

April 20, 2016

TORO WOOD PACKAGING MATERIAL QUALITY STANDARD

REASON FOR REVISION:

The IPPC MARK AND ITS APPLICATION (section #17) needed clarification as to the number of markings and proper location of marking(s) given various crate designs and dunnage applications.

SCOPE: This standard covers all wood material used to package Toro finished goods. Changes and deviations to the standard must be approved through corporate packaging engineers.

PURPOSE: To provide acceptable minimum standards and tolerances for materials used. Non-conforming material will be rejected and replaced at the supplier's expense with material meeting the minimum acceptable standards.

GENERAL REQUIREMENTS:

A. INSPECTION: Wood material may be inspected prior to acceptance to determine that all materials, components, fabrication, and workmanship meet this wood quality standard.

B. MATERIAL STANDARD

- 1. GENERAL - The following are minimum standards.
2. WOOD SPECIES - The wood species group stated on the wood packaging specs is derived from the following group charts.

Table with 3 columns: GROUP I (Aspen, Cottonwood, Magnolia, Redwood, Spruce, Poplar), GROUP II (Fir, Hemlock, Larch, Pine, Tamarack), GROUP III (Ash, Elm, Gum, Maple, Sycamore, Tupelo)

1 Bomgehliia - Lowland Swamp Popple is not acceptable.
2 Southern Yellow Pine may be used as a substitute for Group III or IV wood species.

GROUP IV table with 2 columns: Ash, White; Beech; Birch, White; Elm; Hackberry; Maple, Hard; Hickory; Birch, Yellow; Pecan; Oak\*

\* Oak may be used when product is completely enclosed in a plastic bag and less than 30% moisture content (Domestic shipments only). Other species of wood should be used if feasible, because of the high acid content of oak.

Wood Species not listed are Unacceptable.

3. KNOTS

The average diameter knot can be no greater than one-third the nominal width of the piece.

No more than two maximum size knots, or their equivalent, in any six inch length. Additional such knots must be separated by at least four inches.

4. SPLITS AND SHAKES

Length of crack or grain separation can be no longer than one-half the width of the piece in end deck boards and all blocks, and no longer than the width of the piece in stringers, stringer boards, and inside boards. \*To help prevent splitting at ends of boards the minimum acceptable lap joint nailing area is 1.50 x 2.50".

5. WANE

Wane can be no more than one-third the width of one side of faceboard. Opposite side to be full face of wood. Wane can be unlimited in length, but no nail can be driven into it or through it. Any external layer of bark found in the wane **MUST** meet the definition of de-barked as defined in this standard.

6. WARP

No individual piece on any one pallet is to have deviation due to warp which is greater than X% of its measured dimension.

Bow: 1.5%  
Crook: 1.5%  
Cup: 2.5%

7. DECAY

No decay permitted.

8. COMBINED DEFECTS

Combination of knots, wane, and crossgrain at or near their limits must not exceed one combination of any two of these defects per piece. Splits, shakes, checks, and warp are permitted in any number of combinations, or in combination with the above defects as limited.

April 20, 2016

9. MOISTURE CONTENT

A. Maximum acceptable moisture content shall be 30%.

When a specific moisture % is needed, it will be stated on the specific spec.

Example: Kiln-Dried: 20% or less.

10. MOISTURE CONTENT TESTING

- a. The method of measurement will be near the center of an individual board's length and width.
- b. An isolation type probe will be used to eliminate surface type moisture readings.
- c. All readings will be at a probe depth of 1/2 the board's thickness up to a 1/2" maximum depth.
- d. Any individual board on a skid above specified moisture content constitutes an unacceptable skid.
- e. Boards should be dry and above 40 degrees Fahrenheit if brought in from outside storage.
- f. Excluded from this will be readings in close proximity of KNOTS AND SAP TYPE AREAS.

11. DIMENSIONS OF INDIVIDUAL & MULTIPLE PIECE COMPONENTS

Each individual piece shall be within a tolerance of:

- a. Specified length deviation:  $\pm 1/8''$ .
- b. Specified width deviation:  $\pm 1/8''$  unless exact is called for.
- c. Specified thickness deviation:  $\pm 1/16''$ .
- d. Acceptable tolerance on multiple piece assemblies is  $+ 1/16''$ ,  $- 1/8''$ .

12. SURFACING

Skids deckboards, stringer boards, and blocks may be furnished of rough lumber providing it meets the dimension tolerances as specified.

13. CROSSGRAIN

Slope of grain must not exceed 1" in 8" of length.

14. STAIN

Stain usually does not seriously affect wood strength, but its presence, however, indicates exposure to conditions that are also favorable to the development of decay. Stained pieces should be carefully examined for decay.

15. DE-BARKED WOOD MATERIAL

Timbers used in the packing of any Toro product **MUST** be made using "de-barked" wood as defined in this standard. See definition on the top of page #6.  
Material found by Toro to exceed "de-barked" tolerance levels will be rejected and replaced at the supplier's expense with compliant material.

16. INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES (ISPM15)

Unless otherwise noted on a specification, all materials must meet the minimum guidelines for regulating wood packaging material in international trade as stated in the latest ISPM15 standard. See link below.

<https://www.ippc.int>

17. THE MARK AND ITS APPLICATION (for wood crate and dunnage)

A mark indicating that wood packaging material has been subjected to approved phytosanitary treatment in accordance with this standard comprises the following required components:

- the symbol
- a country code
- a producer/treatment provider code
- a treatment code using the appropriate abbreviation according to Annex 1 (HT or MB).

**Symbol**

The design of the symbol (which may have been registered under national, regional or international procedures, as either a trademark or a certification/collective/guarantee mark) must resemble closely that shown in the examples illustrated below and must be presented to the left of the other components.

17. Continued from page #4

April 20, 2016

**Country code**

The country code must be the International Organization for Standards (ISO) two-letter country code (shown in the examples as “XX”). It must be separated by a hyphen from the producer/treatment provider code.

**Producer/treatment provider code**

The producer/treatment provider code is a unique code assigned by the NPPO to the producer of the wood packaging material or treatment provider who applies the marks or the entity otherwise responsible to the NPPO for ensuring that appropriately treated wood is used and properly marked (shown in the examples as “000”). The number and order of digits and/or letters are assigned by the NPPO.

**Treatment code**

The treatment code is an IPPC abbreviation as provided in Annex 1 for the approved measure used and shown in the examples as “YY”. The treatment code must appear after the combined country and producer/treatment provider codes. It must appear on a separate line from the country code and producer/treatment provider code, or be separated by a hyphen if presented on the same line as the other codes.

Treatment code	Treatment type
HT	Heat treatment
MB	Methyl bromide

As stated in the standard, the approved IPPC crate marking shall be: (See sample markings below)

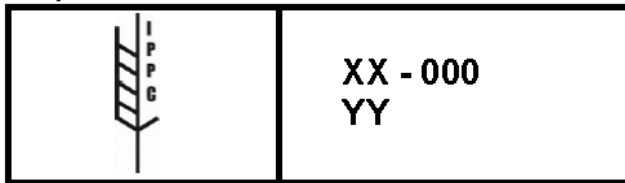
- Legible
- Durable and not transferable
- Placed in a visible location (see required locations below)
- Mark each **wood skid** or **pallet** in **TWO** places - preferably on two opposite sides of each unit or per the component specification drawing.
- On open “slat” style crating and OSB/lumber panel crates, add **ONE** IPPC marking onto **ONE** outside facing board (or panel) of any wood **SIDE or END** component. If in doubt as to which face is outside facing, mark **BOTH** sides of the component.
- For **corrugated sleeves with wood supports** attached by the wood supplier, add **TWO** IPPC markings – preferably on two opposite sides of each outside face of the sleeve where labels will not cover the marking or per the component specification drawing. Typically, the IPPC markings shall be positioned near the Toro (or brand) logo on a printed sleeve.

The examples below illustrate some acceptable variants of the required components of the mark that is used to certify that the wood packaging material that bears such a mark has been subjected to an approved treatment. No variations in the symbol should be accepted.

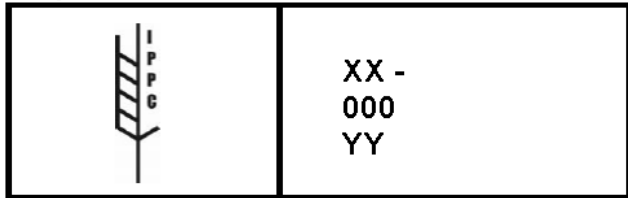
17. Continued from page #5

April 20, 2016

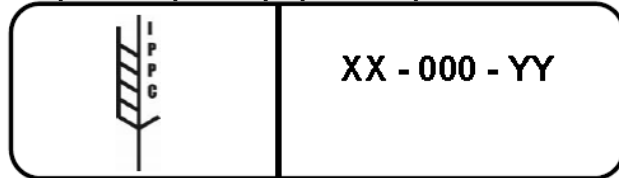
Example 1



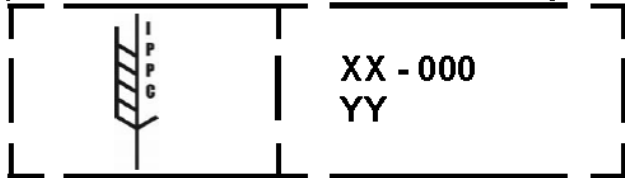
Example 2



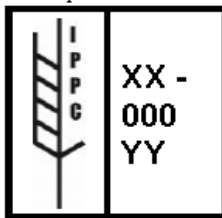
Example 3 (This represents a prospective example of a mark with the border with rounded corners.)



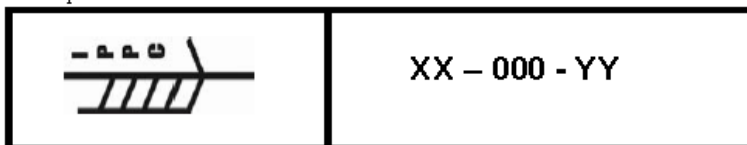
Example 4 (This represents a prospective example of a mark applied by stenciling; small gaps may be present in the border, and the vertical line, and elsewhere among the components of the mark.)



