"Never Unplugged"

Wood and Sound in Amplified Guitars and Basses

By Roger Sadowsky

There are hundreds of differing opinions on how wood choices affect sound in musical instruments. While most of these discussions concern acoustic instruments, my experience with building more than 7300 electric guitars and basses over 37 years has convinced me that this conversation applies equally to electric guitars, basses, and other amplified stringed instruments.

The three primary body woods that tend to be used on electric guitars and basses are Alder, Ash and Mahogany. Fingerboards are primarily Maple, Rosewood or Ebony. Necks are usually Maple or Mahogany. Of course, many other woods are used, including, Basswood, Poplar, Walnut and Maple for bodies, Rosewood and Pau Ferro for necks and Cocobolo and African Blackwood for fingerboards. However, for purposes of this discussion, we will discuss the primary woods.

As one who has primarily built in the Fender style, my basic reference points are as follows:

60's Fenders: Primarily alder bodies with Brazilian rosewood fingerboards

70's Fenders: Primarily ash bodies with maple fingerboards

In my experience in working on these instruments for over 40 years, I would generalize their sound as follows:

60's Fender guitars and basses are sweeter and warmer sounding

70's Fender guitars and basses are brighter and tighter sounding.

Of course this is a generalization…..one can come across a 60's instrument that is brighter than a 70's and one can find a 70's instrument that might be warmer than a 60's. But **in general**, I find these descriptions to be mostly consistent.

One of the earliest enlightening experiences for me was when I had a customer come to pick up a bass that had a maple fingerboard (I don't remember the body wood). He was trying out the bass and was complaining about too much finger and fret noise (metallic clacking, not fret buzz) while playing. So, just relying on intuition, I asked him if he would be open to trying a rosewood board (grateful for bolt on necks)! I swapped necks with a similar instrument with a rosewood board and it made all the difference in the world to this player.

Another situation was with a player who had a couple of my H-S-H style guitars (Humbucker-Single-Humbucker). They both had rosewood fingerboards but one had an alder body and one had an ash body. He found the ash body to be excessively bright compared to the alder body.

As I experienced more and more situations like this, I began to see a pattern with the woods I was using and the tonal results. So I would like to share some of these observations with you.

Fingerboards:

I feel very confident in saying that I have found the fingerboard to be the most important factor in relationship to wood and tone. Here are my observations:

Maple: Tightest and brightest. Best for slap on basses and for bright, glassy tones on guitars. Can produce more string and fret noise than other woods.

Ebony: Not as bright as maple. Most immediate attack and punch of all fingerboard woods. Virtually no "bloom" to the note after the initial attack. Note has more fundamental with less overtones.

Rosewoods: Sweetest and warmest of the fingerboard woods. South American Rosewoods are tighter and punchier than Indian Rosewoods, which are darker and rounder.

Pau Ferro: (Also known as Morado, Caviuna or Bolivian Rosewood)


Ebony
East Indian Rosewood
Brazilian Rosewood
Madagascar Rosewood
PauFerro
Maple

Pau Fero is not a true Rosewood, but I have been a fan of this wood for fingerboards for over 35 years. Grain is very tight and silky smooth. More warmth than Maple or Ebony but tighter sounding than the other Rosewoods.

Neck Woods:

Neck woods are primarily mahogany or maple. Mahogany is the warmest and Maple is the brightest. I have made archtops and solidbody guitars with both. For basses, I have always used Maple for tightness and punch.

Body Woods:

The primary body woods I work with are alder, ash and mahogany.

While I find the body wood less significant that the fingerboard wood, they certainly have audible differences.

Ash: Hands down, the tightest, brightest and punchiest body wood.

Alder: Sweeter and warmer, with fuller midrange

Mahogany: The warmest and most "round" sounding body wood.

Ash

Alder

Maple: I must confess that I personally have never heard a maple body instrument that I like. I have always found a maple body to be too bright for my taste, with a general lack of "character". They also tend to be very heavy.

