duty fiberboard drums, etc. The steel drums, as well as the fiber board drums, will be secured to a pallet by banding with heavy-duty 1¼-in bands.

Bundling

Before bundling, materials must be segregated into common lengths and sizes. The practice of bundling shall be limited to such items as structural steel, pipe, steel bars, tubing, etc. Steel banding of 1¼-in x 0.039-in or 2-in x 0.049-in is required on all bundled steel pipe.

EXPORT CRATES

Framing and flooring materials shall all be #4 yellow pine or better commercial grade, free from excessive knots or splits.

STYLE 1 OCEAN FREIGHT CRATE

2" Flooring
2 X 4" Frame
3/8-1/2" CDX Plywood
Minimum: 4 x 4" Legs
Minimum: 4 x 4" Stringers

STYLE 2 OCEAN FREIGHT CRATE

2" Flooring
2 X 4" Frame
3/8-1/2" CDX Plywood
Minimum: 4 x 4" Legs

AIRFREIGHT CRATE

1" Flooring
1 x 4" Frame
3/8-1/2" CDX Plywood
2 x 4" Legs

Banding (Reinforcing Straps)

Banding shall be applied perpendicular to the edges of the surface over which they pass. They shall be straight and drawn tight so as to sink into the wood at the edges. A variety can be used depending on the box style: Steel Banding (1-1/4" ³/₄") or Cordstrap (1-1/4", 1")

ADDITIONAL CARGO PROTECTION

Vacuum Packing

Material used is Mil-B 131H.

Shrink Wrapping

10 mil plastic is used.

Water Protection

Either Asphaltic Paper or a 3 mil Plastic can be used inside the crate.

Desiccant

A 16-unit bag will absorb humidity.

Table of Loads and Material Sizes (in Inches)

| Load Net Wt. (LBS) | Style | Nominal Size of Skid\ Runner (in) | Flooring (in) | Plywood Sheathing (in) | Nominal Size of Frame Members (in) | Top Headers (in) | Joists (in) | Strap (in) | MAXIMUM LENGTH (Ft) |
|-------------------------------|--------------|--|-------------------------------|--|---|--------------------------------------|-----------------------------|----------------------------|---|
| 1-500 | 3 | 2 X 2 | ½ PLY | 3/8 | 1 X 4 | 2 X 4 | 2 X 4 | ¾ | 8 |
| 501-1000 | 2 | 4 X 4 | 2 | 3/8 | 2 X 4 | 2 X 4 | 2 X 4 | ¾ | 16 |
| 1001-1500 | 1 | 4 X 4 | 2 | 3/8 | 2 X 4 | 2 X 4 | 2 X 4 | ¾ | 16 |
| 1501-2500 | 1 | 4 X 4 | 2 | 3/8 | 2 X 4 | 2 X 4 | 2 X 4 | ¾ | 20 |
| 2501-3500 | 1 | 4 X 4 | 2 | 3/8 | 2 X 4 | 2 X 4 | 2 X 4 | 1 ¼ | 20 |
| 3501-4500 | 1 | 4 X 4 | 2 | 3/8 | 2 X 4 | 4 X 4 | 2 X 4 | 1 ¼ | 20 |
| 4501-6000 | 1 | 4 X 4 | 2 | 3/8 | 2 X 4 | 4 X 4 | 2 X 4 | 1 ¼ | 25 |
| 6001-8000 | 1 | 4 X 4 | 2 | 3/8 | 2 X 4 | 4 X 4 | 4 X 4 | 1 ¼ | 25 |
| 8001-15000 | 1 | 4 X 6 | 2 | ½ | 2 X 4 | 4 X 4 | 4 X 4 | 1 ¼ | 30 |
| 15001-35000 | 1 | 6 X 6 | 2 | ½ | 2 X 4 | 4 X 4 | 4 X 4 | 1 ¼ | |
| 35001-50000 | 1 | 6 X 8 | 2 | ½ | 2 X 6 | 4 X 4 | 4 X 4 | 1 ¼ | |
| 50001-80000 | 1 | 8 X 8 | 2 | ½ | 2 X 8 | 4 X 6 | 4 X 6 | 2 | |
| 80001-100000 | 1 | 10 X 10 | 2 | ½ | 2 X 8 | 4 X 6 | 4 X 6 | 2 | |