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Subject: plywood vs mdf

Posted by [bcherry](#) on Thu, 22 Mar 2001 11:54:37 GMT

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Great! Since we've got a designer and cabinet maker in the house I'd like to hear your comments about a hi-efficiency bass reflex cabinet made of plywood as opposed to mdf. Anyone?

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Subject: Re: plywood vs mdf

Posted by [R. Hertz](#) on Thu, 22 Mar 2001 15:24:57 GMT

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You can get very good results using baltic birch plywood and strategically-placed braces. Most domestic wood will probably have too many voids and will lack the density of birch. For the money though, it's pretty hard to beat MDF or HDF. You can also get the MDF veneered if necessary. My local lumber yard sells 3/4" 4 x 8 sheets for about \$55, veneered both sides.

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Subject: Re: plywood vs mdf

Posted by [bcherry](#) on Fri, 23 Mar 2001 02:51:12 GMT

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Thanks for that. I'm wondering about the sonic tradeoffs. I know MDF seems to have become the defacto standard but to my ears it sounds dead. Musical notes don't lead with the instantaneous burst and the natural decay of live music. Bass notes go thud instead of thump. Treble sounds cloaked without shine and sparkle. On the other hand plywood (ala LaScala) does thump, sparkle and shine but with a 'plywood' colouration. I think the brain can compensate for colourations (looking through coloured glasses for instance) better than subtractive distortion (looking through smudged glasses). Even musical instruments have their own colourations depending on manufacturing techniques and age (Bosendorfer vs Steinway vs Kawai etc). But what would an MDF piano or violin sound like? Are we putting too much emphasis on 'deadness' (the knuckle rap test) in a cabinet and unwittingly killing off something important? Just wondering.

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Subject: Re: plywood vs mdf

Posted by [R. Hertz](#) on Fri, 23 Mar 2001 04:09:03 GMT

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I don't think it would be correct to characterize the sound of a loudspeaker based on the enclosure alone. There are other factors at work such as enclosure alignment, damping material, crossover design, and the overall voicing of the loudspeaker. If you used two identical speaker systems, but one in a plywood cabinet and one in an MDF cabinet, then you might be able to draw a valid conclusion. But if you listen to a Vandersteen model 3A with an MDF enclosure and try to compare it with a Klipsch with a plywood enclosure, your conclusion will be invalid.

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Subject: Re: plywood vs mdf

Posted by [bcherry](#) on Fri, 23 Mar 2001 05:28:05 GMT

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I agree there are many variables at work and all combine make a system which produces a signature sound. In general though it seems our approach to speaker design and construction is to decouple the cabinet from the drivers and suppress the cabinet's role by making it dead. But we're asking the speaker do the same thing a musical instrument does and musical instruments embrace their enclosures and make them an integral part of the design. When you hear a violin, you actually aren't hearing the strings but rather the sound as amplified by the wooden body. I've heard pianos with MDF used in construction and they do sound dead. There is a French company (can't remember the name) that uses a very thin wall solid wood for their speakers cabs with positive results. Are there any others that take this approach or done what you suggest (building both MDF and plywood versions of the same speaker)?

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Subject: Re: plywood vs mdf

Posted by [R. Hertz](#) on Fri, 23 Mar 2001 15:31:10 GMT

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I don't know of a manufacturer that makes two models of the same speaker with different enclosures. The prevailing wisdom as you have stated is to make the enclosure as inert as possible. With musical instruments, the body of the instrument is used to produce sound. With a loudspeaker system, we are RE-producing the sound. Colorations introduced through electronic and/or mechanical means are undesirable as they alter the original performance. See the difference?

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Subject: Re: plywood vs mdf

Posted by [Wayne\\_Parham](#) on Sun, 25 Mar 2001 11:01:35 GMT

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Personally, I prefer that the cabinet be as acoustically inert as possible. I understand the objective of a few manufacturers to make the loudspeaker cabinet act like a musical instrument body. But the thing is, we want our speakers to reproduce the signal, not generate a tone of their own.

