
Chapter 8

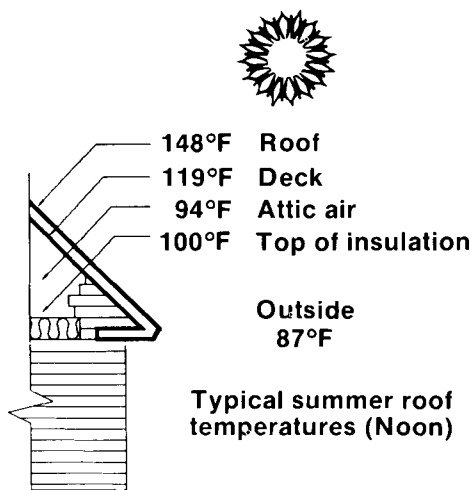
Energy-Efficient Roof, Ceilings and Attics

Recommendations	First Cost	% Potential Savings	
		Cooling	Heating
1. Seal potential air leakage sources in ceiling.	S	10	15
2. Use light-colored shingles and roofs.	N	5	—
3. Use continuous soffit vents at eaves and ridge vents at all peaks.	S	5	—
4. Insulate the attic thoroughly.	S	5-10	10
5. Use radiant barrier systems in attics.	S/M	8-12	8-12
Maximum Combined Total	M	25	25

Cost Codes: R = reduced
N = negligible
S = small (<\$0.25/ft² of floor area)
M = medium (>\$0.25 and <\$1.00/ft² of floor area)
H = high (>\$1.00/ft² of floor area)

Marketing Energy-Efficient Roofs, Ceilings and Attics

If it's hot outside, there's one very easy way to show your clients the importance of a cool roof. Ask them to go up to the attic of their current house for a couple of minutes. Just opening the door or hatch to their attic will probably do the job. The blast of hot air hitting their faces should quickly and powerfully show them how hot roofs and attics can get, and why something must be done to keep that heat from getting into their house. Your well-built, energy-efficient home will take on added value since you have done something to reduce the flow of heat from the attic downward into the house.



Typical summertime attic temperatures.

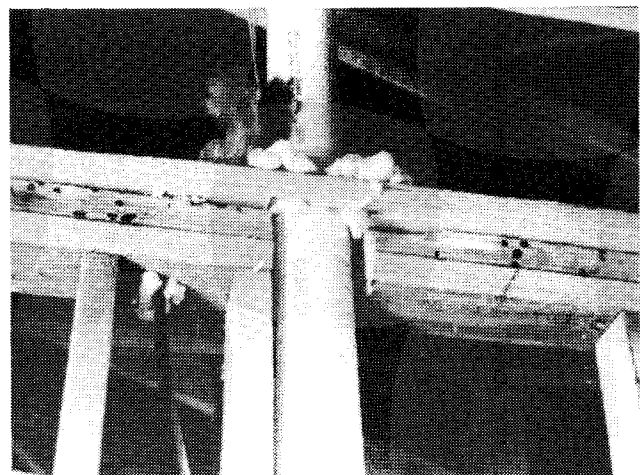
If the weather isn't hot, you can still explain this effect to your clients by showing them the above illustration of attic temperatures. The numbers are dramatic enough to do the selling job for you.

It is important to emphasize to your clients the major role roofs and attics play in heating Florida homes. Research shows that about 10-20% of the cooling load in homes in our state comes from heat conducted into the home through the ceiling, putting a major load on the air conditioner and greatly affecting the comfort level in the house. An additional 25% of the cooling load comes from heat and moisture infiltration, some of which enters the house through ceiling penetrations. The double whammy of higher air conditioning costs and an uncomfortable house poses a major problem to home owners, so you should not minimize the steps you have taken to keep their roof and attic cool.

You have five basic energy-conserving strategies to sell in your homes which can alleviate the problems

of a hot roof: well-sealed ceilings, proper roof materials, good ventilation, adequate insulation and attic radiant barriers. Your attention to these areas will help your buyers enjoy a comfortable home with affordable energy costs. They will feel and enjoy the benefits of these building strategies for many years.

