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# COVER ME

## Installing Sound and Heat Insulation

By Steve Temple

Photos by Steve Temple and courtesy of Quiet Ride Solutions

Sometimes it's the stuff you *can't* see that makes the difference between a good and a great musclecar. Whether you're restoring or modifying a project vehicle, it's usually easier to focus on the obvious items, such as the engine, bodywork, and upholstery. But what about beneath and behind them? Without sufficient insulation for heat and sound, your musclecar could end up being a hot and noisy ride—an uncomfortable experience at best. That might be kind of fun for a short run, but not on a longer drive.

As a case in point, let me share a personal experience. In a previous life I worked for a certain well-known Texas chicken farmer turned racer and sports car builder who decided to reintroduce the Cobra he had created back in the '60s.

When our factory mule was put together rather hurriedly as a display vehicle, a few key items were left out, such as barrier materials (insulation) in and around the fiberglass cockpit, and a rubber grommet on the steering column where the shaft passed through the firewall. When that 427 big-block V-8 came up to operating temperature, a blast of hot air would shoot directly at the driver's nether regions. While we jokingly referred to this feature as the "Shelby nut roaster," it made for a really unpleasant driving experience (not to mention lowering the fertility rates of male drivers).

Personal comfort aside, high levels of noise and heat can also interfere with your reaction time and driving ability. Not only that, good insulation helps your air conditioner operate more efficiently, thus reducing fuel consumption and the risk of radiator boil-over. Also, your audio system should have better fidelity.

To see what's involved in reducing sound and heat in a musclecar, we sought out some expert assistance from Tim Cox of Quiet Ride Solutions. Our subject car was Mr. Norm's reissued '68 Hemi Dart (featured in "Once in a Blue Moon," June 2007).



**1** Quiet Ride Solutions' factory precut kits include Dynamat strips, Quality Heat Shield, spray-on adhesive, and foil tape. Universal kits for custom insulation are available as well. Figure about a day's time for removal of the car's interior, installing the heat shielding, and reinstalling the interior.

Let's address the noise aspect first. Sound can emanate from a least two different sources in a car: via a solid material—the frame and body panels—and through the air—such as from the exhaust pipe, and somewhat surprisingly, the air intake as well. Lowering airborne noise might require toning down that noisemaker under the hood, which is simply not an option on your musclecar. (We don't want to spoil all the fun here!) However, one op-

tion is to check the rubber weatherstripping on the windows. If you spot any big cracks or missing chunks, install new rubber. If the rubber looks dry but is otherwise intact, apply some Vaseline or other lubricant to make it more compliant for a better seal. In addition, inspect the floorboard and firewall for any unnecessary openings. Those can be filled with the kind of spray-on foam typically used for filling holes and cracks in home-remodeling projects.

As for minimizing vibration-borne noise, the basic approach is similar to placing your hand on the skin of a drum. Flat areas of your musclecar's sheetmetal produce the most sound, so those need the most attention. But the entire cabin area should be insulated wherever possible.

Installing Dynamat, a material composed of rubber and asphalt, is the rough equivalent of placing your hand on the drumming motion of your musclecar's sheetmetal panels. Quiet Ride, the country's largest distributor of Dynamat, starts an insulation project by laying down intermittent strips of this self-adhesive material on the sheetmetal.

Why not use just one big sheet? Keeping the cost down is one reason, and Cox says those individual strips work just as well. How so? Imagine the ripples formed by dropping a stone on the surface of water. Those waves of water provide a visual analogy to sound waves, and the Dynamat strips act as breakwaters to attenuate the motion.

Next goes on a layer of Quality Heat Shield, dense padding bonded to a reinforced layer of aluminum foil. It's important that the foil be placed facing up (instead of against the sheetmetal) for several reasons. It not only serves as a skin to protect the padding, but also creates an air pocket, similar to a double-pane thermal window. It's that layer of air that provides the insulation, as sound travels more easily through solids.