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Subject: Glad our duet has become a trio, next an ensemble?

Posted by [bcherry](#) on Mon, 26 Mar 2001 01:08:53 GMT

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Thanks Wayne and R Hertz. I'm just an amateur so this dialogue has been helpful. I had a couple other things to raise but I couldn't get back in time to keep the thread live. I'll mention them and then I'm done. I found the link about the French speaker making their enclosures out of the same kind of wood that guitars are made of and according to Harvey Rosenberg they get the job done surpassingly. The speakers are called Lutherie and here is the link:

<http://www.meta-gizmo.com/Tri/speak/frog.html> I get what you're saying about reproduce versus produce but don't agree. We listen to a violin and hear the complex sound waves produced by the body of the violin. We listen to a violin through a transducer and we hear a facsimile of complex sound waves produced by the emitting section of the transducing device. That section is not just the speaker driver, it includes the box that contains it. With speakers in free air all you hear is the raw driver and it's seriously lacking. Put it in a baffle and it sounds much better. Put it in a box and now you can tune the overall response and damp out the back wave and get much better sound (although some open box baffle-only devotees would argue). But the box is still going to radiate sound so wouldn't it be better to use a material which has acoustical characteristics more closely matched to the original source? In my home we have 2 musicians, a piano, clarinet and flute. And we have our hifi close by so we've had some interesting comparisons; MDF boxes are dead sounding, plywood boxes are more listenable but coloured. Panel speakers are dynamically constricted but detailed and transparent. Solid laminated wood? I don't know. Maybe I'll try building my next speakers from that. But thick or thin? Hardwood or softwood? I'd sure like to hear comments from anyone that's tried different cabinet materials. Thanks for starting this forum. The only way to advance the art is to experiment and these forums provide a way to report our experiences. Brian

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Subject: :-)

Posted by [Wayne\\_Parham](#) on Mon, 26 Mar 2001 02:13:22 GMT

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I saw an interesting idea recently, that removes the loudspeaker cabinet entirely. The idea was to

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use the beat frequency from two high frequency ultrasonic horns. Perhaps contained in the same horn flare - just two emitters. The idea was to project a reference frequency tone - say 100kHz, for example - and then to frequency modulate them with the audio signal. As I interpreted his idea, he proposed that one signal be a 100kHz reference tone and the other be the same 100kHz "carrier," but this one would be frequency modulated by the audio signal. I suppose it could also be done with one signal being 100kHz plus one-half the audio signal frequency and the other being 100kHz minus one-half the audio signal frequency. Either way, it's simple heterodyning; We've been doing it for years in the IF sections of our radios. Cool idea. I wonder if it would have any ill-effects.

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Subject: Re: plywood vs mdf

Posted by [doctorjohn](#) on Wed, 28 Mar 2001 02:30:07 GMT

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In a way this is not entirely true. Take Harbeth LS3/5A for example, the Baffle was later changed to MDF. I believe some other LS3/5As were later of MDF construction. I DID prefer the old Harbeth to the newer. But then it has been said the units take forever to run in and old units have advantage. Personally my suspicion of MDF agrees with bcherry.

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Subject: Re: plywood vs mdf

Posted by [Paul C.](#) on Thu, 03 May 2001 04:26:23 GMT

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Well, something no one mentioned yet...I agree that MDF is probably better for home stereo, or permanent theater or PA speakers. Speakers should not add their own colorations, but reproduce the signal coming to them faithfully. But a working musician has to move on down the road. MDF is not as "roadworthy" as birch ply. A few bumps and first thing you know, corners are knocked off, dents all over the place. Anything screwed into it is likely to pull out a big chunk of MDF when bumped. If they get wet (rain, some \*&^#% spills his drink on MY expensive speaker), the material swells. I have rebuilt speakers for other musicians, copying the original MDF cabinets over in ply. Not ONE has complained of any resonances or such. But all like the sturdier ply cabinets.

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