

Board Foot Requirement Calculation

A Board Foot is defined as a board one foot long, one foot wide and one inch thick; or the equivalent. Therefore, a board 6" wide by 2' long by 1" thick is also one board foot. Or, a board 2" wide by 6' long by 1" thick is one board foot. Or, a board 6" long by 1' long by 2" thick is one board foot. You can also think of a board foot as being 12" by 12" by 1" or 144 cubic inches, or 1/12 (.08333) cubic feet.

Rough lumber is sold in thicknesses measured in quarters of an inch. Lumber rough sawn to one inch thick is referred to as 4/4; Rough sawn to 1-1/2" is 6/4 and that sawn to 2" thick is referred to a 8/4. If you buy wood that has already been surfaced, it will be priced based on the thickness or the rough lumber it was surfaced from (e.g. 3/4" thick is priced as if it was 4/4).

- 1) In order to calculate the amount of wood required for a project you must have a drawing of the project with dimensions. From this drawing identify all of pieces that are the same thickness.
 - a) If the thickness is 1/2" up to 13/16", assume that you will be using 4/4 stock to make those pieces. Note that stock up to 7/8" thick can be obtained from 4/4 boards if the boards are not cupped or bowed or twisted appreciably.
 - i) Determine the rough cut size of each piece. Assume that each piece will be roughed out about 1/2" wider and 2" longer than the finished piece.
 - ii) Calculate the board foot requirements for each roughed out piece by multiplying the length (inches) x Width (inches) and dividing by 144.
 - iii) Sum the individual values to obtain the finished total board feet for 4/4 stock.
 - b) If the thickness of the piece is 3/8" or less, assume that you will be obtaining this material by resawing 4/4 stock. Note that 7/16" thick boards can be obtained from 4/4 boards if they are not cupped, bowed or twisted appreciably.
 - i) Determine the rough cut size of each piece. Assume that each piece will be roughed out about 1/2" wider and 2" longer than the finished piece.
 - ii) Calculate the board foot requirements for each roughed out piece by multiplying the length (inches) x Width (inches) and dividing by 144/2 (72).
 - iii) Sum the individual values to obtain the finished total board feet for 4/4 stock.
 - c) If the thickness is 1" to 1-1/8" thick, you will need to use 5/4 (or thicker) stock.
 - i) Determine the rough cut size of each piece. Assume that each piece will be roughed out about 1/2" wider and 2" longer than the finished piece.

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- ii) Calculate the board foot requirements for each roughed out piece by multiplying the length (inches) x Width (inches) and multiplying by $\frac{5}{4}$ and then dividing by 144 (or just divide by 115).
 - iii) Sum the individual values to obtain the finished total board feet for $\frac{5}{4}$ stock.
- d) If the thickness is $1\frac{3}{16}$ " to $1\frac{3}{8}$ " thick you will need to use $\frac{6}{4}$ (or thicker) stock.
 - i) Determine the rough cut size of each piece. Assume that each piece will be roughed out about $\frac{1}{2}$ " wider and 2" longer than the finished piece.
 - ii) Calculate the board foot requirements for each roughed out piece by multiplying the length (inches) x Width (inches) and multiplying by $\frac{6}{4}$ and then dividing by 144 (or just divide by 96).
- e) Sum the individual values to obtain the finished total board feet for $\frac{6}{4}$ stock.
- f) If the thickness is $1\frac{1}{2}$ " to $1\frac{7}{8}$ " thick you will need to use $\frac{8}{4}$ (or thicker) stock.
 - i) Determine the rough cut size of each piece. Assume that each piece will be roughed out about $\frac{1}{2}$ " wider and 2" longer than the finished piece.
 - ii) Calculate the board foot requirements for each roughed out piece by multiplying the length (inches) x Width (inches) and multiplying by $\frac{8}{4}$ and then dividing by 144 (or just divide by 72).
 - iii) Sum the individual values to obtain the finished total board feet for $\frac{8}{4}$ stock.
- 2) Now get realistic. The boards that you buy will be random lengths and widths. That means that is you need a piece 6" wide, but you stock is 8" wide, you have paid for the 8" width but will only use 6" of it. Therefore, 2" of the 6" needed (33%) is wasted. Also, the lumber will likely have knots, wane, or other defects that make a portion of the lumber unusable. To account for these problems, I usually multiply the amount required by 1.5.
- 3) Now get even more realistic. I make mistakes once in a while. If you do too, you will need to remake some pieces. Therefore, I usually buy twice the calculated amount. Sometimes I have some wood left over for the next project. Not often, but sometimes I need to buy more wood (I made several mistakes). Remember, that you are still learning and part of that learning process is making mistakes.
- 4) Afterthoughts. At least 95% of all mistakes that I have seen in my classes are failure to read and/or follow the instructions or failure to read or understand the drawings.
 - a) If in doubt read the instructions and refer to the drawing.

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- b) Use caution is asking your classmate. The answer they give may not be the best answer.
- c) Do not hesitate to ask the leader of the class or session. They should have the best answer to your question. After all, that is one of the reasons they are there.