As just one example, Cox recalls a hot-rodded '64 Chevelle he insulated. Prior to



**2** Prior to installation, lay out the precut pieces of Dynamat on the outside of the body to get an idea of where they'll fit underneath. The blue tape covers the self-adhesive side, so these strips will be turned over and pressed in place after determining their correct location, as indicated in the instruction sheet.



**3** Loosely lay out the strips of Dynamat throughout the interior. You don't need to cover every square inch of the cabin.



**4** The blue backing tape peels back to expose the self-adhesive side of the Dynamat.



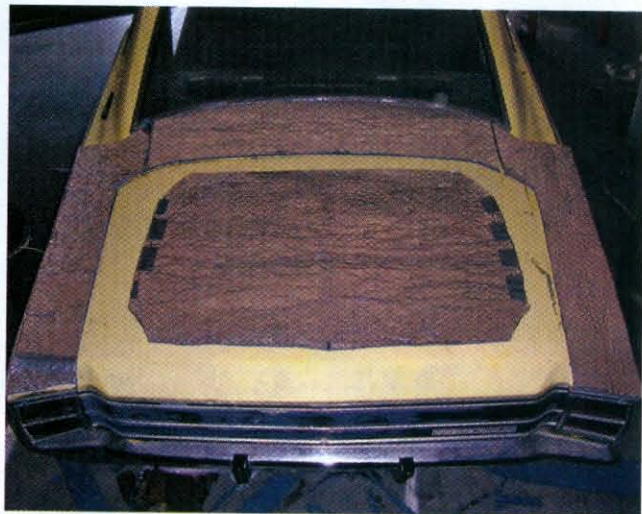
**5** After peeling off the backing, simply press the Dynamat in position.



**7** Quiet Ride precuts pieces of foil-backed Quality Heat Shield padding for the cowl, floor, roof, and trunk, so there's no custom fitting required in most cases.



**6** Use a roller to press the Dynamat strips in place, so they bond tightly with the sheetmetal.



**8** When it's time to install the Quality Heat Shield, lay out the precut pieces on the outside of the body (similar to the Dynamat procedure) to see how they'll fit underneath.

adding the materials, the sound level was 100 decibels (db) at 60 mph, about the equivalent to that of an unbridled jackhammer. Afterward, it dropped to 80 db. Ditto for the levels at idle (80 and 60 db, before and after). That's a huge difference, especially when you consider that decibels are measured on a logarithmic scale, so this decrease represents an approximately 50 percent reduction in sound.

As for reducing temperature, the foil also helps to reflect back heat emanating from the engine and exhaust systems. This material acts as fire retardant, and reflects back 97 percent of infrared energy, Quiet Ride claims, resulting in a temperature drop of as much as 30 degrees. As already noted, this reduction can benefit both the passengers and the engine.

It's fairly easy to put in the materials, and Quiet Ride offers a wide range of precut kits for cars, as well as for trucks, RVs, and other projects. A universal package you can custom fit is available as well.

It's important to make sure the materials form a consistent barrier or envelope that's sealed with foil tape at the seams, and is glued down securely. Otherwise a small opening might create your very own "nut roaster" as well! **MCR**



**9** Even smaller areas, such as this rear corner of the roof, should be insulated.



**10** To install the heat shield, spray adhesive (included with the kit) on the underside of the padding. A double application on the edges is a good idea to ensure a tight bond. Apply the adhesive to the Dynamat strips as well.



**12** The insulation can be fitted into partially enclosed areas by folding it.



**11** After adhesive is applied to both surfaces, lay the Quality Heat Shield on the Dynamat strips.



**13** Be sure to apply foil tape to all seams.



**14** Here's how the cabin should look once insulated with the Quality Heat Shield. Note the silver tape already added on some the seams, all of which will eventually be sealed. The original factory mat goes on top, concealing the insulation.



**15** This decibel meter showed an immediate drop in sound level after installing just the insulation. Once the interior is reinstalled, the noise level will be reduced even more.

#### Source

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