Others: Other body woods that have been used successfully include Basswood, Poplar, Walnut.

Construction Differences:

In addition to wood choices, construction differences play a large role in tone as well. Typical neck joints include bolt-on, set neck, and neck through. I do not personally hear a big difference between a tightly fit bolt-on and a set neck. However, a neck through is a different story. With a neck through, the neck is typically maple or a maple plus other woods laminate, that runs the entire length of the body. Then wings, usually of a different wood, are glued to each side of the body portion of the neck to create a "body". With this mode of construction the pickups and bridge are mounted on the same piece of wood that makes the neck. In this case, my personal opinion is you are primarily hearing the neck wood as the body wood (which is usually maple).

Another construction difference is body laminations. The classic example is the maple cap on the body of a Les Paul

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guitar. Most players can hear the effect of the maple cap on the tone compared to similar guitars with an all mahogany body. In this case, the maple cap starts at about ½" thick. However, on my instruments, where I use a laminate top of about 1/10", I do not feel I can hear the difference, and consider the top to be purely cosmetic.

Finally, I wanted to discuss weight and acoustic resonance. When I started building electric instruments in the late 70's, the conventional wisdom was that the wood was irrelevant and the tone of the instrument was all about the pickups and the hardware (bridges, brass nuts, pickups, etc). In addition, the priority was on sustain rather than tone. Over several years of modding guitars and basses, I noticed that my typical mod (fret job, new nut, shielding electronics, etc) produced different results depending on the instrument. Over time, I became convinced that the better the guitar or bass sound acoustically, the better it sounded amplified, regardless of what I did to the instrument. In addition, I found that the instruments that sounded the best acoustically, tended to be the lightest in weight. Of course, if you are a thrash metal guitarist, sustain would be one of the most important variables for you and would probably override many other tonal considerations. However, for less high volume music, the more subtleties of tone might take precedence. When I coach people on buying an instrument at a music store, I tell them to try to listen to several of the same model, made with the same woods, and play them acoustically. I will always put my money on the instrument that sounds the best acoustically will sound the best through an amplifier.

Obviously, these are generalizations based on my personal experience. Whenever I express my observations on this subject on various internet forums, I am always amazed at some of the hostile reactions I get. People will say "My maple board Music Man Stingray is warmer than my Rosewood Ibanez". Obviously the problem here is comparing apples to oranges. Any instrument, no matter what woods are used, can be brighter or warmer than another instrument. What gives my "generalizations" credibility, is the fact that I have built so many similar instruments over the years. Another point of argument is the occasional "listening test" where people are asked to pick something in a blind listening test. Recently I have read a couple of studies that conclude that listeners are unable to hear differences based on various woods and therefore, the wood does not make a difference. I would counter this argument by saying it really does not matter if the listener can tell the differences or not. What is important here is that the **player** can tell the difference! A musician develops a very special and intimate relationship with an instrument. Very subtle feedback cues affect the way a player creates their tone. What the player hears and feels affects whether they play closer to the bridge or the neck, what angle they use on their pick or nails, the amount of vibrato they use on their left hand, and on and on.

In conclusion, I just wish to say that as subjective as this subject may be, there tends to be a consensus among builders of the tonal differences consistent to what I described. Use it as a guide, but form your own opinions based on your experiences and the feedback you get from your players. Just remember to try to evaluate one variable at a time. If you try to compare wood A to wood B, make sure you keep as many of the other variables as constant as possible, otherwise, you have no way to evaluate if what you are hearing is the wood, versus other factors. □

Roger Sadowsky has been building and repairing all types of guitars since 1972. Sadowsky Guitars was established in 1979 in NYC and has served musicians in NYC and around the world. Today, he primarily makes a line of electric guitars and basses and is once again dabbling in acoustic guitars. ***http://www.sadowsky.com***