

the American grading system...

Visual Grading is the most common type of grading performed on lumber in the U.S. * A grade stamp on each piece of lumber as it leaves the mill. Visual grading is done based on both appearance and strength factors. The grader marks each piece of lumber according to such factors as:

Number, size, and position of knots and holes

Bark on edges

Decay

Checks and splits

Machining defects

Twisting, bowing, and warp

Species

Rules for grading are established by the U.S. Department of Commerce and maintained by the American Lumber Standards Committee. These standards are enforced by regional organizations (e.g. Western Wood Products Association, Northeastern Lumber Manufacturers Association, Southern Pine Inspection Bureau, West Coast Lumber Inspection Bureau, and others). Three years of training are required to become a grader, and in Washington each grader is required to pass the Western Lumber grading rules exam. A grader is very important to the mill because he is responsible for separating lumber products into appropriate strength categories. At the mill shown in the picture, seventy-two pieces of lumber per minute are graded by three graders.

*Lumber is grouped into different categories such as: dimension lumber, boards, and timbers based on the following cross-sectional dimensions.

Boards: 1 to 1.5 inches thick, 2 inches and wider

Dimension Lumber: 2 to 4 inches thick, 2 inches and wider

Timbers: 5 inches and thicker, 5 inches and wider

Dimension lumber is further subdivided into five categories based on size classifications. These classes are structural joists and planks, studs, decking, light framing, and structural light framing. After the dimension lumber has been separated, the grader assigns a grade.

Structural light framing lumber has nominal dimensions of 2" to 4" thickness and 2" to 4" width, and typically* divided into four separate grades: select structural, No. 1, No. 2, and No.3. Select Structural is the best grade in terms of strength characteristics and also the most expensive, No. 1* is the second best, and so on. Light framing lumber has nominal dimensions of 2" to 4" thickness and 2" to 4" width and is divided into three separate grades: construction, standard, and utility. Construction is the best in this case.

Stud lumber has nominal dimensions of 2" to 4" thick* and 2" to 6" wide.* There is only one grade of stud lumber.

Decking is divided into two grades: select decking and commercial decking. Select decking is best in this case.

Structural joists and planks has nominal dimensions of 2" to 4" thickness and 5"

or greater width, and are typically divided into four separate grades: select structural, No. 1, No. 2, and No.3.

Timbers are also subdivided into two* groups by size classification: Beams and Stringers and Posts and Timbers. Again, after the lumber has been separated, the grader assigns a grade.

Visual grades of posts and timbers (nominal dimensions of* 5" and thicker and width not more than 2" greater than thickness) are dense select structural, Dense No. 1, No. 1, and No. 2. Dense select structural is the best grade in terms of strength characteristics and also the most expensive, No. 1 is the second best and so on.

Visual grades of beams and stringers (nominal dimensions of* 5" and thicker and width more than 2" greater than thickness) are dense select structural, Dense No. 1, No. 1, and No. 2. Dense Select Structural is the best grade in terms of strength characteristics and also the most expensive, No. 1 is the second best and so on. Board lumber is graded by evaluating the better face of the board. Natural and manufacturing defects are considered, but strength is not a critical factor (unlike the grading of dimension lumber).

The highest classification of board lumber is called select grade. Select grade is further divided into three categories: B & Better, C Select, and D Select. B is the best but all of the select grades are used in demanding finishing applications.

The next classification is called common grade. Common grade boards generally contain more knots than the select grade. Common grade is divided numerically from 1 to 5 with 1 being the best in appearance. No. 3 and No. 4 common grades are most frequently used for such applications as sheathing or sub-flooring.

there is this and it will take some time to get all the way through it...

[Lumber - Wikipedia, the free encyclopedia](#)

found this...

<http://www.timbersource.co.uk/hardwood/european-ranges/>

and this...

[http://www.forestry.gov.uk/pdf/MTG-WEB.pdf/\\$file/MTG-WEB.pdf](http://www.forestry.gov.uk/pdf/MTG-WEB.pdf/$file/MTG-WEB.pdf)

The class system of rating woods threw me and after reading several of the other posts I'm still not sure...

The Janka hardness scale comes to mind but I suspect that it doesn't apply here... (see chart)... Australian Bullock (sp) isn't on this chart but the stuff is like working with cast iron and tops the hardness chart...

As for durability you and other guys got me to wondering and I found this information..