Explain to prospective home buyers that the unwanted flow of air and moisture from the attic into a house — called air infiltration — is a major cooling load in Florida homes. Point out that much of the problem is caused by air leaking into the house from openings for electrical lines, plumbing penetrations, and other building components which go between the attic and living area below. Describe how well-sealed *your* homes are, and how your crew pays special attention to these sources of air leakage.



Let a photo show the attention you have paid to sealing plumbing and wiring penetrations in the top plate.

Be sure to emphasize that your crew's attention to such hard-to-reach places as ducts and dampers, pipes, and other sources of infiltration may save the home owner considerable expense later on, since many of the areas needing sealing are inaccessible once the home is built.

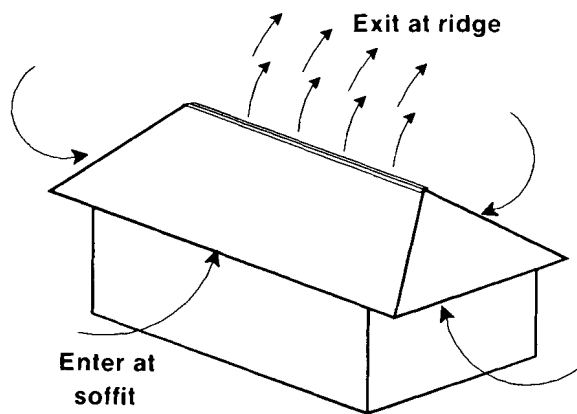
Some builders leave two pieces of asphalt shingle — one black and one white — outside their office window for a simple demonstration of the effects of shingle colors. Try doing this, then take prospective clients outside on a sunny afternoon to this "test area" and ask them to pick up or at least put their hands above each piece. The darker colored shingle



A white tile roof reflects most of the sun's heat.

will be very hot to hold, and will clearly be much hotter than the lighter colored piece. Your clients will see how important shingle color is to the temperature of their roof.

Emphasize to clients how effective vents are at increasing ventilation in their home's attic. If you have installed soffit and ridge vents, explain that these create better attic air flow than gable vents.



Attic air flow is best with continuous soffit and ridge vents.

Many potential buyers will ask you about the insulation in your homes. Media advertising, news articles and other promotional messages over the past few years have convinced home owners that insulation is a major factor in a home's energy use.

Adequate insulation slows the flow of heat through the attic and ceiling, allowing the occupants of the house to maintain comfortable temperatures throughout the year with minimum energy cost.

Inform the home buyer that the best time to install insulation is during construction, since many parts of the attic will be difficult to reach with insulation once the home is completed.

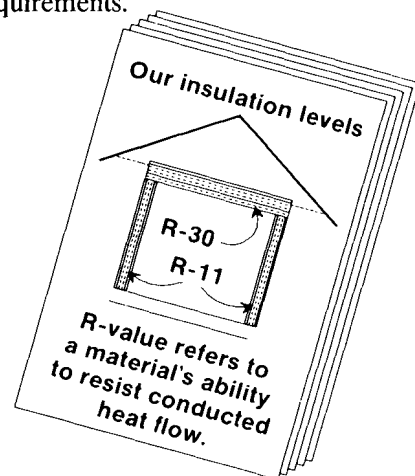
It is important that you anticipate your clients' interest in insulation, and present them with enough information to convince them that your homes are well-built with adequate levels of insulation.

The Federal Trade Commission requires that builders disclose R values to buyers. You can show them the energy code forms to disclose the information.

In Florida, ceiling insulation with an R-value between 19 and 30 is generally recommended (R-19 is the minimum under Florida's Energy Efficiency Code). R-19 is equivalent to about 6 inches of fiberglass batts, 8.5 inches of blown fiberglass, or 6 inches of blown cellulose. R-30, or R-19 plus a radiant barrier, is suggested for good energy conservation.

Explain R-value to customers this way: R-value refers to an insulation's ability to resist the flow of heat from one side of it through to the other. The higher the R-value, the more effective the insulation. Note, though, that each added amount of insulation is not as cost-effective as the previous amount.

To help your clients better understand what R-value means to them, prepare a simple hand-out sheet with a brief definition of R-value (similar to the one above), along with a drawing of your house showing the wall and attic R-values. This will be especially impressive if any of the numbers exceed the minimum requirements.

