



Wood Purchasing Handbook

Hardwood Lumber & Plywood



The mark of
responsible forestry

Delivering the Difference

What you need.
When you need it.
By people that know and care.

"I'm excited to see an industry leader work to enhance awareness and knowledge about grading specifications and help bring better buying decisions to the woodworking industry."

Mark Horne, Chief Inspector
National Hardwood Lumber Association

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Introduction

Delivering what our clients need, when you need it, is essential for us to build a successful business relationship. With a goal to continually create value for you and as a demonstration of our commitment to integrity, we are pleased to present this information booklet. We hope it will be an easy and helpful guide that explains some of the important aspects of purchasing lumber and sheetgoods.

Our sales staff will consult with you to understand your application, manufacturing process and business needs. This consultative approach enables us to deliver the correct product to you.

We welcome your feedback and hope that this booklet achieves our goal of making your purchasing experience an informed one.

Purchasing Check List

There are a number of factors to consider when making an informed purchasing decision. For all raw material purchases, one should always consider the consistency of supply, quality and reliability of delivery.

Further there are specific things that should be considered when buying hardwood lumber and plywood as outlined below:

Hardwood

- Grading standards
- Tally method
- Geographical origin of product (region of growth)
- Colour
- Specifications (eg. length, width, thickness, edging, end trimming)
- Packaging
- Moisture content

Plywood

- Grading standards
- Geographical origin of product (import or domestic)
- Quality of veneer
- Specifications (eg. colour, core, consistency of panel thickness)
- Dimension (eg. 4x8, 5x8, 5x10)
- Quality of sanding
- Type of veneer (PS, RC, WPF, sequence match, bookmatch)

Receiving Lumber

Tally Methods

Piece Tally

The most accurate method to determine net tally is to measure the width and length of each board. Computer piece tallies are often available from the mill, at your request.

Block Scale

Upon receipt of lumber, if a piece tally is not available or is too time consuming, a block scale is a good method for a quick estimate of tally. A good block scale will typically be a few percent higher than the actual tally. Block scale as follows:

1. Measure the average width of the bundle (in inches) accounting for the spaces.
2. Count the number of courses.
3. Determine the average length by estimating the percentage of cutbacks.
4. Multiply the average width by the number of courses by the average length and divide by 12, then multiply by the thickness.

$$\frac{(\text{avg width}) \times \# \text{ courses} \times (\text{avg length})}{12} \times \text{thickness}$$

Purchasing on Net Tally or Gross Tally

*Net Tally is the lumber volume measured after kiln drying.
Gross Tally is the lumber volume measured before kiln drying.
The difference between the two is called shrinkage.*

All species and thicknesses will shrink at different rates. After kiln drying, the industry will typically add back 8% (multiply by 1.08) to the Net Tally to calculate Gross Tally.

We will provide the tallies to you in the format you request.

There are benefits to purchasing on Net Tally:

1. **Time Saving**
No need to add shrinkage for calculating quantity received and waste factors.
2. **Improved Accuracy**
Tracking yields and costing inventory are based on actual quantity.
3. **Consistency in Purchasing**
Not all suppliers use 8% for shrinkage, some add more and some add less. This can create problems when you are trying to accurately measure yields and when you are comparing prices. With **Net Tally** you eliminate the inconsistency of shrinkage.

Example of Net Tally and Gross Tally Methods

Using 4/4 Lumber

Net Tally

$$\frac{30 \text{ courses} \times 40'' \text{ (avg width)} \times 10'}{12} = 1000 \text{ FBM}$$

Net Price: \$3240/per M FBM
Calculation: 1000 FBM x \$3240/M
Total \$: \$3240

Gross Tally

$$\frac{30 \text{ courses} \times 40'' \text{ (avg width)} \times 10'}{12} \times 1.08 = 1080 \text{ FBM}$$

Gross Price: \$3000/per M FBM
Calculation: 1080 FBM x \$3000/M
Total \$: \$3240

Moisture Content

The moisture content (MC) of wood is measured as a ratio of the weight of the water in the wood and the weight of the wood itself and is stated as a percentage. Freshly forest-cut "green" wood may have a moisture content of 30% to more than 200%, depending on the species.

It is important to note that after wood has been dried to the proper moisture content, it can change during storage, manufacturing or use as it tends to equalize to the local relative humidity. This is why metering of wood at all phases of use is critical and should always been done at the time of receiving. There are three primary types of moisture meters: pin type, surface type and electromagnetic. Electromagnetic meters provide the greatest accuracy for reading moisture content.

