

Low cost cockpit sound and thermal insulation

Here is how I did the low-cost thermal and sound insulation for the cockpit and a comparison between it and a sound deadening material such as Dynamat Extreme. I am in no way criticizing Dynamat and like materials, they're just so horribly overpriced in my opinion.

Instead of Dynamat-type sound deadener plus an additional layer of thermal insulation, I did the following in the following order after stripping the floorboards, tranny tunnel, firewall and vertical metal of the rear deck of the cockpit. (This was not done to the following areas. The outboard vertical walls behind and in front of the doors, the rear deck, rear bulkhead and inner door threshold sills.) I also applied a layer of fiberglass mat and resin to the floorboards to repair some small holes.

- A.---I sprayed on two layers of truck bed liner and let them dry.
- B.---Sprayed two coats of urethane sealer to prevent moisture and O₂ transfer through the truck bed liner.
- C.---Sprayed on two layers of quality rubberized undercoating and let dry.
- D.---I painted all areas coated with the truck bed liner and undercoating (i.e. the entire cockpit)
- E.---Applied a foil-backed butyl rubber (similar to Dynamat) on the floorboards where the factory sound deadening material was. Also on the entire transmission tunnel, vertical lower bulkhead behind the seats and forward vertical and horizontal panels of the firewall.
- F.---Sprayed on 3M adhesive and then placed the mylarized sunshades as insulation.

The truck bed liner is really tough and, when painted/sealed with a rust-preventative paint, should offer good corrosion resistance. It also adds a thin layer of dense, sound-absorbing material to the metal.

A good quality, spray-on rubberized rust proofing not only adds additional protection from moisture and oxygen penetration but also adds some vibration-absorbing characteristics. Two or three layers should make a small difference in the area of vibration dampening but one or two more layers might not hurt. Any more probably wouldn't help (though I could be wrong) After the undercoating dried I also painted it to seal it.

Instead of installing Dynamat (or the like) sound deadener which would have cost several hundred dollars I bought some roll-on roofing material at the Home Depot. It is a butyl rubber material with a thick foil backing but costs a lot less. I cut it and placed it in the same pattern as the original factory sound deadening material on the floorboards. I also put it on the firewall, entire transmission tunnel and the vertical bulkhead behind the seats. This material comes in rolls 6-inches wide by 25-feet long and two rolls will finish out the areas I described above if you are careful with it and apply it in the same pattern as I did, five rolls would finish out just about every square inch of the cockpit if you did the floors completely and not just in the factory pattern..

I chose the sunshades for the thermal insulation because I saw them first. Mylar bubble insulation which is the exact same thing (except it comes in a big roll and at a lower cost per square foot) is available at big hardware stores.

The only thing I would do differently is to glue down the Mylar bubble insulation with contact adhesive instead of the spray-on type. I just feel it would hold up better and be a stronger bond.

I'll probably wind up adding the butyl sound deadening material to the inner sills but since I still have welding work coming up in that area I'll do that after I have the new outer sills installed and the rest of the body work finished. It will add about \$17.00 to the costs.

Total cost, as seen below, was \$107.00. Quite a bit less than what conventional Dynamat-type material plus any thermal insulation would have cost.

Spray on truck bed liner, 2 spray cans----- \$7
Rubberized undercoating, 2 spray cans-----\$16
Urethane sealer, 1 spray can-----\$6
"Auto-Shade" dashboard sun shades, -----\$27
3M adhesive, 1 spray can-----\$8
Metal HVAC tape, 1 roll-----\$7
2 rolls roofing butyl with foil backing-----36
Total cost-----\$107.00

For comparison:

Dynamat cost: \$9.50 per square foot

Hardware store butyl with foil cost: \$1.45 per square foot

Total cost for Dynamat plus thermal insulation (and all other costs installed)-- \$396.00

My total cost for the way I did it--\$124.55 (includes extra roll of butyl material for inner sills, outboard footwells and inner doors)

Quite a difference. And yes, the Dynamat is thicker than the butyl sound deadener I installed. But even if I doubled the amount used and also did the sills, the total would be \$178.10...still way less than half of the Dynamat (or comparable) material.

The foil on the two materials is the same thickness and both provide sound deadening and thermal blocking. And I have no doubt that the hardware store butyl material will stand up to the heat coming off the exhaust. If you've ever done any roofing work (and I have done a lot) you know that roof surfaces can reach temperatures of well over 150 degrees on a sunny day.

The materials I used have comparable performance to the Dynamat-type materials and cost much less than half. In addition, I found that installing the 6" wide rolls of the butyl material was much easier than trying to cut up or maneuver the larger sheets of Dynamat.

I tried the Mylar bubble insulation on the floorboards of my Corvette and a single layer practically eliminated the previously substantial heat coming up from the floorboards.

Total weight added to the car with the sound deadening and thermal materials (and using three rolls of the foil butyl instead of two) adds up to around 20 pounds.

Final assessment: This one is almost a no-brainer. While many things people do to save a few

bucks often wind up costing more money or taking much more time in the long run, this one seems to actually be worth the difference. I expect that the sound and heat levels in the car will be dramatically reduced, especially if a hardtop is in place.

The Mylar thermal insulation works well at stopping heat transfer and the foil-backed butyl it basically the same, in practical applications, as Dynamat-type sound deadening materials. The installation of these materials takes no more time or effort than a conventional materials approach (not counting drying times for truck bed liner, paint, etc.)

For what it's worth, I like it (but I'm a cheapskate)

PHOTOS; Clockwise starting from upper left,

- 1. Cockpit with sealed truck bed liner and undercoating.*
- 2. Foil/butyl sound deadener installed in factory pattern.*
- 3. Tunnel and firewall with sound deadener.*
- 4. Final cockpit with thermal insulation installed*



FINAL NOTES:

At the last minute, after I was done with the passenger floorboards, I decided to glue down the rest of the thermal bubble wrap insulation with brush-on contact adhesive instead of the spray on. I had it left over from some other project so it didn't add to the cost and it does seem to give a much stronger bond than the spray-on stuff. It also costs less than the spray adhesive and a \$6.00 can is way more than you need to do the entire interior.

The bubblewrap-like material I used for thermal insulation (the dashboard sunshades from Walmart) appears to be a double layer of the material bonded together. It looks like the same insulation sold by the roll in hardware stores like Home Depot and Lowes. But, I have never taken a close look at the hardware store rolled insulation so it may or may not be double-layered like the sunshades are.

INSTALLATION NOTES:

If you use spray-on rubberized undercoating make sure it is fully dried and painted. If not painted, dragging a brush of contact adhesive across it can loosen it or even liquefy it.

Before applying adhesive to the Mylar bubble wrap insulation or the foil of the butyl sound deadener, be sure to wipe it down with a rag dampened (not soaked) with lacquer thinner or acetone. There are often manufacturing residues and oils on them (especial the butyl foil surface) that will weaken the bond of the contact adhesive.

Sometimes a heat gun is needed to warm up the foil butyl material and make it more flexible during application but as long as the air temperatures are over 60+ degrees I found this to be unnecessary.

All seams and gaps on the butyl/foil sound deaden material were sealed with foil tape (not duct tape) as were all seams of the bubblewrap-like thermal insulation.