

Proper Insulation Installation Methods

Proper insulation installation is vital to getting the most from the insulation that you are paying for. Unfortunately, sloppy installation methods can leave significant voids in the insulation, drafts and derate the insulation value of the insulation used. A 10% void over an entire wall (such as part of a single stud cavity) will cut the R-value of that wall *in half*.

Often the techniques are because one trade doesn't want another trade to do something. In particular, the drywall installers don't want the insulation installer to "Face Staple" the insulation because it makes their life harder. Side stapling is an acceptable ALTERNATIVE if done right, and it rarely is. All of the publications call for the staples to be placed NO MORE than 1/4" back from the face of the stud and that the face of the insulation should be in full contact with the back of the drywall, with no pockets, voids, compressing or channels allowed.

Effects of Poor Installation

Insulation batts are manufactured to have specific insulating values, but keeping this value relies on proper installation. All too often, we see insulation batts compressed to slide under pipes or wires, or simply jammed into smaller spaces and around fixtures rather than being trimmed to fit.

Even a small amount of compression can mean a big loss in efficiency. For example, a standard R-19 batt actually needs 6 1/4 inches to achieve its full insulation value. When that batt is installed in a 2x6 cavity, which is actually 5 1/2 inches deep, its R-value drops to less than R-18. That's a 5% drop in efficiency, just because proper installation methods were not used.

Neatness Counts

The paper batt cover should be neatly stapled to the studs. Ideally, it should be stapled to the face of the stud, rather than the side. Drywall installers dislike face stapling, but it is really the best method to insure maximum



Poor
 Compressed and lots of voids



Good
 No voids, not compressed

NOTE:
These two pictures were taken on the same day, in the same house! Two insulation crews, two different methods.

insulation performance. Side-stapling is also discouraged by the ENERGY STAR standards.

Gaps are the worst offenders for decreasing insulation efficiency. We will often see the worst gaps in attics, where insulation will be removed to do repairs or to install new fixtures, and not replaced. An attic with 12” of insulation (approximately R-38) can be de-rated to just R-20 with only a 3% void area.

Beat the Draft

Insulation isn’t just about preventing heat loss or gain; it’s also about comfort. Properly-installed insulation prevents drafts, too. Side-stapled batts create air channels along the length of every wall stud. Each channel might be very small, but multiplied by the many studs in the exterior walls, it adds up to a big drop in efficiency and comfort.

New Insulation Materials

While fiberglass batts are still the primary insulation materials for walls, there are many other types. In attics, it is common to see blown-in insulation, which is inexpensive to install and does a good job filling voids. However, its efficiency is tied to proper installation as well. We often see insulation “shadows”, where the installer failed to aim the hose around an obstruction, leaving a lesser amount of material in places. Or we will see “channels” through the insulation where workers walked through it to do repairs (it looks like a path through the snow). Blown insulation should be checked regularly for these conditions: the sur-

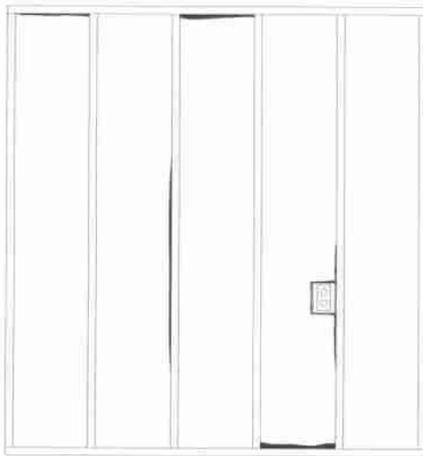
face should be reasonably level and even throughout the attic space.

Details Matter

Here are two very common installation mistakes we see all the time. The first picture shows insulation compressed to fit behind some blocking in an exterior wall. The insulation should have been trimmed to fit snugly around the blocking, with only minimal compression behind the blocking piece itself.

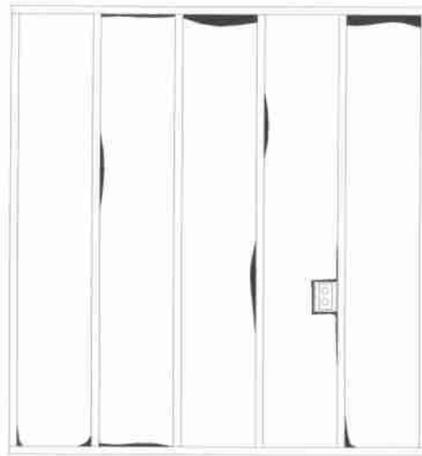


The other common trouble spot is around electrical boxes. Again, the insulation should be trimmed to fit around the box, and the space directly behind the box insulated with a piece of rigid or sprayed foam.



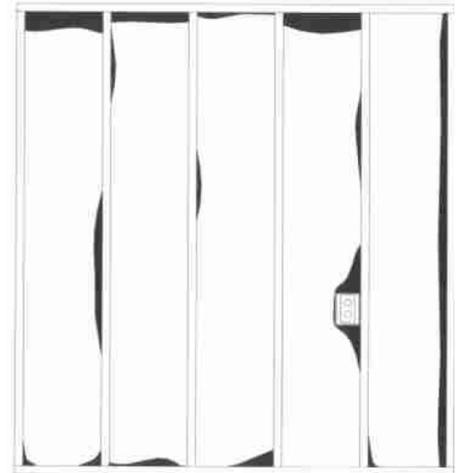
GOOD

Insulation material uniformly fills each cavity, and is split and/or fitted tightly around wiring and other services. Material is in contact with framing and sheathing on all six sides.



FAIR

Gaps amount to less than 2% of total surface area, and less than 10% of the area is compressed. Material is in substantial contact with at least one side (interior or exterior) of the cavity.



POOR

Gaps and voids greater than 2% of insulated area, with more than 10% compression. Not in substantial contact with either the interior or exterior of the cavity.