

## Sound Dampening Part IV

Welcome for the first time to the Secret Monster-Hardware Test Facility located just down the road in Silicon Holler!

Today we revisit the topic of making your computer quieter. There are several components in computers that make noise, with the loudest culprits being the main CPU cooling heat sink unit, case fans, other heat sink fans (video cards, drives, chipset heat sink fans), drive noise caused by "spinning up", and the often-overlooked vibration factor. If you put rotational energy into several objects in a relatively sealed box, some of that energy is eventually going to show up as vibration and case rattling. This review covers different insulations in a three-way brand shootout, utilizing several different types of insulation material. Lets get right to the participants and the products we're going to cover in this shootout!

[Cascade Audio Engineering](#) - VB-2HD, VB-2MAX  
[Dynamic Control](#) - Dynashield, Dynamat Extreme  
[Scosche Industries](#) - Accumat AMT045

Please note that all three of these companies are active in the realm of audio dampening. Because of this, their web sites are geared heavily towards the sales aspect of the car audio field. However, the principles involved in dampening sound in a computer are very similar and all three of these companies do sell their product for the purpose of reducing computer noise.

For this test, I obtained an old case from the "junk pile" (I grabbed several but ended up using only one of them). Here's a picture of the cases and products - ignore the drill press and 1950's model DeVilbiss compressor in the background, they won't be in play for this test! Maybe for the next CPU do-it-yourself water cooling kit... Case "C" was used because there were less "holes" in the case that had been used. As I tested, I covered the front and rear with a sheet of cardboard taped in place to eliminate any direct openings.



Since these were not going to have new motherboard/CPU/power supplies in them, I had to come up with an artificial way of making noise, and also a way to measure it. While everything is subjective to a degree, I wanted to get some actual sound level measurements. Sooooo... I warmed up the old Paypal account and headed over to eBay, where I was able to pick this up for a song!



Yes, a Radio Shack Realistic Sound Level Meter, catalog number 42-3019. Buuuuuut, when I got it in, I realized that there was a slight problem - the ranges available only went as low as 70db, with a -10 to +6 scale for each range (70, 80, 90, 100, 110, 120). Therefore, the lowest I could measure was 60db, well above the "stated" range of most computer use fans. I measured some sample sound levels around the Secret Monster-Hardware Test Facility and everything seemed reasonable... I don't have a way of checking the calibration on the meter, but if it acts the same for all test subjects, we should be OK. Every time I used the meter, I took several readings and averaged the results to get a normalized reading. I needed to come up with a sound source that was up in the 70-80db range - high enough to give meaningful results, and low enough to not damage my hearing... so, I dug around a bit in the Monster-Hardware stash of equipment takeoffs, and came up with this fan:

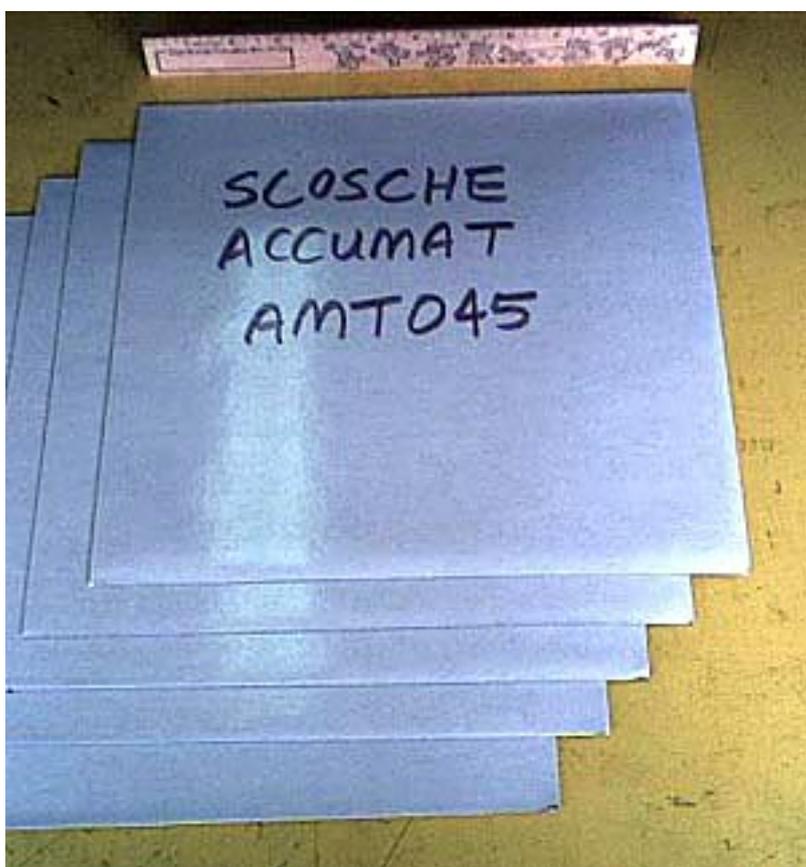


That's right, a 115v 6" diameter Fulmar model 5915PC-12T-B30 fan... 35 watts and 220 cfm of raw air

