Subject: Re: weight of speaker (2pi Towers)
Posted by Wayne Parham on Fri, 28 May 2010 04:30:26 GMT
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A standard build with 5/8" MDF and two cross-braces is 75 pounds.

Weight doesn't matter, but panel stiffness and damping does. The material and bracing are more important than the weight.

You'll hear of people doing things like putting sand in cabinets to deaden them, and it can help in some cases. But the reason isn't because it adds weight, at least not directly. The reason is the weight puts a preload on the panels and makes them more rigid. It also acts to damp the sound. Those are the goals, good damping and rigidity.

Usually things that make something stiffer tend to reduce damping and vice versa. But you need both things for a good cabinet. Typically, you use material like MDF or baltic birch and brace so each panel is pretty stiff. Then for damping, you add fiberglass insulation. This actually damps the wave travelling through the air, not the wood. Some use constrained layers to help damp the wood. Others apply tar.

I find MDF is pretty well damped internally, because it is actually made of several wood fibers as a pulp bonded with glue. Baltic birch is damped similarly, by having multiple layers of wood laminate bonded by glue. It is more rigid than MDF but less well damped as a result. It's also stronger and more moisture resistant. A person could always use baltic birch on the outside and MDF on the inside, held together with a thick layer of silicon adhesive. That would give you a very effective constrained layer damped enclosure at minimum cost. But man, that's heavy.

I find a well-built MDF cabinet with proper bracing to be more than adequate. The truth is the real problem one faces is usually internal standing waves, not cabinet vibration. You can solve it by careful placement of sound sources and internal insulation. All of my designs have these things considered, and standing wave anomalies are negligible.