

forestry & natural resources

MARKETING AND UTILIZATION

Hardwood Log Grades and Lumber Grades: Is There A Relationship?

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Are you currently using a hardwood log grading system? If so, can this system accurately predict the yield of lumber by grade, for each species, diameter, and grade of log?

The United States Forest Service (USFS) has developed a set of hardwood log grading rules. Yield tables, which predict the volume of lumber by National Hardwood Lumber Association (NHLA) grade, species, and diameter class, have also been developed for these log grades. These yield tables are based on approximately 11,000 logs sawed at 28 sawmills in the northern, central, and southern hardwood regions.

Hardwood lumber grades were established so that both buyers and sellers would have a uniform basis for assessing the quality of the product being exchanged. Lumber grades also enabled buyers and sellers to compare price structures and, thus, establish a free and competitive market. A uniform log grading system could be used in the same manner. Buyers and sellers would know more precisely the quality of product being exchanged and, thus, its potential value.

Before the relationship between the USFS log grades and the NHLA lumber grades can be discussed, a brief review of the general requirements of each is necessary.

Lumber Grade Review

In their most simplified form, NHLA lumber grades are based on the minimum size of board, the minimum size cutting permitted, the maximum number of cuttings permitted, and the area of the board required in clear face cuttings.* These requirements are summarized in Figures 1-4.

*A cutting is a portion of a board or plank obtained by cross-cutting or ripping, or by both. A clear face cutting is completely free of defects except ordinary seasoning checks.

Log Grade Review

In grading a hardwood log, the USFS log grades for factory lumber specify that as many defects as possible be placed in one log face. The log grade is then based on the worst of the three remaining faces (Figure 5). The diameter inside bark (DIB), length of log, length of clear cutting, the maximum number of cuttings permitted, and the proportion of the log length required in clear cuttings must also be considered. These requirements by log grades are summarized in Figures 6-9.

Comparison of Log and Lumber Grades

Direct comparisons between the percentage of clear cutting areas and the clear cutting lengths can be made between the USFS log grades and the NHLA lumber grades. The percent of clear cutting areas required for both logs and lumber is shown below. Number 1 logs and Firsts and Seconds (FAS) lumber both require 83 1/3% or 10/12 in clear cuttings. Number 2 logs and Number 1 common lumber require 66 2/3% or 8/12, while Number 3 logs and Number 2 common lumber require 50% or 6/12 in clear cuttings. See Figures 10-12.

A similar relationship exists in the clear cutting lengths permitted. Number 1 logs require 7 foot minimum length clear cuttings for 13-to 15-inch DIB logs and 5 foot lengths for 16-to 19-inch logs. Logs larger than 19 inches DIB will allow 3 foot long cuttings. The minimum size cutting for FAS lumber is 3 inches by 7 feet or 4 inches by 5 feet. See Figure 13.

A Number 2 log requires a 3 foot minimum clear cutting length. Number 1 common lumber requires cuttings 3 inches by 3 feet or 4 inches by 2 feet. A Number 3 log and Number 2 common lumber both require clear cutting lengths of 2 feet or more. See Figures 14 and 15.

The application of log grades, like lumber grades, will require a conscious effort on behalf of

management. Initially, extra time will be required to learn and apply the rules. However, since the Forest Service log grade rules and NHLA lumber grades rules are similar in many aspects, the application of hardwood log rules should not be difficult for anyone with a basic understanding of hardwood lumber. Once the log rules are implemented, a basis for lumber recovery by log grade is established. Knowing lumber recovery and value in terms of products produced helps establish log prices for a specific operation. Knowing log grades and expected lumber yields, will also help in inventory control.

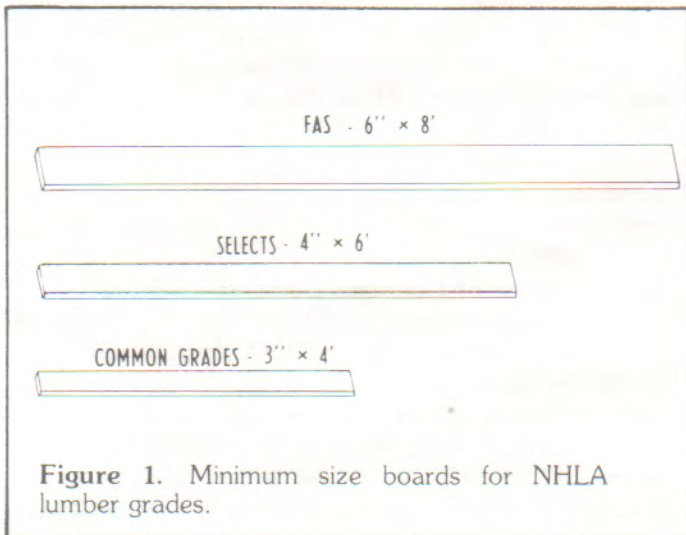


Figure 1. Minimum size boards for NHLA lumber grades.