Lumber Grading

The National Hardwood Lumber Association (NHLA) sets minimum standards by which lumber is sorted into specific grades. Within the same grade, there is a range of quality and yields.

Understanding your needs and matching them to the correct product source can become extremely important in ensuring you obtain the best yields.

The following information provides a quick overview from the NHLA Grade Rule Book for the grading of most hardwoods. Please speak to your Sales Representative if you wish to receive a complete copy of the NHLA Grade Rule Book. Our trained sales staff will consult with you to help you determine which is best for your specific application.

Grading is based on the size and number of clear cuttings that can be cut from a board. In rough lumber, the grade is then determined by using the poorest face.

The minimum requirements for each grade are presented in descending order.

First and Seconds (FAS)

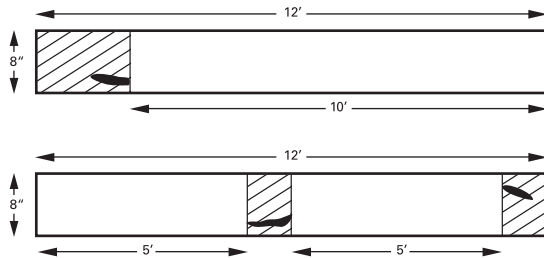
These boards yield 83 ⅓ % to 100% of clear wood cuttings on both faces of the board. These clear cuttings must be at least 3" wide by 7' long or 4" wide by 5' long. Although not sold alone, you can find FAS boards in FAS/1F.

FAS One Face (FAS/1F)

In FAS/1F, the grade is a mix of FAS on one face, #1 Common on the reverse face. The best face of a 1F board must meet the requirements for FAS (able to yield 83 ⅓ % to 100% of clear wood cuttings that must be at least 3" wide by 7' long or 4" wide by 5' long). The reverse side must meet the grade of #1 Common (see below).

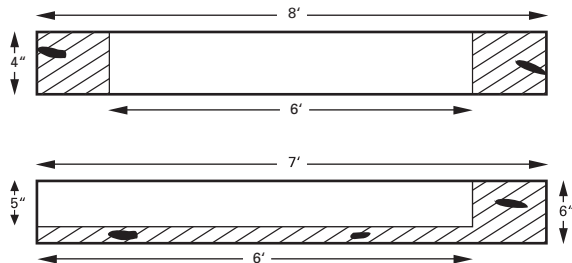
There is no minimum percentage of FAS required, unless buyer and seller agree otherwise.

Examples of the better face:



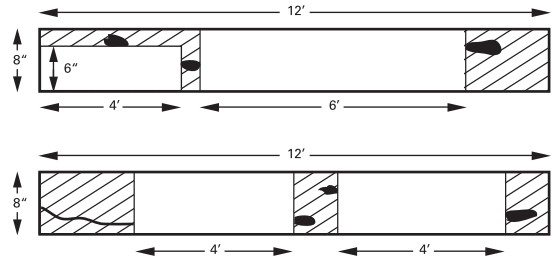
Selects

This grade is similar to FAS/1F. However, the clear cuttings have a different cutting unit dimension requirement. The clear cuttings must be 4" wide by 6' long.



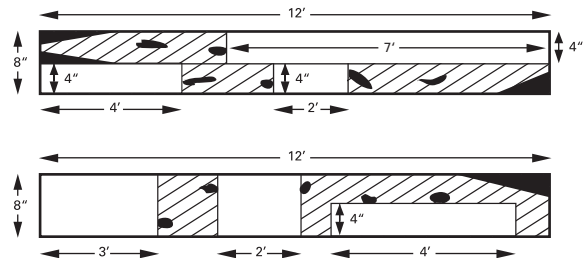
#1 Common

This grade includes material that can yield from 66 ⅔ % up to 83 ⅓ % of clear wood cuttings. These clear cuttings must be at least 3" wide by 3' long or 4" wide by 2' long.



#2a Common

This grade includes material that can yield from 50% up to 66 ⅔ % of clear wood cuttings. These clear cuttings must be at least 3" wide by 2' long.



