



Ripping by the Numbers



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RIP YIELDS CAN BE COMPLEX

People involved in the hardwood lumber industry are familiar with numbers. Board footage, surface measure, cost per thousand, and clear cuttings per board are all common every day calculations we work with. Probably one of the most important calculations we work with is yield. When it comes to ripping, where even a good system will generate 15-20% waste, yield is significant.

For many in the industry true lumber yield becomes one of the most challenging calculations to accurately measure. In many instances, companies have become accustomed to utilizing long standing estimates of their lumber yields. Others have stopped calculating lumber yield all together. Rather, they choose to measure their yield based on the number of products they can produce or by the amount of waste they have to throw away. Others simply trust the readings they have on their rip saws and assume those readings are their lumber yields.

From our experience, when scenarios such as these exist, companies may be losing valuable profits. In situations like this, companies may not have an accurate understanding of their true rip yields and the impact it has on their business success.

DEFINITION OF RIP YIELD

When discussing rip yields with customers we usually start with the simplest calculation we know. We feel it has been proven to be most effective.

$$\frac{\text{Lumber board footage after ripping}}{\text{Lumber board footage before ripping}}$$

Using this calculation we have found that a manufacturer's true lumber yield from converting random lumber to ripped two edge lumber can typically range from 75-85%. That is why increasing your rip yield, even if it is only one or two percentage points, is so important. A two percent rip yield improvement on an \$18,000 load of

	12,000	board feet
X	1.50	per board foot
\$	18,000	
X	2%	Rip Yield Gain
\$	360	

lumber can save you \$360 per load in raw material costs alone! Not to mention that when you improve your rip yields you get more usable lumber per board to work with. In other words, ***leave more edge waste at the mill.***

Most manufacturers believe they achieve rip yields much greater than what we mentioned above. Many times they come to this point of view because they rely on the rip yield numbers from their machine scanners. However, many times this is not a true depiction of the true overall lumber rip yield.