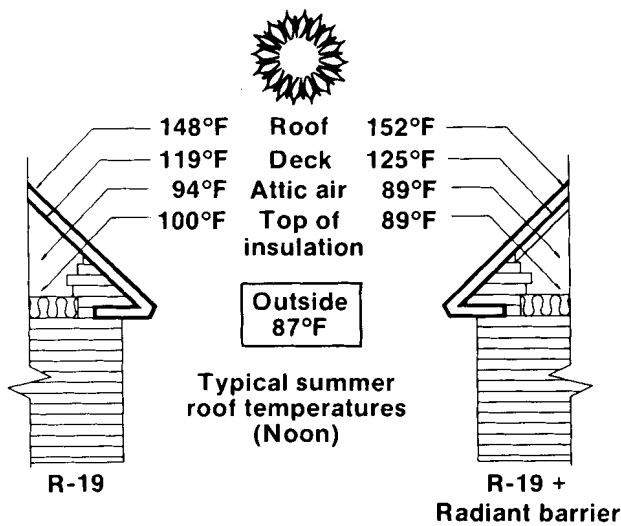


Prepare a hand-out sheet showing R-value of insulation levels in your home.

Point out the benefits of buying a house with a radiant barrier already installed. Retrofitting these systems can be very difficult since attics usually have limited space, and stapling the materials onto the trusses can be an uncomfortable and, in some cases, even impossible task.

Emphasize to your clients that heat transferring (radiating) downward from a hot roof causes the home's air conditioner to run longer and use more electricity. A radiant barrier system (aluminum foil facing the attic air space), however, will stop most of this radiant heat transfer — and, when combined with good soffit and ridge vents, can reduce the heat flow at the ceiling by about 40%. Look at the next illustration and notice how much lower the attic temperatures are with a radiant barrier system.

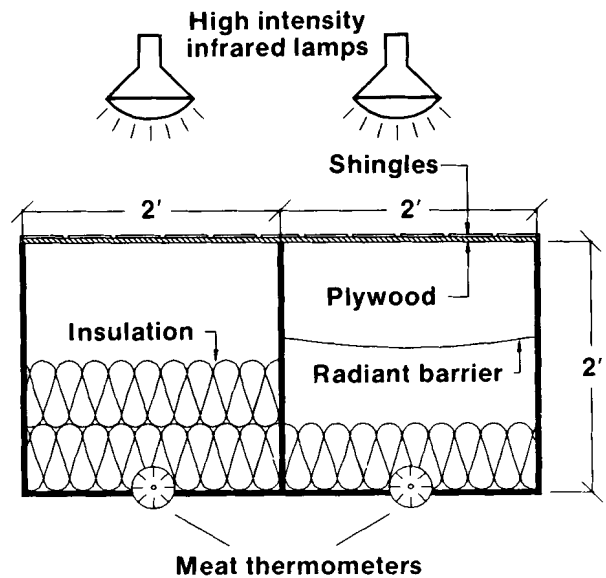
Since these systems keep attic temperatures much lower, the ductwork, plumbing and other materials in the attic may have longer life spans. Cooler ducts also make the cooling system in the home operate more efficiently. The combined effect may even result in a smaller-sized air conditioner.



Comparison of temperatures in attics with and without a radiant barrier.

It is reasonable to expect an attic radiant barrier to save the home owner 8% to 12% on annual space conditioning costs. Actual savings will depend on the amount of heat the roof and attic contribute to the home's total cooling load.

There is a dramatic and effective way to demonstrate radiant barriers to prospective home buyers. Take some plywood and a couple of 2x4s and build a large box about 4 feet wide, 2 feet deep and 2 feet high. Leave the top and front open, and divide the box into two equal compartments. Put a 6-inch layer of insulation on the floor of each compartment. Add 6 more inches of insulation in one compartment, and put a radiant barrier above the insulation in the other one. Put plywood and a shingle roof on the box. Place a sunlamp or other high-intensity bulb a good distance above each compartment. Put a piece of transparent material, such as clear acrylic, on the open side. Drill a hole in the front of each compartment, one inch from the bottom, and insert a meat thermometer into the insulation. After the lamps have been on a few minutes, your clients will see how much cooler the insulation stays under the radiant barrier.



A radiant barrier demonstration box can be a dramatic sales tool.

