"Tek" Newsletter

Beaulieu Residential

Carpet Installation Over Radiant Heated Floors

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Due to the advantages of energy efficiency, uniformity of heat, the absence of drafts (which reduces airborne particulate and biologicals), and unsightly vents or registers, radiant heated floors have become increasingly popular in new homes. Radiant heat is considered a very comfortable heat source because actual surfaces of the room are warmed instead of just the air. As a result, comfort can be experienced at lower thermostat settings.

Although radiant heat offers a variety of fuel sources (gas, oil, electricity, wood) most systems utilize heated water ranging between 80-100 degrees Fahrenheit. This water flows through flexible conduits imbedded in or placed beneath the concrete slab, producing heat similar in method to a huge radiator.

Physically, the construction of carpet provides a highly efficient thermal insulator. Because of this, carpeting installed over radiant heated floors reduces thermal conductivity from the radiant heat source. The subsequent loss of heating efficiency generally requires the use of hotter water and higher heating costs; however, the majority of home owners gladly accept some reduction in heating efficiency in order to benefit from the luxury, aesthetics, and under foot comfort carpet affords. Furthermore, it is generally believed that once a radiant heated room is warmed, the thermal insulation of carpet not only helps maintain ambient temperature, it also lengthens the time between late autumn and early spring when only minimal heat is required.

Proper selection of carpet and cushion for radiant heated floors should be based on combined R-Values (i.e.; the material's thermal resistance or resistance to heat flow). The lower the R-Value the greater the heat conductivity of a material. The higher the R-Value the greater the resistance to heat flow (the better the insulation value of the material).

Studies conducted by the Georgia Institute of Technology indicate that the R-Value of a carpet is proportional to its thickness and pile density. Variations in backings have little influence on R-Values (with the exception of attached foam backings). R-Values for carpet and carpet cushion combinations generally range between 1.0 and 4.0. You can estimate the R-Value of any carpet by multiplying the total thickness of the carpet by 2.4. As an example, a one (1) inch thick carpet would have an approximate R-Value of 2.4 (with a 10% margin of error). The typical "ideal" carpet cushion for residential environments is approximately 7/16 " thickness

And 6-8 lbs cubic foot density. The R-Value of these cushions generally range between 1.8 to 1.9. Since R-Value represents resistance to heat flow, carpet and carpet cushion combinations with a low R-Value are more practical for radiant heated floors.

When installing carpet over radiant heated floors using the tackless method there should be no concern for driving the tack strip nails into the heat conduits beneath the floor. These conduits are not placed along the walls and therefore will not be a concern if proper gully spacing is observed. If the direct glue method of installation is used, floor temperature should be turned down to prevent the floor adhesive from setting up before it receives the carpet. The bare minimum floor temperature should be 65 degrees Fahrenheit. These conditions should remain constant 24 hours before, during, and at least 72 hours after installation.

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