

Homeowner's Guide to Maintenance and Inspection

Volume 2, Number 7
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Insulation – How much is enough?

When I step off my ladder to report to a prospective home buyer how much insulation exists in their attic, they often ask "is that enough insulation?" That question seems simple enough, however there are quite a few variables one must consider in determining the amount of insulation that is required. Some of the variables are: type of insulating material, amount of insulation elsewhere in the home, type of heating system, number and size of windows in the home, climate, and local building codes. This article will help you assess whether your insulation is adequate.

Why do we insulate?

Heating and cooling account for 50 to 70% of the energy used in the average American home. Unless your home was constructed with special attention to energy efficiency, adding insulation will probably reduce your utility bills. Much of the existing housing stock in the United States is not insulated to the best level. Older homes are likely to use more energy than newer homes, leading to higher heating and air-conditioning bills. Even if you own a new home, adding insulation may save enough money in reduced utility bills to pay for itself within a few years.

Priority areas for insulation are: 1. the attic, 2. under floors above unheated areas, on walls in basements and crawlspaces, and 3. exterior walls.

Types of Insulation

Your choice of insulation is mainly dependent on the area it will be used. The effectiveness of insulation is stated in terms of R-value, which is a measure of resistance to heat flow. The following table shows common types of insulation, R-value per inch thickness, and typical usage.

Type (R-value per inch)	Usage
<u>Blanket Fiberglass</u> Regular (R2.9 to R3.8) High performance (R3.7 to R4.3)	Attics, ceilings, floors, walls
<u>Loose-fill</u> Fiberglass (R2.5) Cellulose (R3.5) Rock wool (R2.8) Poly foam spray (R5.9) Vermiculite (R2.7)	Attics, walls. Good for hard to access areas or areas with obstructions. Vermiculite and Perlite are no longer used.
<u>Rigid</u> Poly foam (R3.6 to R5) Polyisocyanurate (R5.6 to R7) brand name Celotex	Basement walls, exterior walls, low slope roofs. Must be covered indoors for fire safety. Must be covered outdoors to weatherproofing.

Table 1: Properties of Various Types of Insulation

Dear Realtor: Please feel free to copy this information for your clients or to include it in your own newsletter.

The Homeowner's Guide to Construction and Inspection is written by David Roos, the owner of Safe and Sound Home Inspection. We are an independent business, not a franchise, locally owned and operated in Littleton, Colorado.

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Recommended Insulation Amounts for Denver, Colorado

Unlike some other states, Colorado does not have building codes for energy efficiency. Each municipal code is different and some towns do not have codes at all! The following suggested amounts of insulation are based on Department of Energy recommendations for new construction in Denver, Colorado assuming a natural gas heating system. See the Further Resources section below for a website that does insulation calculations for you.

Area	R-value	Thickness (fiberglass blanket)
Attic	R-38	12"
Floor (over unheated space)	R-25	8"
Basement wall interior	R-11	3"
Crawlspace wall	R-19	6"



Will you have holiday transactions? Safe and Sound Home Inspection will be available for inspections during the Christmas and New Year's holidays. (excluding 12/25)

Table 2: Recommended amounts of insulation for Denver, Colorado

Cost to Insulate (materials only)

Add 6" fiberglass blanket to 1000 square foot attic: \$365

Add 6" blown in cellulose to 1000 square foot attic: \$215

Further Resources

Calculate insulation needs for your home - http://www.ornl.gov/sci/roofs+walls/insulation/ins_05.html

Energy codes for your Colorado municipality - <http://coloradoenergy.org/codes/colorado.asp>

Department of Energy - http://www.eere.energy.gov/consumerinfo/energy_savers/r-value_map.html

Season's Greetings

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