Wane Limitations in Lumber Grades

FAS/1F

- Better Face: ½ the length of the board maximum
- Back Face (1 common side): ⅓ width x ½ length (widest wane added together, length can be on both sides)

Selects: 6" & Wider Piece

- Better Face: ½ the length of the board maximum
- Back Face (1 Common side): ⅓ width x ½ length (widest wane added together, length can be on both sides)

Selects: 4-5" Wide Piece

- Both Faces: ⅓ width x ½ length (add widest wane together, add total length of wane from both edges)

1 Com through 3 Com

- No wane limitations.

Colour Sorting in Hardwood Lumber

Although colour is not considered when grading lumber, some mills will sort for colour to meet specific end user requirements.

Sorting for colour in hardwood lumber starts with separating sapwood from heartwood and finishes with checking for colour consistency.



Sapwood: The living portion of the tree extending from the heartwood to the bark. Sapwood tends to be lighter than heartwood.

Heartwood: Extending from the pith to the sapwood, it is the dead portion of the tree and is a darker shade than sapwood.

Birch Colour Grading

Sap and Better: Minimum of one face sapwood in the clear cuttings.

Unselected: No colour sort has been done, material will vary in percentage of heartwood and sapwood.

Cherry Colour Grading

Cherry is typically sold red-1-face in the cuttings. The colour of heartwood varies from light to dark depending on grades and region. Red Cherry can be defined between buyer and seller, with a specific percentage attributed to both the front and reverse faces that is red in the cuttings. For example, 95/50 would indicate that 95% of the boards would be red

on the front face and that a minimum of 50% of the boards would be red on the reverse face. Please speak to your Sales Representative to match the product to your application.

Maple Colour Grading

#1 White: Both faces and edges must be all sapwood within the cuttings of the grade.

#2 White: One face and both edges must be sapwood and a minimum of 50% sapwood on the reverse face within the cutting of the grade.

Sap 1 Face: Minimum of one face sapwood in the clear cuttings.

Brown: Material remaining after previous sorts will be primarily heartwood. It may also include stain and sticker shadow.

• Colour Sorted Hard Maple available:

- #1 White
- #1 and #2 White
- Sap-1-Face
- Sap and Better
- Brown

• Colour Sorted Soft Maple available:

- #1 and #2 white
- Sap and Better
- Unselected
- Brown

Oak Colour Grading

Oak is typically identified in the industry as Red Oak or White Oak. But in fact, there are many different species of Red Oak that have different colour characteristics. In addition, the colour and texture of the wood will be affected by the specific growth region.

As a result, to determine the appropriate colour for your application, it is important to consider region (Northern, Appalachian or Southern), mill, sort and specifications. Please consult with your Sales Representative to ensure you receive the product that meets your requirements.

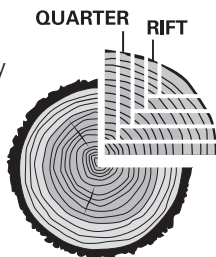
Rift and Quarter Sawn Material

Quarter Sawn (QS)

- Yields straight grain, narrow boards and fleck or figure which runs across the grain. Fleck is noticeably present in Oak, but not discernable in Ash, Cherry, Hard Maple and Walnut.
- Quarter Sawn wood has growth rings at 60°-90° angle to the face of the board.
- Some Quarter Sawn lumber is also produced when lumber is Plain Sawn.

Rift Sawn (RS)

- Produces small flecks caused by cutting through the wood rays.
- Reduces the yield of the log and therefore increases the cost.
- Rift Sawn wood has growth rings at 30° to 60° angles to the face of the boards.
- Rift Sawn lumber is desirable when straight grain material is required without prominent fleck.
- Some Rift Sawn lumber is also produced when lumber is Plain Sawn.



Plain Sawn (PS)

- Most common type of lumber sawn, yielding broad grain, and wide boards.
- Plain Sawn wood has growth rings that are under a 30° angle.

How is quarter sawn lumber achieved?

There is only one true way to quarter saw a log. First the log is cut into quarters. Next, each quarter is processed by cutting a single board off of one face, then cutting the next board from the opposite face and finally cutting from alternating faces until the quarter is completely cut.

Quartered lumber provides great dimensional stability for its final application:

- Reduces shrinking and swelling in lumber width
- Reduces twisting, warping and cupping
- Less prone to surface checking
- Wears more evenly in flooring applications
- Does not allow liquids to readily pass through it
- Holds paint better
- Produces smooth surfaces as raised grain is not pronounced

Plywood Grading Basics

The Interim Voluntary Standard for Hardwood and Decorative Plywood published by the Hardwood Plywood and Veneer Association (HPVA) establishes nationally recognized classifications, quality criteria, definitions and product designation practices for plywood produced primarily from hardwoods. However, suppliers can set their own standards to meet the needs of their customers.

