

KUNI Radio Series “Unplugged”  
Show #30: Foil in your attic

From the Center for Energy & Environmental Education at the University of Northern Iowa, this is Pat Higby with a series of programs on KUNI to help you save energy.

Heat transfer in or out of your home occurs by three different routes, and each one requires a different method to stop it. **Conduction** is heat transferred when objects of different temperatures touch each other. Your best defense is traditional insulation with a high R value. **Convection** is heat transfer by moving air, and you can stop it with caulk, weather-stripping, and expanding foam. **Radiation** is heat flowing from a hot object, like the sun, a portable electric heater, or your roof.

If your roof is exposed to direct sunlight for many hours, it absorbs a great deal of heat, and can reach temperatures of more than 170 degrees Fahrenheit. A hot roof will radiate heat, raising the temperature of your attic and your home. Radiant heat, like light, is in the form of an electromagnetic wave. Just as light will pass through a window, radiant heat passes through fiberglass insulation. To stop radiant energy it must be reflected away with a shiny mirror like surface. Radiant barriers are very efficient, reflecting as much as 97% of the incident heat.

Radiant barriers often have a reflective aluminum surface attached to a base layer of kraft paper or other material. The shiny surface must face open air space to be effective. If attached to the roof, the shiny side should face the open attic. If laid on the attic floor, the shiny side must face up. Floor applications are more likely to collect dust, and will become less reflective.

In Iowa radiant barriers used on the floor must allow water vapor to pass through, to prevent moisture accumulation. This is accomplished with holes, perforations, or a wicking base. According to information from Oak Ridge National Laboratory, roof applications do not need to allow water vapor permeability.

If your roof is **not** shaded by trees, you should consider adding a radiant barrier to your attic. You can expect it to reduce your cooling bill by 5 to 10 percent.

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