

Installation Expertise with Tim McAdoo

Radiant Heat and Flooring

Radiant Heat under flooring continues to grow and grow in our area. Radiant Heat may go under Carpet, Ceramic Tile, Cork, Engineered Hardwood Flooring, Laminate, LVT Flooring, and Vinyl Flooring. However, this is not just a case of rolling out an electric heating mat and installing flooring over it.

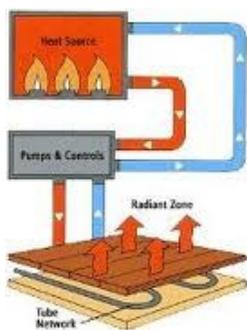
Radiant heating systems supply heat directly to the floor or to panels in the wall or ceiling of a house. The systems depend largely on radiant heat transfer -- the delivery of heat directly from the hot surface to the people and objects in the room via infrared radiation. Radiant heating is the effect you feel when you can feel the warmth of a hot stovetop element from across the room. When radiant heating is located in the floor, it is often called radiant floor heating or simply floor heating.

Radiant heating has a number of advantages. It is more efficient than baseboard heating and usually more efficient than forced-air heating because it eliminates duct losses. People with allergies often prefer radiant heat because it doesn't distribute allergens like forced air systems can. Hydronic (liquid-based) systems use little electricity, a benefit for homes off the power grid or in areas with high electricity prices. Hydronic systems can use a wide variety of energy sources to heat the liquid, including standard gas- or oil-fired boilers, wood-fired boilers, solar water heaters, or a combination of these sources.

Types of Radiant Floor Heat

AIR-HEATED RADIANT FLOORS

Air cannot hold large amounts of heat, so radiant air floors are not cost-effective in residential applications, and are seldom installed. Although they can be combined with solar air heating systems, those systems suffer from the obvious drawback of only producing heat in the daytime, when heating loads are generally lower. The inefficiency of trying to heat a home with a conventional furnace by pumping air through the floors at night outweighs the benefits of using solar heat during the day.



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ELECTRIC (MAT SYSTEMS) RADIANT FLOORS

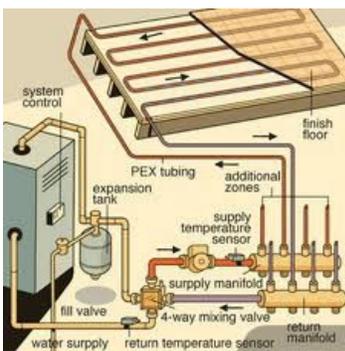
Electric radiant floors typically consist of electric cables built into the floor. Systems that feature mats of electrical conductive plastic mounted on the subfloor below a floor covering. Because of the relatively high cost of electricity, electric radiant floors are usually only cost-effective if they include a significant thermal mass such as a thick concrete floor and your electric utility company offers time-of-use rates. Time-of-use rates allow you to warm the concrete floor with heat during off-peak hours (approximately 9 p.m. to 6 a.m.). If the floor's thermal mass is large enough, the heat stored in it will keep the house comfortable for eight to ten hours without any further use of electric, particularly when daytime temperatures are significantly warmer than nighttime temperatures. This saves a considerable number of energy dollars compared to heating at peak electric rates during the day. Electric radiant floors may also make sense for home additions if it would be impractical to extend the heating system into the new space. Electric Radiant Heat can easily be controlled from room to room by the use of a thermostat.



HYDRONIC RADIANT FLOORS

Hydronic (liquid) systems are the most popular and cost-effective radiant heating systems for heating. Hydronic radiant floor systems pump heated water from a boiler through tubing laid in a pattern under the floor. In some systems, controlling the flow of hot water through each tubing loop by using zoning valves or pumps and thermostats regulates room temperatures. The cost of installing a Hydronic radiant floor varies by location and depends on the size of the home, the type of installation, the floor covering, remoteness of the site, and the cost of labor.

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When installing flooring over Radiant Heat, the heat is to be encased into the subfloor or covered with a cementitious patching compound. The Radiant Heat should not come into direct contact with the flooring.

Here is a look at the recommendations by flooring category;

Carpet: The efficiency of heated floor systems can be improved by properly selecting the carpet cushion. Most radiant heated floor manufacturers suggest a total maximum R-value for carpet and cushion installations not to exceed 4.0. With Radiant Heated floors, lower pile carpet and lower thickness cushion are better than higher pile carpet and thicker cushions. When cushion is used, it should be no thicker than 3/8". Most conventional carpet is suitable for use over heated floors. Confirm with the carpet manufacturer that the backing is resistant to long periods of low continuous heat. **For more information on Carpet and Radiant Heat, please contact me for the technical bulletin from the Carpet and Rug Institute**

Ceramic Tile & Stone: An excellent choice for Radiant Heat. When using the Electric/Mat system, some of the Mats are adhered to the subfloor with a latex modified thinset and some. Then, apply a coat of thinset according to the thickness required for your tile or stone and install flooring over the Electric/Mat system. Some mats are fastened to the subfloor with a hot glue gun or staples, then a coat of thinset according to the thickness required for your tile or stone and install flooring over the Electric/Mat system.

