

Installing Insulation

By David Holtzclaw of Transduction Technologies

Adding insulation to your midtown home is one of the easiest and cheapest home improvements you can make that will increase both comfort and energy savings. However, it is the one upgrade that is most often messed up.

The thermal performance of insulation is measured by its R-value - the higher the R-value, the higher the thermal performance, and the better the insulation. Select insulation that is most appropriate for the area you are insulating, not its R-value.

For midtown retrofits, the 3 main types of insulation will be: fiberglass batts, blown fiberglass or cellulose, and one of the many different types of spray foam insulation. Fiberglass batts are cheapest, generally have the lowest R-value per inch, and easiest to install. The biggest mistake do-it-yourselfers make is placement of the vapor barrier, that "paper" on one side of the batt. The "paper" should be placed on the "warm-in-winter" side of the wall. So, if you are installing batts in exterior wall cavities, the paper should go next to the interior drywall. Batt should be stapled to the studs every inch and completely fill the cavity. Also, studies by Oak Ridge National Laboratory have found that "commonly installed" fiberglass batts lose 28% of their labeled R-value. This means that most "R-19" labeled batts were found to actually be R-17.4 before installation. From there, the results dropped between R-17 (perfectly installed) and R-13.7 for "commonly installed". with an average of R-13. Fiberglass batts work well for attic joist bays that currently are uninsulated, uninsulated floor joists or exterior walls with full wall cavity access. Furthermore:

1. Insulation should be split or cut to fit around wiring.
2. Insulation should be placed between the outside wall and the pipes. If kraft facing is used, it should be in substantial contact with the gypsum board.
3. Vapor Retarder Placement. It should be towards the "warm in winter" living area
4. Keep all insulation at least 3 inches away from combustible sources such as chimneys, non-IC fixtures, and heated flue pipes.
5. Eave Baffles. Baffles should be installed on eaves with vents.
6. Knee walls should be insulated at wall R-value requirements. Insulation should be supported with an appropriately fire-rated backing on the exterior side.
7. Air Infiltration. All insulation requires proper air sealing or the installation of a rated air barrier. All air paths should be sealed using caulk, tape, air barriers or other air sealing measures.

Fiber glass insulations that are made to the NAIMA 202-96 Standard and certified to the NAHB Research Center criteria are imprinted on the surface of the insulation opposite the facing with "NAIMA 202-96 (Rev. 2000)," (for fiberglass only) the R-value and the NAIMA member company. Please see the following website for tips on how to install batt insulation: <http://www.naima.org/insulation-knowledge-base/proper-installation-fiber-glass-rock-slag-wool-insulation-residential.html>

Blown cellulose insulation is made mostly out of recycled paper. Flame retardant chemicals are added to make the insulation less burnable. The most common flame retardants for cellulose are ammonium sulfate, borax, and boric acid, which are all considered safe for

humans. The boron-based flame retardants have the added benefit of being toxic to insects and other pests that might be attracted to your home. Blown cellulose works well for attic floors and wall cavities. When selecting cellulose insulation, we recommend an Energy Star label product and Class A fire rating. Cellulose can settle over time, so for attic floors, you should add an additional inch. You should not install blown cellulose over fiberglass. For wall cavities, blown cellulose should be installed to a density of 3½ pounds per cubic foot, where it will have an R-value of 3.8/inch. Finally, keep all insulation at least 3 inches away from combustible sources such as chimneys, non-IC (insulation-contact) rated fixtures (can lights), and heated flue pipes.

A newer insulation type is spray polyurethane insulation. This is a wonderful product that proves excellent thermal insulation (typically R-6 per inch) and air sealing. Therefore, it is an ideal product for most midtown retrofits. However, due to both safety and application issues, we strongly recommend you hire a professional installer. For more detailed information, visit our website: www.transductiontechnologies.com.