How to Soundproof a Door

Doors are weak links in any soundproofing project. Buying acoustically rated sound doors can cost in the thousands of dollars. In this article we will show you how to produce a high quality sound rated door for a fraction of the price.

The challenge to soundproofing a door is threefold:

- The Door itself easily allows sound to penetrate.
- The gaps along the sides of the door are a sound path.
- Mainly; the gap at the bottom of the door is the biggest sound leak.

Below is a list of products which you will need to ensure maximum soundproofing results:

Drywall or Fiberboard (step 1)
Green Glue (step 1)
Soundproofing Rubber (step 2)
Acoustic Caulk (step 2)
Door Gasket (step 3)
Automatic Door Bottom (step 4)

Figure 1

STEP 1: REINFORCING YOUR DOOR PANEL

Sound waves can easily penetrate a door panel, particularly if it is of the hollow variety. Use a solid wood door with a flat surface. Buy a piece of wood the same size as your door, we like to use 1/2" thick, smooth MDF wood as this routes and paints nicely (if looks are not an issue you can even use a piece of drywall). This step will add mass to your door and will allow you to apply a layer of green glue in between.

Install 1-2 tubes of Green Glue Damping Compound on the back of the MDF or on the door and screw the MDF to the door tightly sandwiching the Green Glue in between (see figure 1).

You can install your handles by drilling the same size hole through the MDF, however for ultimate sound control we recommend using a dummy handle with a ball and catch type of latch in order to eliminate any penetrations through the door.

[Green Glue Compound is a visco-elastic damping compound which dampens vibrations and prevents sound waves from infiltrating through the panel. For more information see, All About Green Glue].

Once your door is fortified you can focus on filling the gaps around the perimeter of your door.

Figure 2

Figure 3

STEP 2: APPLYING SOUNDPROOFING RUBBER AROUND THE MOLDING

Although it is covered by a molding, the gap between the door frame and wall framing is a big sound leak around your doors.

A dense closed cell sponge neoprene Soundproofing Rubber can be used to fill this gap (see figure 2).

Once the soundproofing rubber is applied, use Acoustical Caulk to fill in all remaining small and corner gaps and install your molding (see figure 3).

148 Horton Drive, Suite B
Monsey, New York, 10952
Phone: 845.352.3200
Fax: 845.367.4657
www.TMSoundproofing.com

STEP 3: APPLYING A DOOR GASKET

The next step involves sealing the gap between the door and the doorframe along the sides and top (Jambs and Header).

The cheapest way to do that is using self-adhesive weatherstripping. As you may have noticed, standard weatherstriping tends to fall apart with time. We sell only high quality silicone weatherstripping with special compression properties to give you a long lasting seal.

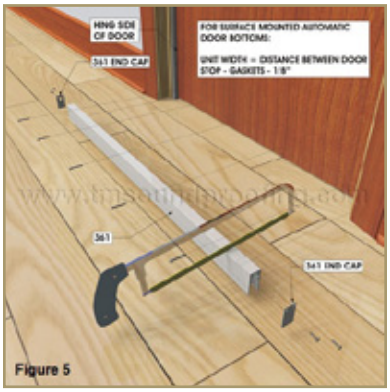
An even better option is to use door gaskets, as these attach to the frame of the door and therefore ensure a true seal at all times.

We carry a Basic Door Gasket which gives you a good seal. As doors are rarely square and flush and they tend to warp and shift we highly recommend our Adjustable Gaskets or Heavy Duty Adjustable Door Gasket which allow you to adjust the seal with the twist of a screwdriver. Although pricey, they will return superior results over many years of use.

The materials used in our door gaskets are high quality neoprene with a 204 anodized aluminum retainer to ensure the seal will remain flexible and effective through constant usage, and its soundproofing properties will endure.

Our gaskets are available in various finishes to assure they blend well into the door and provide an unobtrusive look.

The door gasket is applied to the two jambs (sides) and header (top) of the door (see figure 4).



STEP 4: APPLYING AN AUTOMATIC DOOR BOTTOM

The final step is sealing the gap at the bottom of the door.

A standard rubber sweep will not give you a proper seal. If the seal is tight to the floor you will not be able to open and close the door, if it is not tight to the floor you will not have a proper seal. Additionally, most door and floors are not precisely square, therefore as the door swings you can find the front edge of the door coming closer and closer to the floor making installing a door sweep with a proper seal nearly impossible.

The solution is to use an Automatic Door Bottom. This ingenious piece can be mounted flush with the bottom of the door and will drop a seal when the door closes and automatically raise the seal when the door opens. The best seal you will get is when using a Mortised or Semi-mortised applied Automatic Door Bottom. Being that a mortised application is not always feasible, a surface mounted Automatic Door Bottoms work great too, they just require a bit of fiddling and trimming to get the fit just right.

In addition to soundproofing gaps, a door bottom has added benefits of preventing draft and light infiltration that is common through the gap under doors.

How it Works:

Automatic Door Bottoms utilize a concealed flat spring mechanism. When the door is closed, a plunger on the side of the door bottom is compressed against the door frame which activates the mechanism. Upon activation, the mechanism will lower a neoprene seal which compresses against a doorway threshold or the floor surface below to tightly seal the gap. The seal drops from the hinge side first ensuring a constantly smooth motion and preventing drag! It retracts automatically upon opening the door.

Once you have fortified your door panel and gaps at the jamb, header, and bottom of your door frame you can be assured a soundproof door with high ratings.