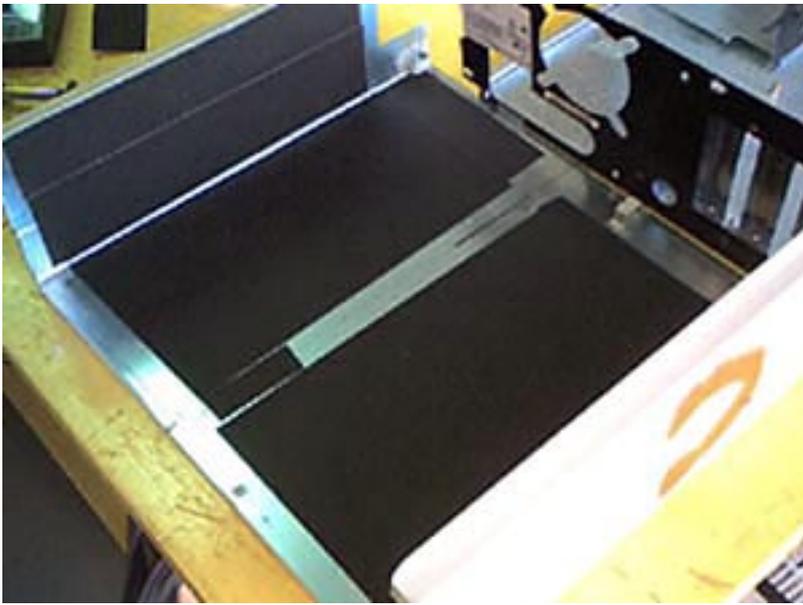
moving power!(grunt-grunt!) It has a metal hub and blades enclosed in a cast aluminum open frame with a grill on the input side. The rating for this fan in regards to sound level is 56db, to which I reply - either the test engineer was smoking crack that day or they definitely used a bad sound meter - it has a particularly nasty whine. With an ambient sound level of less than 60 db in my shop, the fan measured a noise output of about 80 to 84 db depending on the angle of the sound meter.

Now, on to the tests (I'll provide installation details, notes, and methods first and then results compiled at the end):

First, I installed some [Scosche Accumat AMT045](#). This is a rubberized sheet of sound dampening material that comes in 12" x 12" square sheets. There were five sheets in the package that arrived from Scosche, in a lightweight heavy cardstock folder along with a sheet of instructions. Each sheet had a self-stick adhesive with a waxed paper backing - just "peel and stick". The surface of the material resembled a heavy vinyl or naugahyde, with a leather grain texture. Unlike the picture on the website for this product, the material is a solid black and does not have any writing on it. The material is much stiffer than some of the others tested, more on that later. By the way, if you see a ruler in a photograph, it is to give a sense of scale.

