

# LUMBER GRADING

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## *Definition*

"Lumber grading is the classification of lumber so as to place them on the same market in uniform size, shape and qualities irrespective of the character and size of the trees that produce them. Thus the grade of a given species can compete on the same basis on the same markets, irrespective of the varying conditions of manufacture in the same nature and kind of forest where their mills are located.

"The fundamental basis of grades is free from defects. The location, position, form, number and size of visible defects and blemishes determine the grade of every species."

## *Brief History of Lumber Grading in the Philippines*

Grading rules governing the inspection and measurement of Philippine lumber have been promulgated on February 7, 1919. Three years later, on November 7, 1922, a revised grading rules was issued by the Bureau of Forestry. This revised grading rules have since been in use up to the present time.

The Bureau of Forestry trained many of its personnel and a number of representatives from various lumber companies and exporters the phases of grading lumber. Many others, in the course of their work with the already trained lumber graders in the government or in the different lumber companies, have learned and became experts in this work.

The lumbermen have ever since been urged by the government to have their lumber graded before placing them into the local market. Thus the public may be able to buy lumber according to classifications.

However, lumber grading has only been confined to lumber for export.

## *Grading Rules Used*

Presently, there are two rules being used in the classification of lumber for export. They are (1) the Grading Rules governing the Inspection and Measurement of Philippine Lumber (commonly known as the Philippine Bureau of Forestry [BF] rules) and (2) the National Hardwood Lumber Association (NHLA) Rules for the Measurement and inspection of Hardwood Lumber, Cypress Veneer and Thin Lumber, for Philippine Mahogany, of the National Hardwood Lumber Association, Chicago, Illinois, U.S.A. The latter rules for grading have become so popular and are often used, while the former are seldom and sometimes never used in the classification of export lumber from the Philippines.

## (1) Grading Rules governing the Inspection and Measurement of Philippine Lumber

Although there are other specifications under the grading rules for Philippine lumber, this article shall only discuss the grade so often specified for grading export lumber, which is *merchantable*. Copies of the Grading Rules to include the said "other specifications" may be obtained from the Director of Forestry, Manila.

"Merchantable corresponds to lumber sold in local markets for ordinary house construction, temporary construction, etc. and exported for other than cabinet purposes.

The specifications of this grade are as follows:

"1. Variations in sawing same as in 'clears'. Sound stained sap not considered a defect in this grade.

2. Up to 4" in thickness, this grade will admit all sound lumber that does not contain defects seriously impairing the strength of the piece for ordinary or temporary structural purposes.

3. Timber from 6" x 6" upward, this grade will admit boxed heart, provided heart cracks do not extend to more than one face; also sunchecks, pitch pockets, slight shakes, heart cracks, sound sap, knots or other defects not seriously affecting the strength of the piece.

4. Pieces containing more sap than heartwood shall be excluded from this grade. In determining this, the solid contents and not surface measure should be taken into consideration."

(2) The National Hardwood Lumber Association Rules for Philippine Mahogany

Among other grades, the NHLA standard grades popularly used in the classification of Philippine lumber for export specified by buyers are as follows:

- (a) First and Seconds
- (b) No. 1 Common
- (c) No. 2 Common
- (d) No. 3 Common

Deviations from some of the above-mentioned standard grades are sometimes specified by the buyers in order to admit pinworm holes that are found in the lumber. The following grades may be specified:

- (a) Firsts and Seconds Pin Wormy
- (b) No. 1 Common Wormy

A typical example of specifications by which the grade of lumber is determined with the NHLA rules is exemplified by the specifications of Firsts and Seconds, as follows:

"53. Widths: 6" and wider.

54. Lengths: 8' to 16' admitting 30% of 8' to 11' of which one-half may be 8' and 9'.

55. Pith, boxed or showing on the surface, shall not be admitted when exceeding

in the aggregate in inches in length, the surface measure of the piece in feet.

56. Wane (bark or the lack of wood) exceeding in the aggregate one-twelfth the surface measure of the piece shall not be admitted; nor shall either edge of the piece have wane in the aggregate exceeding one-half of the length of the piece.

57. Splits exceeding in the aggregate in inches in length twice the surface measure of the piece in feet shall not be admitted, nor when diverging more than one inch to the foot in length, except when one foot or shorter and covered by Paragraph 59. In any series of special widths sold 10" or wider, splits exceeding in the aggregate in inches in length, the surface measure of the piece in feet, shall not be admitted, nor when diverging more than one inch to the foot in length, except when one foot or shorter and covered by paragraph 59.

58. The average diameter of any knot, or hole, shall not exceed in inches one-third the surface measure of the piece in feet.

59. Within one lineal foot from the ends of the boards not less than 50% clear face is required, not over 25% unsound wood or wane shall be admitted. The required 50% clear face shall be computed in not more than two pieces of any shape.

60. Warp and cup shall not be admitted if sufficient to prevent the board from dressing two sides of standard thickness in accordance with the rules for lumber dressed two sides, except that slightly cupped or warped pieces 12" and wider are admitted if they can be ripped to produce two pieces each of which would grade Firsts and Seconds and then not contain warp and cup which would prevent the ripped pieces from dressing two sides to standard thickness in accordance with the rules for lumber dressed two sides. The exception as to pieces 12" and wider shall not apply to contracts for lumber, in special widths 10" and wider.

61. Minimum cutting: 4" wide by 5' long, or 33" wide by 7' long."

Additional specification for grading Philippine Mahogany lumber:

"In Firsts and Seconds, bright sapwood not exceeding in the aggregate one-third the width of the piece will be admitted on one face. Any part of the sapwood may be included in the cutting."