Our trained sales staff will consult with you to help you determine which product is best for your specific application, which can include providing customized front and back faces.

The following information provides a quick overview of the HPVA face and back grade quality definitions.

Front Face

Grade AA

- Architectural grade.
- The best quality face grade for high-end applications such as architectural paneling, doors and cabinets.
- Veneer is matched for highest consistency of grain pattern and colour.

Grade A

- Where excellent appearance is very important, as in cabinets and furniture.
- The veneer is generally composed of entirely heartwood or sapwood unless specified for natural or determined by the species or cut.
- Veneer is matched for both grain pattern and colour.
- Minor infrequent burls, pin knots and inconspicuous small patches are allowed.
- Frequency of the defects depends on the species

Grade B

- Where the natural characteristics and appearance of the species are desirable.
- Heartwood and sapwood characteristics are similar to Grade A, however, it is matched for colour only, not grain.
- Allows for more numerous and larger burls, pin knots and colour streaks.

Grades C, D, E

- Where the application will have parts of the surface hidden or a more natural appearance is desired.
- Provides sound surfaces, but allows unlimited colour variation, and the number and size of the repaired defects increase from C to E, respectively.

Back Face**Grade 1**

- Allows some colour variation.
- Sound tight knots cannot exceed $\frac{3}{8}$ " in diameter.
- No putty-filled knotholes (repaired pin knots allowed).
- Wormholes and splits must be filled.

Grade 2

- Colour is not a consideration.
- Sound tight knots cannot exceed $\frac{3}{4}$ " in diameter.
- Repaired knotholes up to $\frac{1}{2}$ " are permitted.
- Wormholes allowed.

Grade 3

- Sound tight knots cannot exceed $1\frac{1}{2}$ " in diameter.
- Repaired knotholes up to 1" are permitted

Grade 4 (Reject Back)

- Not sound.
- Allows for many open knots.

Shop Grade

This grade contains minor imperfections such as a broken corner, a small area of void, a sanding error or other manufacturing defects. Shop grade will typically yield 85% usable material. Mills are allowed to ship up to 10% shop grade mixed in with a standard order of on grade plywood. If a unit is put up as a mill run, then there is no limitation on the amount of shop that can be included.

Colour Sorts**White**

- When referring to colour and matching, veneers containing all sapwood, ranging from pink to yellow.

Red

- When referring to colour and matching, veneers containing all heartwood, ranging from light to dark.

Types of Cores**Veneer Core (VC)**

Veneer core consists of one or more (usually odd number) plies of wood veneer. Each sheet is laid with the grain direction at a right angle to the adjacent sheets. Usually, inner ply veneer species are made with widely available low cost species like: Fir, Poplar, Aspen or Pine. Imported species could include: Ceiba, Lauan, Virola or Fuma.

- Excellent screw holding ability and lightweight.
- Slight variation in thickness may occur.

Medium Density Fiberboard Core (MDF)

MDF core is manufactured from pressure cooked wood chips which are broken down into fibers and combined with resin and wax and pressed into panels. Since MDF uses wood fibers, the end product is solid - the compressed fibers make it very dense. It can be machined or sanded to a smooth finish. It is heavy, however, at about 96 pounds per 4' x 8' x $\frac{3}{4}$ " panel. It is typically almost twice as heavy as veneer core plywood.

- Smooth finish, cuts well but heavy in weight.

Particleboard Core (PB)

Particleboard core is constructed from wood particles rather than processed fibers. The wood particles are blended with resin and wax and pressed into panels. It is firm and solid throughout and makes a good core for hardwood plywood. Because of the larger wood particles, however, it will not machine and sand as well as MDF or veneer core. It is also heavy at about 93 pounds per 4' x 8' x $\frac{3}{4}$ " panel.

- Inexpensive, stable and smooth finish.

X-banded Core

X-banded core is constructed with a VC center with a thin layer of MDF on either side.

- Good screw holding ability.
- No telegraphing because of MDF outer layers.
- More expensive than most other cores.

Hardboard Core

Hardboard core is a composite panel manufactured primarily from inter-felted lignocellulosic fibers consolidated under heat and pressure. Other materials may be added during the manufacturing

process to improve certain properties, such as resistance to abrasion and moisture, and increased strength and durability. Hardboard is grainless, with uniform thickness, density and appearance.