Cork Flooring: We Cork Floating and Glue Down Cork Floors are suitable for use with radiant heat. It should be pointed out that the flooring installed over radiant heat may gain moisture or dry out faster. Use of a humidifier is suggested. When installing WECU Underlayment to the subfloor follow our installation instructions for application under ceramic tile, marble & hardwood flooring using latex modified thin set or a freeze/thaw stable adhesive. The surface temperature of the floor should not exceed 85° Fahrenheit. Radiant heat should be allowed to run

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5-6 days before installation regardless of the season.

Hardwood Flooring: **Solid Hardwood flooring is not recommended over Radiant Heat.**

Engineered Hardwood flooring is recommended, but it will be specific per the hardwood manufacturer as to what species, installation method, condition of the radiant heat system, and the maximum subfloor temperature are recommended. As with any hardwood flooring installation, it is essential to maintain a constant relative humidity level in the home between 35% and 55%. With some exotic hardwood flooring, these levels may be higher. **For more specific information on what the JJ Haines Hardwood suppliers recommend, please contact me.**

Laminate: Laminate Flooring is recommended over Radiant Heat, but will be specific per the manufacturer.

Armstrong: Radiant heated subfloors should not exceed 85°F

Metroflor Laminique: Subfloors should have been operational for at least 3 weeks prior to installation to drive out moisture and calibrate temperature settings. All radiant heat floors should be turned down to 65 degrees for 3 days prior to installation and kept at 65 degrees for at least 48 hours after installation.

Tarkett: Tarkett Laminate is suitable for installation over Radiant Heat systems provided that the heating element is installed at least 2" below the surface of the concrete. Surface temperature should not exceed 85°F

LVT Flooring: Glue down and floating LVT is recommended over Radiant Heat, but will be specific per the manufacturer.

Armstrong (LUXE, Natural Creations, Natural Living & Natural Personality): Radiant heated substrates must not exceed a maximum surface temperature of 85°F.

Flexco (Natural Elements): Cut off the heat, install the flooring and then bring the heat up gradually. Maximum surface temperature of 85°F.

Engage, Konecto & Starloc: Radiant heat components must be a minimum of 1/2" separated from Starloc. This is the only type of radiant heat that is approved. Subfloors should have been operational for at least 3 weeks prior to installation to drive out moisture and calibrate temperature settings. All radiant heat floors should be turned down so subfloor temperature is maintained at 65 degrees for 3 days prior to installation and kept at 65 degrees for at least 48 hours after installation to allow the adhesive to fully cure. Maximum operating temperature should never exceed 85°F.

Metroflor (American, Commercial, Metro Design, Solidity 20/30/40, Solidity Ceramic): Subfloors should have operated for at least 3 weeks prior to installation to

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drive out moisture and calibrate temperature settings. All radiant heat floors should be turned off 3 days prior to installation and remain off for at least 6 days after installation to allow the adhesive to fully cure. Maximum operating temperature should never exceed 85°F. Radiant heat components must be a minimum of ½" separated from adhesive and tile.

Vinyl Sheet Flooring:

Armstrong: Radiant heated substrates must not exceed a maximum surface temperature of 85°F.

Tarkett: May be installed over radiant heated floors, provided the operating temperature does not exceed 85°F. **NOTE:** During installation, lower the radiant heated floor temperature to a minimum 65°F. This temperature should be maintained for at least 24 hours before, during and 48 hours after completion of the installation. On ground floors the radiant heating system should have a proper moisture barrier beneath it. The concrete should be tested for moisture before the tile flooring is laid. Heating pipes must be at least 2" below the floor surface. If the heating pipes are too close to the vinyl flooring, the vinyl may discolor next to the pipe work.

Vinyl Groutable Tile

Armstrong (Alterna & Alterna Reserve): Radiant heated substrates must not exceed a maximum surface temperature of 85°F.

Nafco: May be installed over radiant heated floors, provided the operating temperature does not exceed 85°F. Tarkett 400 Adhesive must be used for both plank and tile installations. **NOTE:** During installation, lower the radiant heated floor temperature to a minimum 65°F. This temperature should be maintained for at least 24 hours before, during and 48 hours after completion of the installation. On ground floors the radiant heating system should have a proper moisture barrier beneath it. The concrete should be tested for moisture before the tile flooring is laid. Heating pipes must be at least 2" below the floor surface. If the heating pipes are too close to the vinyl flooring, the vinyl may discolor next to the pipe work. Gradually increase temperature in increments of 5° F per hour.

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About Tim McAdoo:

Tim is a certified instructor for Armstrong, Avoire, Konecto and Starloc products and has been a member of the Armstrong Installation Training Team since 1984. Tim has highly developed installation skills and qualifications that have been combined over his 32 years in the floor covering industry. Tim is privy to all the latest innovations and techniques used in the installation of their products.

We are sure you will find your skills improved after attending one of his installation courses.



To view a complete list and register for one of Tim's installation trainings, click here on the QR or visit: <http://www.jjhaines.com/customers/installation-training/>



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