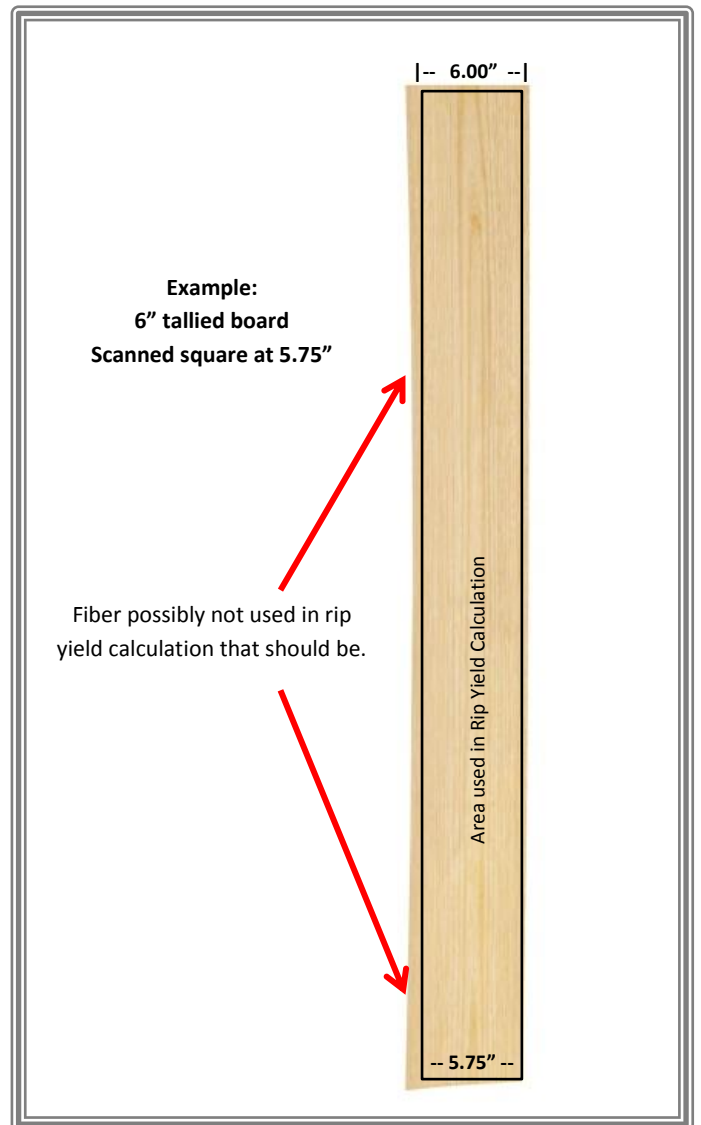
SCANNER RIP YIELD READINGS

Industry professionals know hardwood lumber is not normally sold square. Random widths, random lengths, and slightly tapered boards are the norm. Almost always, it is at the rip saw that the random nature of this raw material creates a challenge for manufacturers. Today's manufacturing process is one of high precision inputs, outputs, and calculations. The random nature of hardwood lumber plays havoc on automated rip yield scanning and reporting.

Over the years, lumber scanning designers and engineers have struggled to create a program that accurately measures hardwood lumber's true effective yield. Much of this is due to the randomness of each hardwood board.

Fortunately, modern rip saws do a better job in accounting for this randomness with advanced scanners and algorithms. However, a vast majority of rip saws in production today do not. Manufacturers with set ups that do not account for the randomness of hardwoods could be left with a misunderstanding of their rip yields.

From our research many of the yield numbers provided by rip saw machines display a rip yield that is contingent on the board being square prior to ripping. In essence, many machines will digitally scan the board and make a board size estimate based on what the board would look like if it was square. It is this estimate that is used for the rip yield calculation and from our perspective can actually overstate lumber yield anywhere from 8 to 15%.



TEST YOUR MACHINES RIP YIELD CALCULATION

One way to test the accuracy of the rip yield calculation on your machine is to first calculate your expected rip yield manually. Then with the same board run it through your machine and see what you get.

For example, if you are using a 6" wide board and were to rip it down to 5" you would expect a yield of 83.33%. So if you ran the board through your machine you would expect to receive a rip yield rating of 83.3%. Depending on the yield calculation parameters your machine uses you might receive a reading higher than that. Reason being is many rip saw machines utilize an algorithm to estimate the largest square board possible from the piece of lumber being scanned and reduce the overall board footage slightly before calculating the yield. Therefore, when you start with a smaller board footage number before ripping your overall yield calculation will appear higher.

Another simple test is to run a wide already ripped board thru the rip saw machine. Since it is already square you can validate both your specific measurement logic and calibration accuracy!

Calculations

Manual Rip Yield Calculation

Board Footage = (Lineal Footage x Width/12) x Thickness

6" board X 12' length with 4/4 thickness

$$\text{Bf in} = (12' \times 6" / 12) \times 1" = 6$$

$$\text{Bf out} = (12' \times 5" / 12) \times 1" = 5$$

$$5 / 6 \times 100 = 83.33\%$$

Possible Automated Machine Rip Yield Calculation

Board Footage = (Lineal Footage x Width/12) x Thickness

6" board X 12' length with 4/4 thickness

Estimated Square size = 5.75" X 12' length with 4/4 thickness

$$\text{Bf in} = (12' \times 5.75" / 12) \times 1" = 5.75$$

$$\text{Bf out} = (12' \times 5" / 12) \times 1" = 5$$

$$5 / 5.75 \times 100 = 86.9\%$$

Other

Lineal Foot = Pieces x Length

Board Footage = (Lineal Footage x Width/12) x Thickness

BENEFITS OF MORE ACCURATE RIP YIELD MEASUREMENTS

We consider these tests best practices. It is important to fully understand and validate your machines true rip yield percentage and reporting capabilities so you are using accurate numbers throughout the rest of your business.

With a better understanding of lumber rip yields and conversion capabilities a manufacturer can more accurately track production costs, be more precise on product costing, and be more competitive in the sales process.

BAILLIE CUSTOM LUMBER SOLUTIONS

Recently, we have expanded our Custom Lumber Solution program to include hardwood ripping solutions as well. We have gained valuable experience in helping customers understand their true lumber yields and develop ongoing lumber programs that assist them maximize the amount of usable lumber they receive and utilize per load.

If you are looking for assistance, or are interested in learning more, contact us today to explore how our Custom Lumber Solution process might be able to benefit you.



How to contact us.



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