Lumber Core

Lumber core is constructed from sawn wood or sliced boards, three to four inches wide and of random length. It is joined at the edges with pressure sensitive glue and sanded to a uniform thickness. Lumber core is normally manufactured with cross bands of lauan veneer.

Types of Cuts

Plain Sliced (PS) / Flat Cut (FC)

Slicing is done parallel to a line through its center, which produces a very unique light multicoloured pattern and is quite unique. Typically found in all species except Maple and Birch.

Rotary Cut (RC)

The log rotates toward the blade and is peeled in long, wide sheets. This cut produces veneers with very distinctive grain patterns. Typically found in Maple and Birch unless specified.

Quarter Cut (QC)

The quarter slicing cut produces a straight grain effect. The quarter log is mounted on the flitch table so that the growth rings hit the blade at right angles. Notably in Oaks.

Rift Cut

The cut is made at a slight angle in relation to the position of the quarter log. This brings about a comb or rift effect. Sometimes referred to in species like Fir as Vertical Grain (VG).

Half-Round Slicing

A variation of rotary cutting, the quarter log is mounted on a stay-log, giving a cut that slightly crosses the annual growth rings.

Horizontal Slicing

A stationary blade slices lumber in a horizontal fashion to produce a multicoloured pattern.

Custom Matching

Whole Piece Face (WPF)

A single sheet of rotary cut veneer that reveals a continuous grain pattern throughout the sheet. Typically specified in Maple and Birch only.

Book Match (BM)

Every other leaf is turned over like the pages in a book. It creates a symmetrical pattern and a series of pairs. Typically found in Plain Sliced (PS) AA, A and B faces only.

Slip Match (SM)

Adjacent sheets of veneer are placed side by side, in their natural order, without being turned. The result is a uniform look.

Pleasing Match

Components are arranged based on the similarity of their colours rather than their grain characteristics.

Plank Effect / Plank Match (PM)

Generally, components of different widths and coming from different logs, spliced, in a way to simulate an effect of lumber put side by side (solid wood).

Special Match

A number of special patterns can be created upon request by a customer, including diamond point.

Sequence Match and Numbered (Seq'd)

A method of arranging veneer faces such that each face is in order relative to its original position in the tree and, therefore, contains features of grain and figures similar to adjacent faces. Three or more related faces are required to constitute a sequence.

Veneer Helpful Tips

- Face grades are represented by letters of the alphabet. Back grades are represented by numbers. Depending on your specific application, you may request Face Grades or Back Grades on both sides of the panel.
- “Good 2 Sides” (G2S) has a variety of meanings. For example, C2 sheet could be considered a G2S since it is a sound panel, however this may not work for certain applications.

Due to this fact, your sales representative will ask you what is acceptable for your application. We want to know what is acceptable to you for colour, flitch size, size and amount of pin knots, rough grain or other defects in order to get you the product that works best for your applications.

- Rotary cut is the only cutting method that is capable of producing whole piece faces.
 - The barber pole effect: The alternating leaves in book matched faces may reflect light and accept stain differently, creating a noticeable colour variation. This effect can be minimized through the use of proper finishing techniques.
 - Slip matching eliminates the barber pole effect.
 - Pre-sealing is beneficial for maple veneers to stop blotchy appearances and reduce the barber pole effect. It allows the stain to take more evenly.
 - Availability of slip matched faces may be limited due to the general preference for book matched faces.
 - Final panel edge trimming may alter the dimensions of the outside two-face components in balance and center matched panels.
 - Higher grade hardwood veneers should be considered when high gloss paint finishes will be used.
- Natural colour is allowed in any grade of Birch and Maple. Be sure to communicate your colour preference to us when placing an order.
 - Once a panel has been sanded, it must be finished. Extended exposure to air affects the colour of many wood species.