Note: Old growth or reclaimed can easily be found if you look for it..

A number of native North American woods have reputations for heartwood

durability. The USDA Forest Products Laboratory "Wood Handbook" lists heartwood of the following species as "Resistant or very resistant" to decay:

Bald cypress (old growth only), Black locust(**1**), Post oak, Catalpa, Mesquite, White oak, Cedars, Red mulberry(**2**), Osage orange(**3**), Black cherry, Bur oak, Redwood, Chestnut, Chestnut oak, Sassafras, Arizona cypress, Gambel oak, Black walnut, Junipers, Oregon white oak, Pacific yew....

1 Exceptionally high decay resistance...

2 Exceptionally high decay resistance...

3 Exceptionally high decay resistance...

Recent experience with redwood, Western red cedar, and bald cypress have indicated heartwood now available from these trees may not be so durable as that formerly used. Perhaps it's because of coming from younger trees. However, old growth, ``close-grained" redwood heartwood, used above ground, does have a reputation for resistance to termites.

Here's more...

When most people hear the word "durability" in relation to wood, they immediately think of its ability to withstand dents and scrapes. However, in this context it specifically refers to a wood's ability to resist elemental and natural forces of decay. (The former notion of durability equating to physical toughness would be better explored through Janka hardness and Modulus of Rupture values.)

Degradation can occur from fungus (caused by cycles of rain/moisture), or from termites or other boring/destructive insects. An overall chart defining the terms used to describe a wood's durability in direct ground contact:

Classification Service Life(in years)

Very Durable 25+

Durable 15-25

Moderately Durable 10-15

Non-Durable 5-10

Perishable less than 5

This durability assessment is only based on the tree's heartwood, and not its sapwood—as only the heartwood, due to its extractives, has any appreciable degree of durability; in nearly all instances, sapwood should be considered perishable.

Some genera of Bamboo are only expected to last 6 months to 3 years in direct

ground contact. On the other end of the spectrum is wood such as Teak, which is well-known for its durability, and is frequently used in boat building and other outdoor applications.

In addition to the length of time the wood can physically maintain its structural integrity, there's also the matter of a wood's weathering characteristics. Weathering can't be as clearly expressed in a single number or measurement, but overall, woods with good weathering characteristics exhibit limited photo-degradation (caused by UV rays in sunlight), as well as above-average resistance to contraction and expansion, warping, and surface checking due to seasonal changes in temperature and humidity.

Because of this vague definition, only woods that have notably good (or notably poor) weathering characteristics will be noted. (Again, Teak is noted for both its excellent durability and its superb weathering characteristics.)

Way more reading

[Home : Woodspec -](#)

www.timber.net.au - The Australian Database of Timber - Natural Durability Ratings

[As 5604-2005 Timber - Natural Durability Ratings](#)

[AS 5604-2003 timber - natural durability ratings - Freestd - Australia Standards\(AS\)](#)

this one will knock your socks off

[Predicting timber](#)

You may want to get some lunch to go with this...

Reference Number:

PN07.1052

Other Attachments:

application/pdf iconManualNo1-ClimateData.pdf

application/pdf iconManualNo2-Reliability Equations.pdf

application/pdf iconManualNo3-IG Decay.pdf

application/pdf iconManualNo4-AG decay.pdf

application/pdf iconManualNo5-AtmosphericCorrosion.pdf

application/pdf iconManualNo6-EmbeddedCorrosion.pdf

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Haven't hit bottom yet...

<http://www.woodsolutions.com.au/Resources/Publications/>

Publications

The following publications include a range of useful design guides and span tables from WoodSolutions and other industry bodies.

Installation Guides

To maximize the service life of timber products a series of installation guides have been produced to provide designers with an understanding of planning requirements when using timber in construction and offer installers information that ensures correct installation to maximize the service life of the products.

Technical Design Guides

A number of design guides have been developed to provide designers with the information necessary to maximize the aesthetic and technical performance of timber and assist with the development of constructions and products that conform to the required standards through out Australia.

Other Publications

Cross Laminated Timber (CLT) Handbook

Cross laminated timber (CLT) offers many advantages to designers and builders. It is increasingly used in multi-storey structures worldwide. Download the free WoodSolutions Handbook.

R-Values for Timber Framed Building Elements

A handy eighty page reference for architects, building designers or anyone requiring R-values of common timber framed structures. Download a free copy of R-values for Timber-framed Building Elements