



## Selecting Wood For An Electric Guitar

When I built my first electric guitar, little did I know then how addicting the hobby would become. On one hand, it was the desire to build what I hoped would be the perfect guitar that first got me started. On the other, it was the seductive lure of beautiful wood that really got me hooked. Before long, I was looking at wood grain in a way I had never done before. There was figured Maple, waterfall Bubinga, striped Mahogany and flamed Myrtlewood just to name a few. Each one had its own unique appeal, which beckoned me build a guitar using every variety I could find.

However, as I explored the possibilities, I began to learn how the type of wood you choose can impact the tone of a guitar. If you rap your knuckle against thick slabs of different kinds of wood, you'll notice how some will sound flat and dull, while others will have a pleasing ring. Now lets try an experiment. You don't have to actually do this, just bear with me, as it will hopefully make sense in a minute.

Imagine if you stretched a steel guitar string between two points and surrounded with nothing but open air. If you plucked the string, you might hear a faint twang. But if you placed a piece of wood on the opposite side of the string from your ear, the twang would suddenly come to life. Why? The sound waves are bouncing off the wood and into your ear rather than dissipating into open air. If you tried this experiment with different types of wood and you'll get different tones with each. Pine will sound dull and lifeless while Mahogany will sound much more robust. Of course, Mahogany isn't the only type of wood with this unique property. Other woods such as Alder, Swamp Ash and Maple have similar qualities, however, each is slightly different in the tonal frequencies they yield.

Luthiers refer to woods with good sound reflecting qualities as tone woods. However, be aware that this term is purely subjective and is not used to officially classify any species of trees.

I know some of you maybe wondering how wood can impact the sound of an electric guitar since it's the pickups that make the sound, right? I mean they're not like an acoustic guitar, which has to rely on carefully shaped wood to generate tone. However, if you plug your guitar into an amp and tap one of the pickup's pole pieces with a pick, you'll hear the tap coming out of the speaker. That should tell you the pickup not only generates a signal, but it acts as a microphone. So the sound waves coming reflected by the wood are going to be detected by the pickups and sent along as part of the signal to the amp. It's sort of like sending an email with an attached photo. The email symbolizes the signal while the photo symbolizes the tone.

Okay, now that I have hopefully proven that wood plays a part in shaping the tone of an electric guitar, let me explain what the differences are between regular lumber and tone wood. There are two types of wood: hard and soft. Softwood is mostly used to frame



What a typical Luthier dreams about:  
a huge stack of mahogany

houses and make really cheap furniture. Hardwood, on the other hand is reserved for quality furniture, boat building, flooring, doors, fixtures and anything of lasting value that can be crafted from wood. Softwood tends to absorb sound while hardwood does a better job of reflecting it. Therefore, hardwood is what we want to use to build our guitar. The question is, what are the best species to use? The answer depends on what kind of tone you're after.

The most common species of wood used in guitar building are Mahogany, Alder, Swamp Ash and Maple. There are many other kinds of wood that work just as well and even better, but the big guitar companies rely on these woods because of their availability and the fact that they work so well. However, I encourage you to explore other options since you probably aren't going to build a thousand of guitars right off the bat like the big guitar companies do. To help you make the right choice, let me describe the impact that different types of wood will have on the tone of your guitar.

There are several different species of Mahogany on the market today. But, the only ones you should consider for guitar building are African and Honduran. They are strong enough to be used not only for the body, but as long as the boards are quarter sawn--meaning the end grain runs up and down rather than side-to-side--they can also be used for the neck. As for tone, I would describe Mahogany as having a warm growl.

Alder can only be used for the body since it isn't strong enough to serve as a neck. But the nice thing about Alder is how lightweight it is compared to Mahogany. It's also cheaper! As for the tone of Alder, you can expect it to be balanced between warm and bright. If you decide to

select Alder, however, make sure the boards are clear of any knots.

Swamp Ash from the Louisiana Bijou is very desirable to those who want a brighter sounding guitar than they'd get using Alder. Beside the bright tone, Swamp Ash is even lighter than Alder. And for that

reason it can't be used to make a neck. Now, don't confuse Swamp Ash with Northern Ash. Northern Ash, which is even brighter sounding than the Swamp variety is much denser and therefore heavier. Because Swamp Ash harder to come by than Mahogany or Alder, be prepared to pay extra for a slab.

Maple is perhaps the brightest sounding of all the tone woods and there are two varieties you'll come across: soft and hard.

Hard Maple is a popular choice for necks due to its great strength and the nice thing is it can be either flat sawn or quarter sawn. Another nice feature often associated with Maple

is its grain. It can run straight or up and down and side-to-side, which creates an effect known as figure. There are a lot of terms used to describe the different grain patterns such as flame, tiger stripe, curly and quilted. These variations can be used for the neck, fretboard and as an interesting top for the body. However, you should avoid the temptation to use any kind of Maple for a solid body, as weight will become an issue.