Green Programs

FSC Certification



To earn the right for a product to carry the FSC label, every step in the supply chain between the forest and the final product must be FSC Chain of Custody certified. There are 4 types of FSC claims that our products can carry:

FSC 100% - products where 100% of the fibre comes from an FSC-certified forest

FSC Mix - products that are manufactured with a mixture of FSC-certified material with recycled fibre, and/or controlled fibre

FSC Recycled - products where 100% of the fibre is recycled, and a minimum of 85% is post-consumer recycled fibre

Controlled Wood - is wood or wood fibre that does not come from any of the following controversial sources:

1. Illegally harvested forests
2. Forests harvested in violation of traditional and civil rights
3. Forests in which high conservation values are threatened
4. Forests that are being converted to plantations or non-forest use
5. Forests in which genetically modified trees are planted

For more information, visit www.fscus.org

LEED

Leadership in Energy and Environmental Design (LEED), is redefining the way we think about the places where we live, work and learn. As an internationally recognized mark of excellence, LEED provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

LEED certification provides independent, third-party verification that a building, home or community was designed and built using strategies aimed at achieving high performance in key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

We have LEED accredited staff members throughout our North American divisions. An increasing number of our products are qualifying for LEED points so please contact your Sales Representative for more information.

For more information, visit www.usgbc.org

CARB

CARB regulations ensure that the composite boards, you are purchasing have very low formaldehyde emissions. Panel manufacturers, distributors, fabricators, importers and retailers share in the responsibility of maintaining a transparent chain of custody through to the end use consumer.

For more information, visit www.carbrule.org

TFF

The Tropical Forest Foundation (TFF) is an international, non-profit, educational institution committed to advancing environmental stewardship, economic prosperity, and social responsibility through sustainable forest management (SFM). For 20 years, TFF has fostered dialogue and alliances among industry, government, and academia, as well as the research and conservation communities to improve tropical forest management and increase the economic value of these forests for those who depend upon its bounty for their livelihood.

TFF is widely recognized for the establishment of demonstration models and training schools to teach the principles and the advantages of sustainable forest management. TFF regional programs have become synonymous with the promotion and training of Reduced Impact Logging (RIL).

For more information, visit www.tropicalforestfoundation.org



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Terminology

Surface Measure (SM)

Surface measure represents the surface area of a board in square feet, for 1" thick lumber. The formula for calculating the surface measure is:

$$SM = \frac{\text{width (inches, including decimal)} \times \text{length (feet)}}{12}$$

Example: $\frac{7.5'' \times 10'}{12} = 6.25 = 6 \text{ SM}$

Foot Board Measure (FBM)

A board foot is the standard unit of measurement of lumber. A board foot represents one foot long by one foot wide by one inch thick or its equivalent. The formula for calculating board feet in a board is:

$$FBM = \frac{\text{width (inches, fractions)} \times \text{length (feet)} \times \text{thickness}}{12}$$

Example: $\frac{(6'' \times 16' \times \frac{5}{4}'')}{12} = 10 \text{ BF}$

1. The thickness of lumber is calculated prior to surfacing.
2. The lengths are only measured at the full foot mark, anything less than a full foot will be measured as the lower foot length.

Example: 11'11" would be tallied as a 11' board.

Milling

Surfaced 2 Sides (S2S)

Material that has been sent through the planer to be surfaced on 2 sides.

Surfaced 2 Sides, Straight Line Ripped 1 Edge (S2S1E)

Material that has been S2S and then sent through the rip saw to be straight line ripped on 1 edge.

Surfaced 2 Sides, Straight Line Ripped 2 Edges (S2S2E)

Material that has been S2S and then sent through the rip saw to be straight line ripped on 2 edges.

Surfaced 4 Sides (S4S)

Material that has been sent through a moulder to be surfaced on all 4 sides.

Tools

Conversion Formulas

Board Footage (FBM)

$$FBM = LF \times \text{width} \div 12 \times \text{thickness}$$

Example: To convert 3000 LF of 8" x $\frac{5}{4}$ (1.25");
calculate $3000 \times 8'' \div 12' \times 1.25'' = 2500 \text{ FBM}$

Lineal Footage (LF)

$$LF = FBM \div \text{width} \times 12 \div \text{thickness}$$

Example: To convert 1500 FBM of 6" x $\frac{5}{4}$ (1.5");
calculate $1500 \div 6'' \times 12' \div 1.5'' = 2000 \text{ LF}$

Price/M FBM into Price/LF

$$\text{Price/M} \div 12 \times \text{width} \times \text{thickness} \div 1000 = \text{Price/LF}$$

Price/LF into Price/M FBM

$$\text{Price/LF} \times 12 \div \text{width} \div \text{thickness} \times 1000 = \text{Price/M}$$

Board Footage (FBM) into Cubic Meters

$$FBM \div 424 = \text{Cubic Meters}$$

Cubic Meters into FBM

$$\text{Cubic Meters} \times 424 = \text{FBM}$$

Price/m FBM into Price/cubic meters

$$\text{Price/M} \div 2.359 = \text{Price/Cubic Meters}$$

Price/cubic meters into Price/m FBM

$$\text{Price/Cubic Meters} \times 2.359 = \text{Price/M}$$

All calculations based on Net Footage.