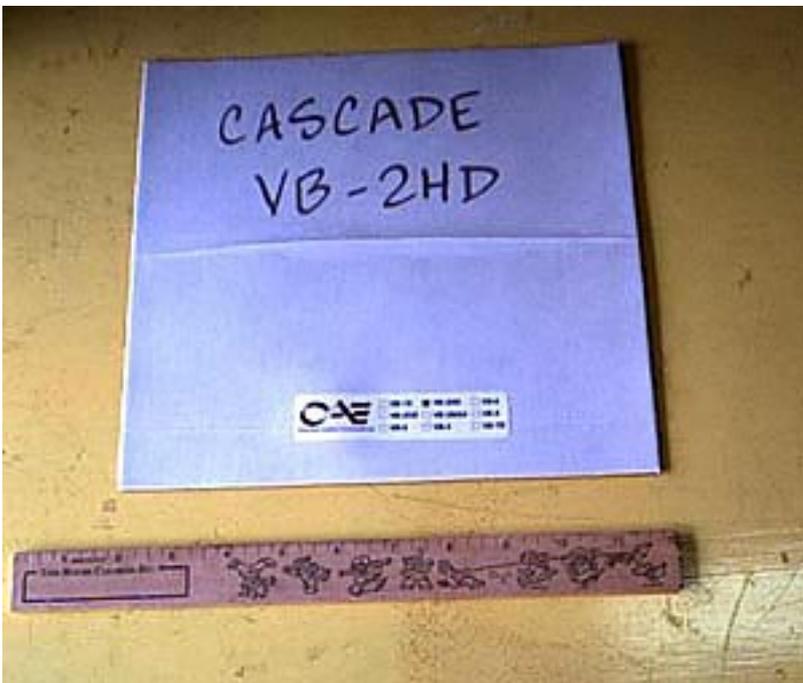


Installation was simple and straightforward, the material cut easily with scissors or razor knife. Note that the instructions indicate that every square inch of available surface need not be covered for effective dampening, but do the best you can. More is better in the case of dampening material, and I was able to get about 80-85% coverage for all brands tested. Note that the omitted notch is due to an interior support in the case.



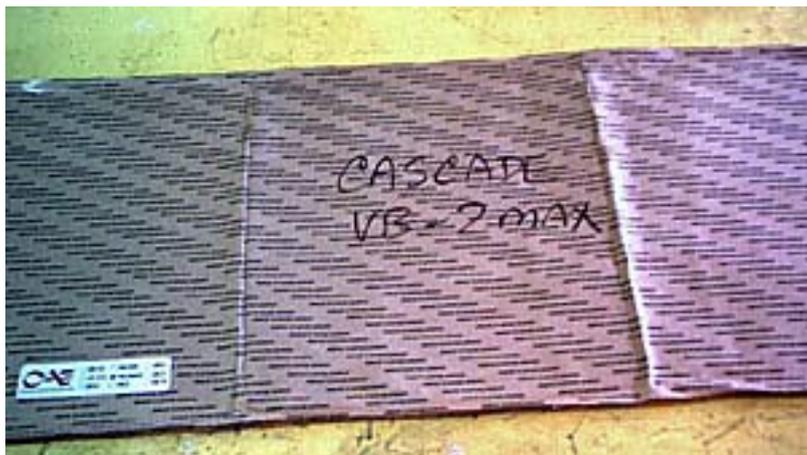
After the results were taken, I took the case back apart and peeled the Accumat material off. This is not an activity I recommend if you have a low aggravation level, or somewhere to go next week. I have to give their adhesive engineers a hand, this stuff is meant to stay in place where you put it. I had to use a putty knife, lots of elbow grease, and time, and also had to use a chemical cleaner to get rid of the final adhesive residue. If you ever need to take this out of a case to do a mod or something, plan accordingly.

Secondly, I tried out the [Cascade Engineering VB-2HD](#)...hey, wait a minute! This stuff looks EXACTLY like the Scosche Accumat AMT045, even the backing paper. Same product thickness, texture, adhesive - everything. The only difference - the sheets measure 10" x 10" instead of 12" x 12" for the Accumat AMT045. If you purchase this product from Cascade, make sure you order enough material by square inches and don't go by number of sheets alone. Frankly, I'm going to skip this test since I am relatively certain that it is the same material.



Next, I tried the [Cascade VB-2MAX](#). This material is noticeably different than the VB-2HD, but it is also "peel and stick". The VB-2HD is stiff, while the VB-2MAX is soft and much more rubberized instead of resembling vinyl. It also has a foil backing that is painted a smooth semi-gloss black. It is much more flexible and should conform to bent and curved shapes much better. The actual "rubber part" is stretchy; if you've ever seen any

old 3M waterproof self-sealing electrical insulation tape, that's what it reminds me of. The VB-2MAX came in a sheet that was approximately 12"x 30". Due to the nature of the foil backing, this material has some creases and wrinkles that will not press out. The product was folded twice, presumably for shipping reasons.



The material, once again, cut easily with scissors. Due to the material being much more flexible and less stiff, installation wasn't the breeze like it was for the Accumat AMT045 and Cascade VB-2HD. However, installation was straightforward and not difficult.



Removal was MUCH easier. Obviously, the manufacturer of this product has given the foil a better bonding agent than the adhesive on the application side. The strength of the foil prevented the product tearing that occurred with the AMT045/VBV-2HD, so removal took only moments and was far easier to accomplish. It seemed like the application adhesive left far less residue, in fact, it all came off. That's a definite plus in my book.

Next, I'm gonna try the [Dynamat Extreme](#). Hmm...I have a sense of déjà vu! This is VERY similar to the Cascade VB-2MAX, with the only exception being the packaging. The foil backer is not solid black, but the Dynamat Extreme logo appears to be silk-screened onto the bare aluminum. This looks a little better in my opinion than the Cascade equivalent product, but that's just a personal preference. The Dynamat Extreme came in a triangular tube, a single 18"x32" sheet. You can see the tube in the picture that shows all the products in a group. Due to the much tighter rolled up radius, this product is heavily wrinkled but this should not affect performance. Some of this can be pressed out at installation, but not all.