With regards to the other kinds of hardwood available for electric guitar necks and bodies, I would suggest doing some research before spending any money. You'll want to find out how the wood you





might want to use will affect tone as well as the weight and how safe and easy the wood will be to work with. On the internet, [woodworkerssource.com](http://woodworkerssource.com) is a great place to purchase hardwood, but it's a great place to find out everything you'll need to know about working with different hardwoods.

There is one other vital piece of wood you'll need to use for your guitar: the fretboard. The wood used most often for the fretboard can be Ebony, Indian Rosewood or Hard Maple. Ebony has the brightest tone followed by Maple, while Indian Rosewood tends toward a warmer sound. There are other varieties like Cocobolo and Purpleheart to name just two, but no matter what you choose, make sure the wood is very dense so the thin slots you'll be cutting into it will do the job of securing the fret wire.

Once you have a reasonably good idea of the types of wood you'll want to use for your guitar, you'll be ready to do some lumber shopping.

If you're hoping I'll divulge my super secret wood source, I'm sorry to say I don't have one. Like many of you reading this article, I have searched all over the internet for the best pricing on wood and I've come to the conclusion that no one can beat a local source if you're lucky enough to find one. What I'm talking about

is the lumberyard in your neighborhood. If you happen to have such an option nearby where you live, it's worth checking out. I'm not saying you can't get a good deal online, but having a local source gives you the opportunity to actually see the wood before you buy it.

Before you go out and spend a wad of cash on wood, take a look around your living space and see if there's some old furniture made of Mahogany or Maple you can use to save money. Of course, if you live with others who might value this furniture, you'll have to make up a story about how termites staged a sudden attack on grandma's antique china cabinet. That won't explain the sudden appearance of your guitar, but I'm sure you'll figure something out. In all seriousness, buying wood isn't all that difficult. However, there are some

fundamentals you'll need to know.

When shopping local sources, it's a good idea to bring a tape measure and a calculator to figure the price for the wood you're interested in. Also be sure to ask the staff the following key questions:

1. What exactly is the species of wood?
2. Is the wood kiln dried?
3. What is the moisture content of the wood?

The first question relates to the fact that wood is sometimes marked incorrectly and in some rare instances, sold as a species other than what it really is. If it's marked as Honduran





Mahogany ask the lumberyard's staff if it truly is Honduran Mahogany (*Swietenia macrophylla*) and not a substitute like African Mahogany (*Khaya ivorensis*) or Sapela (*Entandrophragma cylindricum*). There is nothing wrong with African Mahogany or Sapela--although they aren't as strong and stable as Honduran Mahogany and they are used extensively in guitar building--but they shouldn't be sold as Honduran Mahogany, which commands a higher price. A reputable yard that's been around for a long time is most likely not going to knowingly pass off a particular species as another. But, also make sure you're not accidentally buying the wrong variety of wood. For example, it can be tough to tell the difference between hard Maple and soft. It isn't always easy for the novice to tell. Knowledgeable lumberyard staff should be able to help you make the right choice.

The second question will tell you if the wood was dried naturally (a process that can take years) or in a kiln. Most wood at a lumberyard is kiln dried, but check to be sure. Also find out where it was dried and how long the yard has had it in their inventory. Wood needs to acclimate after shipment before you can start carving it up. Otherwise your finished guitar may warp, twist, bend or crack.

The third question is somewhat related to the second in that it has to do with dryness. Most lumberyards that stock hard wood have handheld devices known as moisture

content readers. Ask a staff member if they can take a reading of the wood for you. I prefer to work with wood having less than 8-10% moisture content.

Regardless of where you purchase your lumber, you'll likely have to purchase it in board feet. Calculating this measurement is easy. Simply multiply the board's length by its width and then by its thickness. Take that number and divide by 144. The resulting number is the board feet.

Multiply the board feet by the price per board feet and you'll have the cost. One thing to be aware of is how the thickness of lumber is measured. Instead of a board having its thickness stated as 1-1/2 inches, it will be listed as 6/4. Two inches would be 8/4. But this is where it gets a bit confusing. If you measure a board marked as 6/4 with your tape measure, you'll discover it's really only about 1-1/4 inches thick. So what happened to the other 1/4 inch? The 6/4 measurement is what the board started out as when taken from the tree at the lumber mill. Then