Example 5



Example 6



**Dunnage Marking**

April 20, 2016

Wood packaging materials required for blocking and bracing within export container shipments are considered “dunnage” and shall meet the following requirements.

As stated in the standard, the approved IPPC Dunnage marking shall be: (See sample markings below)

- Legible
- Durable and not transferable
- Placed in a visible location in TWO places, preferably on opposite sides of each component



**18. PREPARING WOOD PACKAGING MATERIALS FOR SHIPMENT INTO TORO**

Shipment of wood packaging components into Toro manufacturing facilities must utilize sufficient loading and bundling methods as required to maintain conformance to this F-102 material standard.

**19. THIRD PARTY MANUFACTURERS OF THE TORO COMPANY**

When shipping product containing wood packing materials, all third party (outside-manufacturers) must meet the minimum standards per F-102, meet ISPM15 guidelines and be made using “de-barked” materials as defined in this standard..

\*Non-compliant material found by Toro will be rejected and replaced at the supplier’s expense with compliant material.

**DEFINITIONS**

**BLOCKS**

Are square or rectangular wooden parts employed on some four-way pallets in place of stringers, and serve the same purpose.

**CROSS GRAIN**

Grain not parallel to the length of the piece either diagonal or spiral, or a combination of the two. Diagonal grain results from sawing a board at an angle other than parallel with the bark. Spiral grain results when the fibers of the tree grow spirally around the trunk instead of in a vertical course.

Important to pallet lumber as it relates to load bearing strength of the piece, as well as resistance to shock.

**DE-BARKED WOOD**

Wood packaging material must be made of debarked wood. For this standard, any number of visually separate and clearly distinct small pieces of bark **MAY REMAIN** if they are:

- less than 3 cm (1 3/16") in width (regardless of the length) or
- greater than 3 cm in width, with the total surface area of an individual piece of bark less than 50 square cm. For example - no larger than the size of a standard credit card.

**DECAY**

Disintegration of wood substance through the action of wood-destroying fungi.

Decay is important in relation to loss of strength properties and is proportional to the percentage it occupies in the piece.

**DECKBOARDS**

Are the boards which make up the faces of a pallet, and which either carry or rest upon the goods packed thereon.

**KNOTS**

That portion of a branch or limb which has been surrounded by subsequent growth of the wood of the trunk or other portion of the tree.

- a. Loose or Decayed - Where knot will drop out leaving a hole, or due to advanced decay, has no structural strength.
- b. Sound Knot - Which is solid across its face and at least as hard as the surrounding wood and with no indication of decay.

In pallet parts, the size of a knot is measured at its greatest dimension across the width of the piece.



**SPLITS AND SHAKES**

A lengthwise separation or crack in the wood due to the tearing apart of the wood cells. The maximum allowable visible split, check or shake length not to exceed 1/2 the width of any board.

- a. Splits - Longitudinal cracks that extend through the full thickness of a board.
- b. Checks - Longitudinal cracks generally in the radial direction or across the annular rings resulting from shrinkage in seasoning.
- c. Shakes - Longitudinal cracks generally between annular rings that extend lengthwise beyond the visible opening.

Splits, checks and shakes have an effect on the strength and serviceability of pallet lumber depending upon their length, size, and location as they relate to nails and their susceptibility to impact.

**STAIN**

Discoloration of wood caused by certain fungi or by oxidation of extractives from contact with other material. Not to be confused with decay.

Stain is relatively unimportant in pallets except as a detraction in appearance.

**STRINGERS**

Are the wooden runners to which the deckboards are fastened, and which serve as a spacer between the top and bottom decks to permit the entry of mechanical handling devices.

**STRINGER BOARDS**

Are boards used over blocks below the deckboards on the four-way block type pallet.

**TIMBER PACKING**

Includes Crates, Cases, Dunnage, Pallets, Skids and any other timber used as a shipping aid.

**WANE**

Bark, or lack of wood from any cause on edge or corner of a piece of lumber.

The importance of wane as a defect, apart from appearance, depends upon its width, depth, length, and location. The loss of strength is proportional to the percentage it occupies in the piece. Also, nails should never be driven into it or through wane.

April 20, 2016

**WARP**

Any variation from a true or plane surface. Warp includes bow, crook, cup, and twist or any combination thereof.

- a. Bow - Deviation flatwise from a straight line from end to end.
- b. Crook - Deviation edgewise from a straight line from end to end of a piece.

**WARP** Continued from page #9.

- c. Cup - curve in a piece across the grain or width of a piece. Measured by placing a straight edge across the width and measuring the point of greatest deflection. Slight cup measure up to 1/4"; medium up to 3/8"; deep cup up to 1/2" - all based on a board 12" wide. Cup in a 6" board measures half as much or in like proportion for other widths.

Warp is important as a defect in pallets in both dimensional deviation as well as loss of bearing surface and nail holding power.