



## Tip #16 Why is MDF (Medium Density Fiberboard) Better?

There are a lot of different materials used to make speaker enclosures and baffles. Although most people don't think about it, the enclosure or baffle material can have a very dramatic effect on the sound quality of the speaker.

Most speaker materials fall into one of three main categories:

- Plastic
- Aluminum
- Wood

Plastic is very conducive to molding into different shapes and designs and is therefore a favorite material for speaker designers who place a higher priority on appearance over sound. Once the tooling is paid for ("tooling" is the apparatus that actually molds and forms the hot liquid plastic into its final shape), the actual per-piece price of a plastic part can be very low. That's why many plastic speakers also have cheap price tags. You can make good, "non-ringing" plastic (like we use on our AW-424), but you won't find it on those cheapo cutsey little sats.

Aluminum can also be very cheap, especially when it's extruded. The process of "extruding" aluminum is sort of the same as making home-made pasta (especially ziti, the hollow-log kind). The aluminum goes into this big machine on one end, and out the other end comes a formed, shaped cylinder. Depending on what size you need, you simply chop off the aluminum cylinders at the desired length.

Aluminum has the advantage to the uninitiated person of conveying quality: "Oooh, it's made out of *metal*!"

However, metal can be a terrible speaker enclosure material. Here's why: The only things you want to make sound in a speaker are the drivers (the woofer and tweeter), right? But as a woofer moves back and forth, it generates pressure waves inside the enclosure. It also vibrates through its frame. These energies are transmitted to the front baffle and to the enclosure walls. The baffle and the enclosure then have a "choice," if you will, as to what they will do with this extraneous energy: They can either damp it out so it's inaudible...or, they can ring like a bell in response to this energy input.

Look at the Liberty Bell...what's it made of? Wood? Would that make a good bell? (See Fig 1) Look at the cymbals on the drum kit of your favorite band's drummer...what are they made of? (See Fig 2) Metal! Metal can ring like crazy, uncontrollably.

In the best speakers, only the woofer and the tweeter "speak." The enclosure and baffle keep their mouths quiet.

MDF (a composite of real wood fibers and dense resin) is a terrific speaker enclosure material that really damps out unwanted, extraneous energy and vibration. All you get is great sound...which is what you expect from Atlantic Technology.

**Figure 1: The Liberty Bell**



*Metal rings when struck. Good for a bell, bad for a speaker enclosure.*

**Figure 2: The Wooden Cymbal**



*Wood doesn't ring when struck. Bad for cymbals, great for speaker enclosures.*

### Other Tech Tips:

Tip 12: Why FS Series?

Tip 13: What is "Boundary Comp"?

Tip 14: The Sub-8 Team

Tip 15: Subwoofer Placement