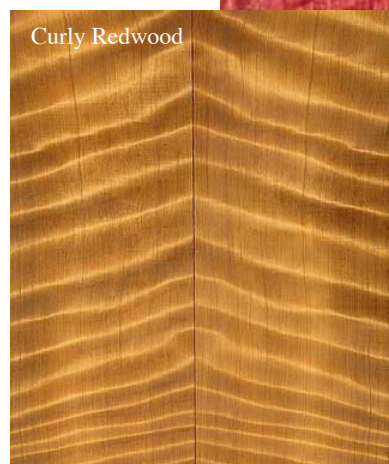
the rough board was planed and sanded which took away that quarter inch. When you calculate the price of a board that is 20 inches long, 14 inches wide and 1-1/2 inches thick, the formula will look like this example:

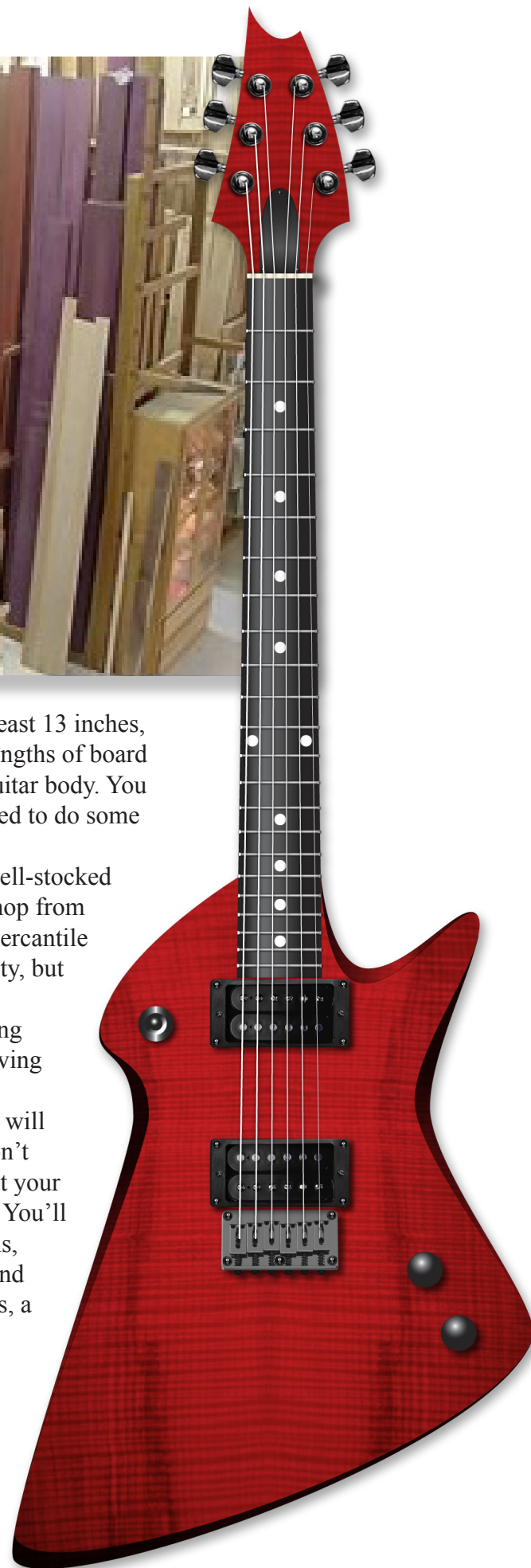
$$20'' \times 14'' \times 6/4 (1.5'') = 420.$$

Divide 420 by 144 and that will equal 2.916 board feet.

If the price for this particular lumber is \$11 a board foot, the board will cost a smidge over \$32. But wait a minute! The board is really only 1-1/4 inches, which means you'll be paying for 1/4 inch of air. You can try haggling, but were talking about an industry that's been around as long as trees and humans.

One additional factor to be aware of is how wide most boards really are. Since an





electric guitar body requires a board to have a width of at least 13 inches, it most likely will be necessary to glue two or even three lengths of board together, side-by-side to get a blank big enough for your guitar body. You might get lucky and find a slab wide enough, but be prepared to do some gluing.

Now for those of you who don't have the luxury of a well-stocked lumberyard nearby, you may have no other choice but to shop from catalog retailers such as Stewart MacDonald or Luthiers Mercantile International. Both have web sites and offer excellent quality, but only limited species.

And finally, there's the internet. I'd recommend shopping from sites like [warmoth.com](http://warmoth.com) or [gilmerwood.com](http://gilmerwood.com) before giving in to the lure of ebay. Not that there's anything wrong with buying off ebay--I've had some good experiences--but you will have to exercise some caution since after all, you really won't know for sure what your getting until the package arrives at your front door. Get to know the seller by ask a lot of questions. You'll need assurance on the species of wood, its exact dimensions, the moisture content and most importantly, its condition. And remember, even though a picture is worth a thousand words, a crappy photo will probably mean crappy wood.

Well I think that about covers wood selection. In the next article, we'll fire up the power tools and get started on actually building an electric guitar. Until then, make sure you've rounded up and measured all of your parts, including the wood.