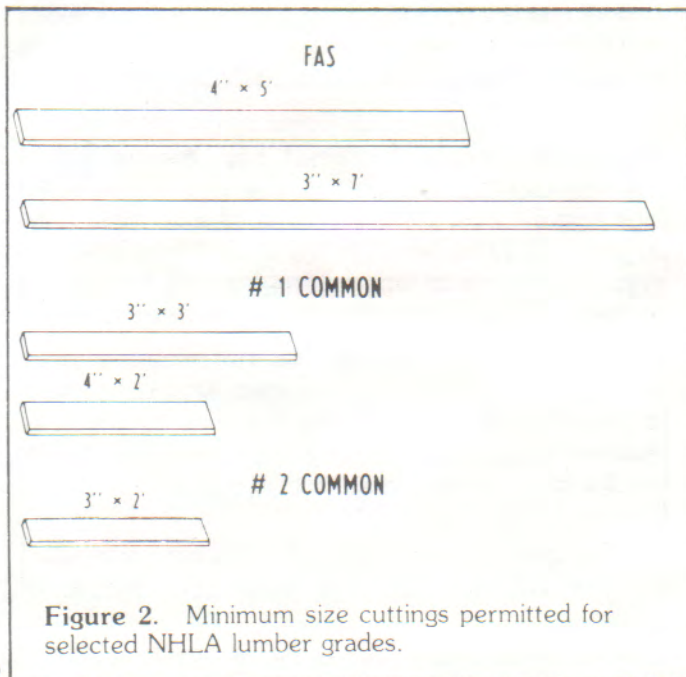


Figure 2. Minimum size cuttings permitted for selected NHLA lumber grades.

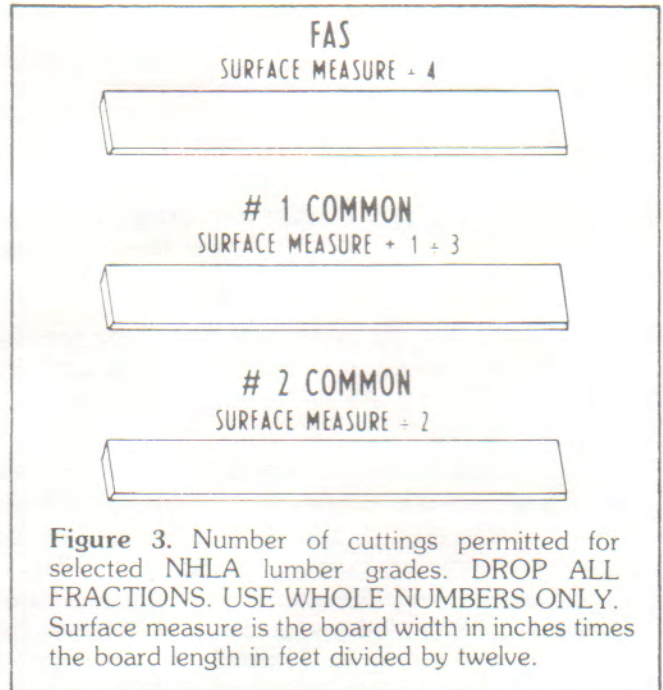


Figure 3. Number of cuttings permitted for selected NHLA lumber grades. DROP ALL FRACTIONS. USE WHOLE NUMBERS ONLY. Surface measure is the board width in inches times the board length in feet divided by twelve.

