

# All about radiant barriers

Learn the facts about radiant barriers and reflective insulation products to determine if they are a wise investment for achieving energy and cost savings in your home.

## What are radiant barriers?

Radiant barriers and reflective insulation products are installed in buildings to reduce radiant heat transfer, which is one of the ways buildings gain heat in the summer and lose heat in the winter. The idea is that by reducing radiant heat gain into the attic, for instance, you will use less energy to cool the house in the summer.

There are three primary types of radiant barrier products on the market:

- Foils and films usually reinforced for strength
- Coatings such as radiant barrier paints or sprays
- Reflective insulation such as foil-faced bubble wrap products

Sometimes, products combine more than one type, such as foil-faced bubble wrap installed in an open attic. This is both an insulation and a radiant barrier.

## Do they actually reduce radiant heat transfer?

In a word, yes. Most of the foil and reflective insulation products reduce radiant heat transfer by about 96 percent. The performance of the paints and sprays is much more variable. Some reduce radiant heat transfer by about 75 percent, some by much less. Some radiant barrier foil and reflective insulation products have qualified for the Energy Star label, indicating they may save energy when properly installed. None of the paints and coatings has qualified for the Energy Star label. None of the radiant barrier products qualifies for federal energy tax credits.

## Do they actually save me energy?

Studies by Oak Ridge National Lab and Florida Solar Energy Center documented, on average, a 2–10 percent reduction in the air conditioning bills of homes with radiant barriers (foil) installed in the attic, but almost no savings on heating costs during the winter.

## Are they worth it?

The answer to this question is more complicated and depends on cost. If you spend \$200 and save \$45 every year, that may be a worthwhile investment. But if you spend \$1,000, it's not nearly as clear. Are there better ways to invest your money that would reduce your energy bills?

## What other factors should you consider?

The more insulation you have in your attic—if it's properly installed without air leaks between the house and the attic—the less you will save with a radiant barrier. In many homes, it would cost less to seal all of the gaps and holes



between the house and attic and add additional insulation.

Studies have shown that dirt and dust accumulation on radiant barriers degrades their performance fairly quickly and results in less savings over time.

If the roof is shaded, the savings will be less.

Some roofing materials—metals, tiles, light colored shingles—give off less heat to the attic. If you have these types of roofing, the savings from radiant barriers will be less.

If there is ductwork and/or handling equipment in the attic, the savings will be higher.

If you store valuables in the attic that will be harmed by high temperatures, installing a radiant barrier may help preserve them. This won't save you money, but it might save your stuff.

Saving energy has positive impacts on the environment, and many people will put this into the equation as well.

## What about moisture issues?

Aluminum foil is one of the best vapor barrier products used in buildings. Neither liquid water nor water vapor goes through it. This can be a great product when there is a roof leak above a radiant barrier, and the foil directs the water to the exterior of the building, reducing the damage from the leak. On the other hand, foil installed over the insulation on an attic floor could trap moisture, which then condenses and drips into the insulation. Some products are perforated with a lot of small holes to help reduce this potential problem.

## A word to the wise

If they make a claim that you will save 10 percent, ask them 10 percent of what? Is it 10 percent of your total utility bill, the heating and cooling portion, or just the cooling portion?

## A source of confusion

Some energy saving product might claim that it “eliminates 86 percent of the radiant heat gain in your attic” or “reduces ceiling heat gains by up to 42 percent.” These may be true statements, but that doesn't translate into energy savings so high. The radiant barrier will only affect the portion of the bill caused by radiant heat entering from the attic. It has no impact on the heat gained by your house from air leaks, windows and doors, walls or floors. 📌

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