


AMERICAN FOREST & PAPER ASSOCIATION

American Wood Council

Engineered and Traditional Wood Products



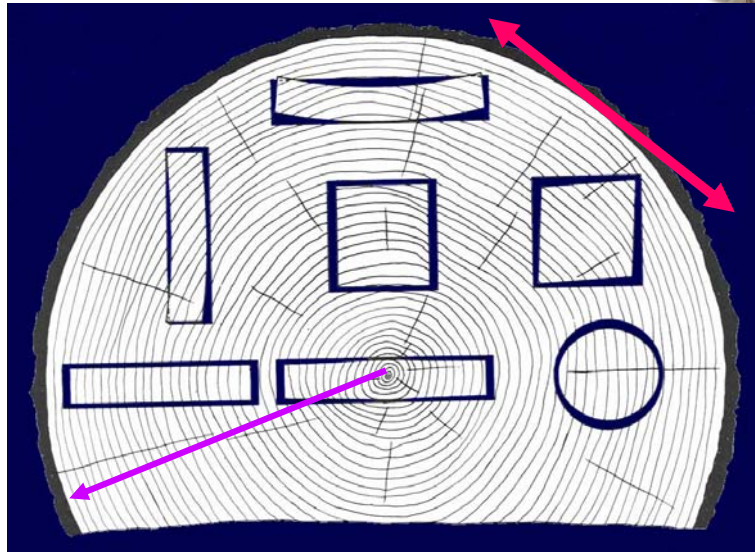
The header of the slide features the American Forest & Paper Association (AF&PA) logo on the left, the American Wood Council logo in the center, and logos for NDS and WFCM on the right. The American Wood Council logo includes the text "Engineered and Traditional Wood Products" and "Developers of internationally recognized standards for wood design and construction".

MAT102: Characteristics of Wood

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This section of the program is a short discussion of the characteristics of wood that can (1) affect its appearance, (2) affect its serviceability, or (3) cause questions about its acceptability. This material isn't addressed in the codes, but it is general information that is useful.


Characteristics




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As the moisture content in the cells of wood products changes, particularly as it dries out, wood members can change shape if the change in moisture content isn't done in controlled conditions. As wood dries out the amount of shrinkage differs in the various directions. Shrinkage is limited parallel to the grain of the wood. It's greatest when measured in a tangent to the growth rings. The amount of shrinkage along the radius of the wood is less than that tangentially. Depending upon where in the log the member is cut from, uncontrolled drying can cause wood members to exhibit unusual shapes as shown here in this exaggerated illustration.

Characteristics




Shake



Split

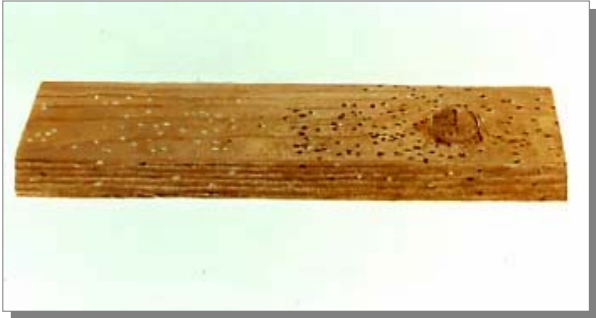
Considered in grading



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Uncontrolled drying can also cause separation of the wood fibers. This can happen after the piece of lumber leaves the mill and is exposed to moisture prior to being incorporated into the framing. The condition in which the fibers separate across the growth ring, as shown here, is called a split. Some small amount of splitting is acceptable under the grading rules for lumber, the amount depending upon the grade of the piece. However, excessive splitting which may affect the member's useability, is a condition that may warrant disapproval of that piece.

Characteristics



White speck

Considered in grading

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Here's another moisture-related condition that you may see on lumber, but it's a condition that is NOT a problem. As we'll talk about in more detail later, wood-consuming organisms need, among other things, moisture to live. What you see here is condition in which organisms in the log began to eat the wood fiber. After the piece of lumber was cut and dried out, the organisms became dormant. Any strength-reducing damage that might have occurred has been reflected by the grade of the piece of lumber. As long as this lumber isn't subjected to moist conditions again, the damage to the wood won't get any worse than what was seen when it was graded.

Characteristics



Decay


Not permitted by grading rules

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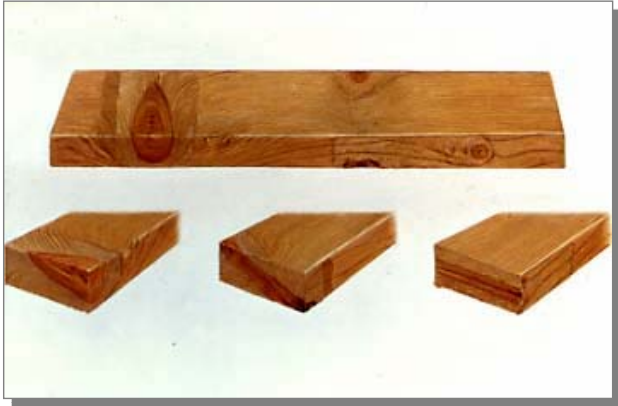


What you see here is a moisture-related condition that is a problem. In spite of the fact that we often refer to this dry, corky condition as “dry rot,” decay requires the lengthy presence of moisture. No amount of decay is permitted in the grading rules, and this condition occurred at some point after the lumber left the mill.

Characteristics



Knots




Considered in grading : size, number, location


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A common condition in a piece of lumber is the presence of knots. Knots are in-grown limbs. Their presence in a piece of lumber is one of several factors in determining the grade of that piece of lumber – their size, their locations, and the number of knots. From a practical standpoint, one of the problems that knots present is the fact that they often make nailing difficult if they're located at a point where nails will be driven.

Characteristics



Wane



Considered in grading

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Wane is a condition in which the piece of lumber includes a portion of the outer edge of the log from which it was cut. Often some of the bark is still present, although what you may see may just be the curved surface of the log with no bark. A certain amount of wane is permitted by the grading rules, and the only practical problem that it presents is that wood fiber is missing, making a connection difficult or reducing bearing surfaces.

Characteristics

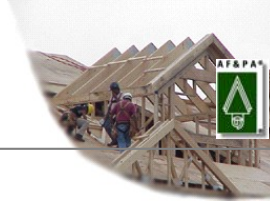
- Moisture affects
 - Shrinkage & expansion
 - Decay
- Control is important



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Although not addressed in the codes, as we've seen the uncontrolled wetting and drying of wood, or the long-term presence of moisture, causes problems in lumber and other wood products. Proper storage of the materials on the job site is critical. As shown here, they should be stored off of the ground, and they should be covered to protect them from rain.

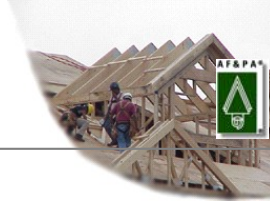
Characteristics



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The undesirable conditions that we've seen often result from job site storage such as this.

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QUESTIONS?

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