The installation was straightforward and removed exactly like the Accumat VB-2MAX. Note the logo in the picture above... if you have any windows cut in the side of your case, this will be noticeable. This product might bring a huge plus to the table if you have any cathode or led lights installed inside your case, as it will be very reflective and should make your case seem much brighter.

The Dynamat Extreme also comes in a prepackaged computer kit that contains six 4" x 10" sheets of the Dynamat Extreme material, an instruction sheet, and a Dynamat logo that you can install on a case window or sheet of glass. They didn't have to include a logo, which is a touch of class. I didn't test this kit since the material was the same as the material provided in the wedge kit.



Lastly, I tested the [Dynashield](#). I tested this one last, since it is a spray material. The can says that it is a multi-purpose material which can be used for soundproofing, undercoating rust protection, gravel guard, and as a thermal shield. The net weight of the can is 10.5 oz.



I was impressed with the ease of application. Since I was working on an old case, I did not use any taped off material to prevent overspray. You should obviously take this precaution if you are working on an active project or expensive case!



This product impressed me - it was easy to apply and built up quickly. I was able to build one wet coat to appx 1/8th of an inch, but I did have to let it dry for about 45 minutes. The Dynashield built up with almost a marshmallow like consistency and dried to a flat black, resembling a soft neoprene foam rubber. Removal wasn't an issue, I didn't even try. You'll definitely have to go outside to complete your soundproofing project if you use the spray, as there is a noticeable asphaltic odor. It isn't offensive, though, and far better than many of the similar products I've tried. The other products used in this test has either no odor at all or extremely minimal.

## **TEST RESULTS:**

	Measurements are in Decibel Levels			
	Top of Case	Side of case	Rear of case	Front of case
Case baseline - no soundproofing	73	75	79	75
Scosche Accumat AMT045 and Cascade VB-2HD	70	73	76	75
Cascade VB-2MAX	68	73	76	75
Dynamat Extreme	69	72	75	75
Dynamat Dynashield	70	74	77	76

### **Conclusions:**

The Cascade VB-2MAX and the Dynamat Extreme performed virtually dead even, and provided the best reduction of sound level - on average, about 4-5 db. This makes intuitive sense since they are very similar (if not the same) product. These materials are very heavy, and the incremental increase over the runner ups might be due to the improved vibration dampening due to the heavier and denser mass. The Dynamat website has a wealth of technical analysis and detail about how their product works, if your need that kind of background, the technical hows-and-whys are definitely there. A single sheet of Cascade VB-2MAX offers 2.6 square feet of coverage. The Dynamat Extreme wedge pack offers 4.0 square feet of coverage, and is also available in the computer kit offering 1.67 square feet of coverage. In my opinion, if looks matter, the computer kit is the best choice since the sheets are precut, smooth, and comes with a logo decal. The ease of removal puts this product over the top:

**Rating - 93/100.**

The Scosche Accumat AMT045 and Cascade VB-2HD offered the next best level of sound dampening. This product offered an average of 3 db reduction, a noticeable difference. I liked this version of product as well, especially since it was the easiest to apply. The surface was uniform and looked great. My gut feeling is that this product will be a little more economical than the other Cascade product or the Dynamat Extreme, and would be a good compromise of performance versus price. Ease of installation factors heavily:

**Rating - 90/100.**

Lastly, the spray product Dynashield offered the least amount of soundproofing. But, it did offer a audible reduction of noise level, just not as much as the other products. This is to be expected since the mass is not as great, with less vibration dampening properties. Advantages are the ability to provide the most thorough coverage and economy. Dynamat claims 4 square feet of coverage for each can, but I suspect that this is a bit conservative - I can't imagine not being able to soundproof two midsize computers with one can. Quality spray mechanism and economy gives it:

**Rating - 89/100.**

### **Final Notes:**

Finally, I would not hesitate to use any of these products, as they all provided a quite noticeable difference in the sound level of noise coming out of our test case. Candidly, my ears couldn't tell the difference between

any of the products with the exception that the case with the spray material was a little louder.

I did not test for temperature increases, since I was using an artificial noise source and not a working computer. However, I don't think that using any of these products will significantly raise your case temperature, if at all. This type of material is sound insulation, not thermal insulation, and the dense material transfers heat well.

The bottom line - I'd feel good about buying any of these products... trust me, I'm as frugal as they come - can I get a witness, MHW crew! I appreciate the suppliers who generously allowed us to test their products. Readers - good luck on your next project!

Insulglass

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