Lumber Weights

Approximately weight in lbs. per 1000 board feet

Domestic Hardwoods	4/4"	8/4"
Alder	KD.. Rgh 2480.....	2610
Ash, Brown	KD.. Rgh 3650	3900
Ash, White.....	KD.. Rgh 3650.....	3900
Aspen.....	KD.. Rgh 2390.....	2520
Basswood.....	KD . Rgh 2000.....	2100
Beech	KD.. Rgh 3990.....	4200
Birch, Red	KD.. Rgh 3500.....	3700
Birch, Western	KD . Rgh 3550.....	3740
Birch, White	KD.. Rgh 3600.....	3750
Birch, Yellow	KD.. Rgh 3500.....	3700
Butternut	KD.. Rgh 2390.....	2515
Cherry.....	KD.. Rgh 3400.....	3600
Elm.....	KD.. Rgh 3270.....	3450
Hickory	KD.. Rgh 3850.....	4000
Maple, Curly.....	KD.. Rgh 2900.....	3100
Maple, Hard	KD.. Rgh 3500.....	3700
Maple, Soft	KD.. Rgh 2900.....	3100
Maple, Western	KD.. Rgh 3010.....	3170
Maple, Wormy Soft	KD.. Rgh 2900.....	3100
Oak, Red.....	KD . Rgh 3800.....	4000
Oak, White.....	KD.. Rgh 4175.....	4390
Poplar, American Yellow.....	KD.. Rgh 2700.....	2800
Sap Gum	KD.. Rgh 3010.....	3170
Sycamore	KD.. Rgh 3100.....	3260
Walnut.....	KD.. Rgh 3500.....	3700

Imported Hardwoods	4/4"	8/4"
Anigre.....	KD.. Rgh 2900.....	3050
Banak	KD.. Rgh 2920.....	3100
Beech, European Steamed KD..	Rgh 3580.....	3750
Birch, Baltic	KD.. Rgh 3400.....	3600
Bubinga	KD.. Rgh 4870.....	5125
Cedar, Spanish	KD.. Rgh 2300.....	2425
Cumaru.....	KD.. Rgh 5500.....	5800
Goncalo Alves	KD.. Rgh 5300.....	5600
Ipe.....	KD.. Rgh 6500.....	7000
Jatoba.....	KD.. Rgh 5000.....	5250
Mahogany, African.....	KD.. Rgh 2750.....	2890
Mahogany, Fijian Genuine. KD..	Rgh 2800.....	2900
Mahogany, Santos	KD.. Rgh 4000.....	4200
Mahogany, South American. KD..	Rgh 2800.....	2900
Makore	KD.. Rgh 3540.....	3730
Marupa	KD.. Rgh 2300.....	2425
Padauk	KD.. Rgh 3750.....	3950

Purpleheart	KD . Rgh 4500.....	4725
Red Grandis.....	KD . Rgh 3400.....	3800
Sapele	KD... Rgh 3500	3725
Sipo	KD.. Rgh 3550.....	3730
Tea	KD.. Rgh 3800.....	4000
Wenge.....	KD.. Rgh 4750.....	4980
Zebrawood.....	KD.. Rgh 4250.....	4475

Softwoods	4/4"	8/4"
Accoya®.....	KD ... Rgh 2750	2850
Cedar, Western Red	KD ... Rgh 2800	2950
Cypress, Atlantic	KD ... Rgh 2750	2850
Fir, Douglas.....	KD ... Rgh 2300	2420
Hemlock	KD ... Rgh 2750	2890
Pine, Eastern White	KD ... Rgh 2300	2420
Pine, Ponderosa	KD ... Rgh 2650	2790
Pine, Radiata	KD ... Rgh 2750	2850

Plywood Weights

	5/32"	3/16"	5mm	1/4"	3/8"	1/2"	5/8"	3/4"	1"
MDF				33	50	67	83	100	132
PBC					48	64	80	96	126
VC	14	17	19	22	33	44	55	66	88
WC			21	24	36	48	59	71	96

Pounds per sheet based on 4' x 8' material

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