

Why Soundproof ?

As you drive down along the road surface, over rumble strips or cattle grids, the impact the rough surface makes is transferred from the tyres, through the suspension and shocks and finally into the body of the vehicle causing vibration, as the car motion continues, so does the energy to make the car body resonate, creating a noise floor that quickly rises to an annoying drone. Speakers also cause the resonances that affect the body panels of the vehicle. A door mounted mid range speaker can cause the outer skin of the door to vibrate, which in turn causes another part of the door (inner door panel) to also resonate so on and so forth.

So the best idea is to apply a sound damping material. Applied in the correct this material will go a long way towards absorbing the resonant energy. Cutting down these resonances will also improve the overall dynamics of the audio system importantly being the mid-bass region. It has been reported that if the installation of this damping material has been installed properly a car can result in a reduction of road noise by upto six decibels, maybe more. In layman's terms that can be the same as 4 times the output of the amps.



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Figure 1

So how much do I use ?

Well the answer is you can't use too much, research from the suppliers of these materials indicates that the single biggest reduction in noise is achieved by dampening the cars floor-pan. (figure 1), then the front bulkhead between the passenger and engine compartments, then the inside of the wheel arches, the door skins, the rear side body panels and finally the boot area including the lid. If you have the money and time you could also do the roof and engine compartment.

What type of damping material should I use ?

There are different types of damping materials from the aerosol kind to the bitumen asphalt types which come in sheet form. The best I my opinion is the self-adhesive sheets can be cut installed without much difficulty at all.



Dynamat Original



Noise Killer



Figure 2

How to soundproof your car

Firstly work out the amount of damping material you need to buy.

Soundproofing the tailgate

Thoroughly clean each mounting area with a quick-drying solvent that is residue free i.e.; (Acetone or Thinners) so removing grease, dirt, oil, wax, moisture and rust. Now with a clean and smooth surface, a permanent bond will be gained.

Making a paper template (figure 3) of the area you are going to cover. This should save you material and a good check. It can be very sticky once applied and you will not get the chance to remove it.

Using a sharp knife or scissors cut the material to the desired shape.

Remove the backing.

On larges areas only remove small sections at a time, working your way over the panel.

Heating the panel surface with a hairdrier (figure 4) that you are about to apply the material to will ensure a proper and permanent bond. Also heating the material will make the glue stickier and the material more pliable to conform to the body panels, This will keep the material in full contact with the panel maximizing the damping efficiency.

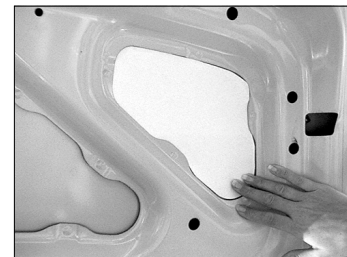


Figure 3



Figure 4

Apply the material to the panel surface starting at the top corner working your way down and across, pressing the material into place. With a small roller, (figure 5) press the material to the surface. Starting from the centre, work it into all contours of the panel, even if the panel is smooth rolling it will ensure lasting adhesion and full contact with the panel surface removing any trapped air.

Carry on soundproofing the rest of the boot (figure 6) in the desired areas till you are happy it has stopped the rattles and has enhanced your sound .

Soundproofing the doors

To soundproof the doors you go about it in the same way as you did the boot in the previous section remembering the more you can afford to put on the better the soundproofing will be. Figures 7 and 8 show how I soundproofed the doors of an Vauxhall Astra a few years ago.

If you need larger copies of the images found in this document, they can be downloaded in a zip file from : <http://www.mitsubishi-fto.org/hifi/soundproofing.zip>

Some manufacturers of soundproofing products:

Dynamat : <http://www.dynamat.com/>

Noise Killer : <http://www.quietnoise.com/nkillers.htm>

Autoleads : <http://www.autoleads.co.uk/>



Figure 5



Figure 6



Figure 7



Figure 8

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