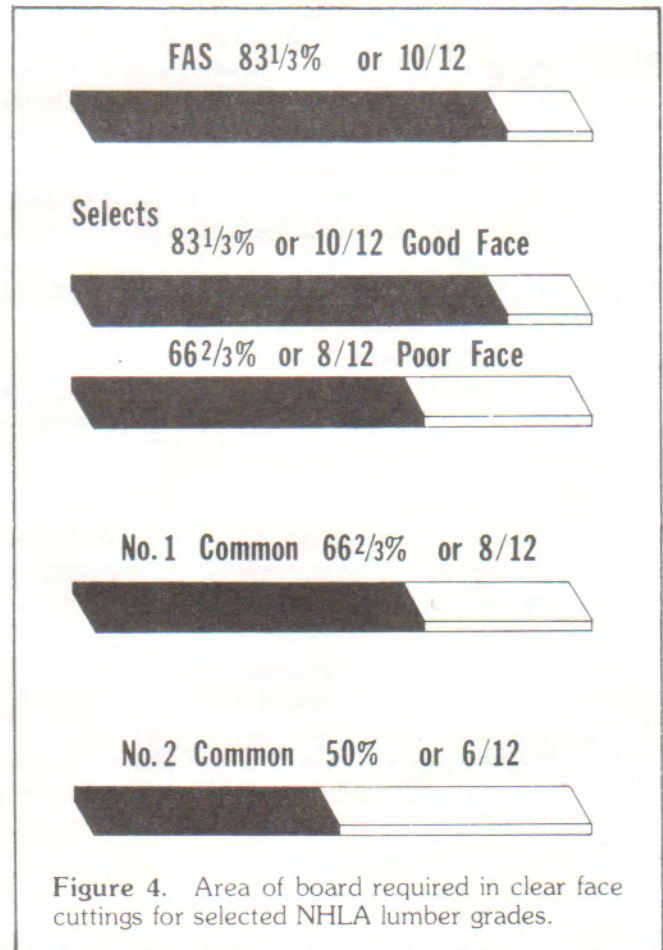
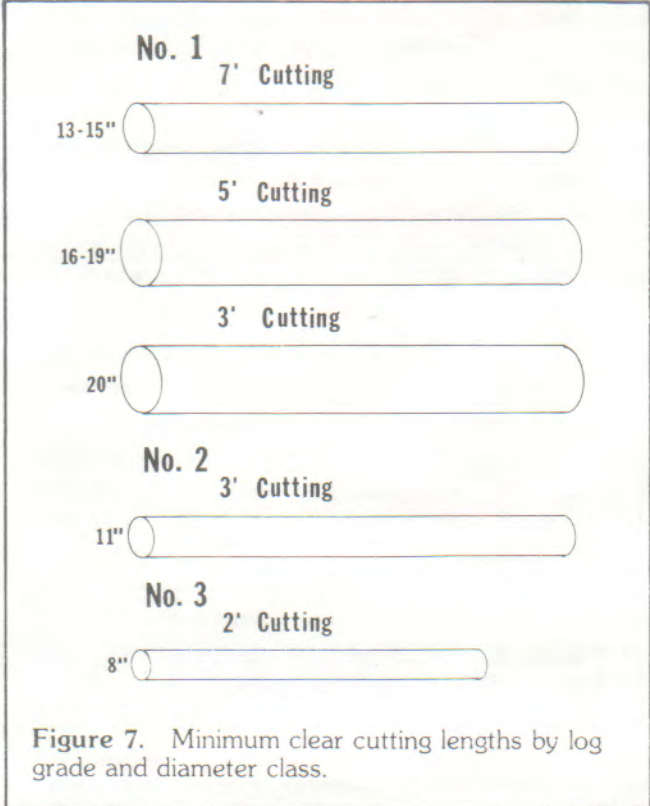
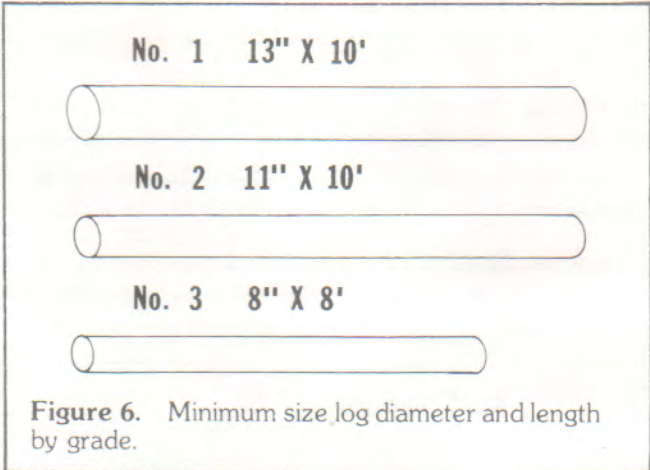
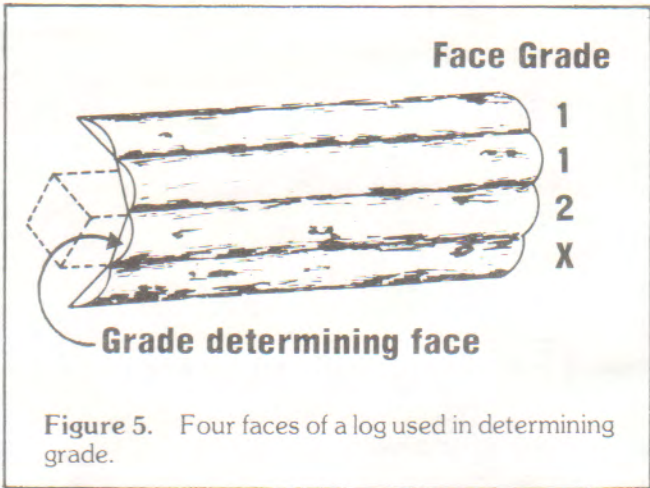


Figure 4. Area of board required in clear face cuttings for selected NHLA lumber grades.



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