For the purpose of brevity, the specifications of the other NHLA grades mentioned in this article shall not be described. Reference therefor may be made with any of the editions of the NHLA Rules for the Measurement and inspection of Hardwood Lumber, etc. published by the National Hardwood Lumber Association of Chicago, Illinois, U.S.A. A copy of this publication may be secured or borrowed from any lumber grader serving in the government or lumber companies and exporters. Copies may also be obtained from some book stores. However, some changes in the general instructions, specifications and other section of the rules are made by the Association from time to time. Thus one edition of the NHLA rules may differ from another. Such changes should be properly noted and placed them up to date.

#### *NHLA and BF Rules Compared*

For the purpose of comparison with the Bureau of Forestry grades, it will be necessary to group the NHLA standard grades, as follows:

##### **GROUP I**

1. Firsts and Seconds
2. No. 1 Common
3. No. 2 Common.

##### **GROUP II**

1. Firsts and Seconds Pin Wormy
2. No. 1 Common Wormy
3. No. 2 Common
4. No. 3 Common

It will be noted that No. 2 Common appears in both groups I and II. Lumber with pinworm holes is not admitted under

this grade, except when pinworm holes are treated as equivalent of other defects and appear only outside the clear face cuttings. This grade is sometimes so specified by the buyers of Philippine lumber, hence, it is placed in group I where the grades do not admit pin wormy lumber. Sometimes, however, grades lower than the NHLA No. 1 Common is not specified but instead the Bureau of Forestry grade, merchantable, is used. Such specification often places a NHLA No. 2 Common under the said BF grade. Thus No. 2 Common is likewise placed under group II.

Merchanable (BF) grade may not always be lower than the No. 1 Common (NHLA) grade but it admits most, if not all, of the defects not admitted in No. 1 Common and some lower grades. Likewise, the NHLA grades in group II admit limited defects mentioned in the specifications for the BF merchantable grade. Thus group II (NHLA grades) and merchantable (BF grade) have similarities. In most cases, perhaps for convenience between the buyer and the seller, the grades mentioned under group II are no longer specified. Instead, the merchantable grade is used. Hence most, if not all, of the lumber that may be classified as FAS Pin Wormy, No. 1 Common Wormy, No. 2 Common and No. 3 Common, if the NHLA rules were used, will only be classified as merchantable.

#### *The NHLA Rules may be Adopted*

In general, the NHLA standard grades are determined by the number, kind, size, form and location of defects, and by the number, size, and percentage of clear face (no defects) cutting or cuttings with respect to the surface measure (area in square feet of one face) of the lumber. These grade may have been evolved scientifically according to the strength and other properties of the lumber in each grade.

The fact that the NHLA rules are particularly accepted for grading lumber for the

purpose of having uniform grades with those in the export market, it is also adoptable for the grading of lumber for local use.

#### *Schemes of Lumber Prices*

Price differences of lumber in the local market, particularly for rough lumber, exist only according to the Bureau of Forestry grouping of timber under which the species fall. Prices are often based according to the strength and durability of each species, and not by the grades of the lumber produced from it. Under this price scheme, one buys lumber, whether it is the soundest or whether it contains the worst defects, at the same cost.

Should there be grading of lumber before they are placed in the local market, there should also be different prices for the different grades. Under this scheme, the lumber dealers may also give different price rates for graded lumber of different species. One can then buy graded lumber at rated prices and properly use each lumber to advantage. In the export market, the price of lumber is based according to classification.

#### *Use of Graded Lumber for Ordinary Construction*

The right use of graded lumber described in an article of the Popular Mechanics magazine, issue of October, 1954, entitled "The Right Grade of Lumber Saves Money", using FHA specifications, may be used as a guide for ordinary construction purposes.

Although the "FHA specifications" mentioned in the article was not defined, it may as well be compared with the NHLA standard grades so popularly used in classifying Philippine lumber for export.

The following are house construction parts and their corresponding grades as gathered from the said article in the PM magazine, which may be used or modified to suit the desire of the home builder:

<i>Construction parts</i>	<i>Grade</i>
1. Joists (long span)	No. 1 & No. 2
2. Rafters (long span)	No. 1 & No. 2
3. Floor	No. 2 & better
4. Sidings	No. 2 & better
5. Studs (1st floor)	No. 2
6. Plate or mud sills	No. 2
7. Box sill	No. 2
8. Joists (short span)	No. 3
9. Rafters (short span)	No. 3
10. Studs (2nd floor)	No. 3
11. Sub-floors	No. 3
12. Walls	No. 3
13. Roof sheath	No. 3
14. Posts	No. 3
15. Girders	No. 3
16. Bridging	No. 3
17. Firestops	No. 3

Posts, beams, girders, rafters, chords, purlins, flooring, sidings, doors, stairs, etc. are not graded before they are used in most building construction in the Philippines because of the presence of a variety of durable species for such special purposes, like: yakal, quijo, apitong, bakauan, narra, amugis, etc. Perhaps this is one reason why the local lumber users are not very particular about the use of any graded lumber for building constructions.

However, where different species for different use is not available, it would be wise to secure lumber even of the same species provided such have been properly classified. By the proper use of graded lumber, a building may not last as long as one built with the best ungraded lumber just used anywhere, but it will at least last until the strength of all the piece used give way evenly at a certain expected lifespan. In using graded or classified lumber, the builder will also spend much less.

"Your home's soundness is highly important, but if you demand the best lumber throughout, you do not necessarily get a better house—it just costs you more.", to quote from the PM magazine. It added

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