

# RADIANT INSULATION

## IMPROVED PERFORMANCE

Invest in quality insulation for your radiant floor-heating system.

Insulation figures into radiant system design in three distinct areas: in the structure itself, between floors in multilevel homes and in the foundation.

A well-insulated home allows for more system and floor-covering options. Insulation under concrete slabs reduces operating costs and speeds up the response of a floor-heating system. Insulation between floors improves your radiant system's performance and control. Investment in quality insulation makes great sense.

The Radiant Professionals Alliance has developed minimum guidelines for insulation required under radiant floor-heating systems (see the chart below). Local codes and system suppliers may have other requirements.

Insulation below the heat-emitting floor is required by code in areas enforcing the International Energy Conservation Code. If the code does

not apply in your area, at a minimum the insulation below the floor should be two times greater than the R-value of the finished goods.


### UNDER SLABS

Insulation of concrete slabs lessens the back loss of heat to the ground. In residential applications, most radiant system suppliers recommend full insulation under a slab, particularly if there is moist, conductive soil beneath. Less-stringent options include insulating either in or down the sides in perimeter areas.

The traditional method has been to use closed-cell foam insulation specifically manufactured for use in damp locations and under slabs. It comes in a variety of compressive strengths. For the correct type and strength, consult with both the insulation supplier and your concrete applicator.

### BETWEEN FLOORS

Between-floor insulation in a radiant floor heating system makes the system much easier to control and assures the heat travels where you want it to — upward through the floor, not down through the ceiling to the space below. Under more insulating floors, higher levels of insulation are recommended to prevent this downward heat loss.

Many types of insulation may be used, depending on the application and local codes. Between floors, traditional fiberglass batt insulation or foil products may be used. Foil products, often referred to as reflective insulation, slow heat transfer in two ways: by reflecting the radiant energy back to the heated surface, and by emitting lower amounts of heat to the space below. 

RADIANT PROFESSIONALS ALLIANCE INSULATION TABLE			
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Floor Type	Application	Min. R-value	Coverage
<b>Slab</b>			
Slab On Grade	Alternate # 1	* (Ti-To) x 0.125	perimeter to below frost line
Slab On Grade	Alternate # 2	R-5	4' horizontal or vertical at perimeter
Slab On Grade	Alternate # 3	R-5	under entire slab
Slab Below Grade		** R-5	
<b>Conventionally Framed Floor</b>			
Over Heated Space	Hard Surface	R-5	under entire floor with 2" air gap
Over Heated Space	Carpeted Surface	R-11	under entire floor with 2" air gap
Over Unheated Space	Hard Surface	R-13	under entire floor with 2" air gap
Over Unheated Space	Carpeted Surface	R-19	under entire floor with 2" air gap

\* R-value = inside temperature (°F) - outside temperature (°F) x 0.125

\*\* For slabs above frost line