

Do The Math!



Formula, Schmormula

By Jay Goltz

When you're framing one or two pictures and you estimate a certain amount for scrap, the results will not be earth-shattering if you're off. When you are framing a 1,000 piece job, that's another story. There are two key reasons why understanding the scrap allowance is critical to success in any large framing project.

First of all, you need to know how much moulding to order. If you order too little, you will not only have a problem completing the job but the extra moulding you have to order later will come directly out of your profit. If you estimate too much, you can easily lose the bid, or—in the best case scenario—you will get the bid but the “extra” profit will end up trapped in the leftover moulding.

Figuring out how much moulding to order is part art, part math. The art part is knowing whether there will be any variations in the run, how long the sticks are, and how fragile the finish is. The scrap allowance is very different for a large project than for one-of-a-kind jobs.

If you're doing a large project, it's worth the time to figure out the best way to cut the moulding. For instance, sometimes you're better off cutting three long lengths instead of four from a stick and using the remaining piece to cut two short legs to minimize the scrap. You may end up having only a 3" piece of scrap instead of a 12" piece. In addition, when you cut multiple frames, you should have less damaged moulding since you are using it up instantly and not putting it back in the bin until you need it again.

Then there's the math part. Let's assume that you have figured out over the years that your scrap factor is about 30 percent, which is a 70 percent yield. You have calculated that a 24" x 30" frame with 1-1/2" wide moulding is going to use 10' of moulding. That includes 108" for the frame, plus the 1.5" mitering amounts on each corner, or 8 (two miter cuts per leg or eight total cuts) times the 1.5" width of the moulding or 12". That's a total of 120" or 10'.

Let's also assume that the scrap factor for that particular moulding is 30 percent. How many feet of moulding would be needed to make that frame? The answer I usually get to that question is 13', which is

10' plus 30 percent.

And that answer is wrong. I will give you both the mathematical answer and the logical answer. The algebraic answer is:

Let's do the math:

T is the total moulding length needed

Y is the yield, which is 70% or 0.7 for this example.

F is the size of finished frame, which is 10'.

$$T \times Y = F$$

$$T \times 0.7 = 10'$$

$$T = 10' \text{ divided by } 0.7$$

$$T = 14.3'$$

To calculate total length needed, multiply the finished frame size by a factor of 1.43.

Why is the total moulding length needed not 13'? Think about it. If you had 13', you would also need to include scrap loss in the additional footage. That's why you need more. Therefore, you either have to divide the length by .7 (or whatever you think your yield is) or you have to multiply it by 1.43.

The point is that if you are doing big jobs and working on a small margin, you'd better do more than be guessing wildly on the scrap factor. There is a significant cost difference between using a 20 percent scrap factor and 40 percent. There are also scrap factors in mats and glass, but those are much smaller. They're also easier to keep track of, and they're easier to calculate.

Being accurate while estimating material usage is a critical part of having no surprises at the end of a job. Bad estimating is a win/lose situation: you win the job but you lose money. In my book, that's really a lose/lose situation—you worked hard for no reason and lost money.

Ouch! Double ouch!!! ■

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