# Radiant Floor Installation Methods

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<th>Radiant Flooring Method</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
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| 'Thermal Sandwich' on Sub Floor or Slab | A unique ‘thermal sandwich’ is created by placing proprietary TPO plastic base modules on sub-floor or slab, then routing PEX tubing through base and heat reflectors, and covering with thermal mass – typically fiber cement board. | ✓ Easiest, most flexible installation method  
✓ Less weight than wet methods  
✓ Most efficient – lower water temps  
✓ Radiant energy focused on thermal mass  
✓ Quick recovery time  
✓ Contractor or do-it-yourself installation  
✓ Only system with true radiant barrier  
✓ Sound deadening | • Requires planning for additional thickness of the thermal sandwich |
| **EasyFloor™ System** | | | |
| **Radiant Warmth the Right WaySM** | | | |

| Wet Methods |  |
|-------------|  |
| On Floor Concrete Slab | Radiant tubing is placed on sub-floor or building slab. Concrete layer is poured over tubing. | • Requires planning for additional thickness of floor  
• Weight—requires sub-floor re-enforcing  
• Shrinkage & cracking  
• Messy, wet installation  
• Long set time – site unavailable  
• Won’t flow under drywall  
• Requires high water temp  
• Slow recovery/cycle time  
• Not do-it-yourself  
• Difficult to repair  
• Requires sealer & crack isolation membrane |
| Gypsum/Concrete Underlayment | Lighter weight concrete by adding gypsum and other additives | • Reduces cracking and shrinkage  
• Better thermal mass  
• Better acoustic sound reduction  
• Less weight than concrete  
• Durable | • Requires planning for additional thickness of floor  
• Messy, wet installation  
• Long set time – site unavailable  
• Subject to damage during construction  
• Slow recovery/cycle time  
• Difficult to repair  
• High installation/product costs  
• Requires high water temp  
• Professional installation only |
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| Under-Floor 'Staple Up' | Thermal tubing is ‘stapled up’ to bottom of sub-floor. A reflective heat distribution cover is placed over tubing. | • Low cost initial cost  
• Contractor or do-it-yourself installation | • Requires exposed sub-floor – does not work in restricted areas  
• High operating costs – wood sub-floor is very poor thermal mass  
• Can be difficult installation  
• Requires high water temp  
• Weakened joists from heat  
• Not applicable to slab floors |
| Grooved Wood on Subfloor | ½” thick plywood sheet with grooves routered through the sheet for the placement of radiant tubing. Some manufacturers have aluminum plate under the plywood. | • Placed on top of subfloor  
• Easy installation in large spaces | • Limited flexibility – difficult to work in tight spaces  
• No thermal mass – poor efficiency  
• Requires high water temp  
• Requires special tools and routers to install  
• Unknown durability  
• Can be noisy when heating tubes expand/contract  
• Expensive |
| Grooved Wood Subfloor | Tongue and groove plywood subfloor cut with grooves to accommodate PEX tubing. Aluminum plate bonded to surface for heat transfer. | • Single installation of subfloor and radiant delivery system  
• Structural  
• Does not require accommodation for height of radiant delivery system  
• Can be nailed and cut with conventional carpentry tools | • Difficult to change. Commits building layout at subfloor construction time.  
• No thermal mass  
• Subject to the wear and tear and mess during construction  
• Requires special tools and routers to install  
• Slippery when wet  
• Not applicable for most remodel jobs  
• No DIY Installation |
| Electric Heat Mats | Heating wire secured to a fiberglass net – covered with thin cement | • Useful for supplemental heat in small rooms  
• Easy install in open spaces  
• Quiet | • Extremely high product costs  
• High operating costs – not generally suitable as primary heat source  
• No thermal mass  
• Difficult to install in irregular spaces  
• Durability? |
| Base Board ‘Hot Water’ Heating | Baseboard unit equipped with copper tubing with ‘fins’ that radiate heat into room | • Can work in conjunction with other radiant methods  
• Well established method  
• Low product costs | • Less efficient than in-floor radiant heat  
• Requires very high water temp  
• Boiler heat sources only  
• Uneven heat like forced air systems  
• Noisy as ‘radiators’ heat and cool  
• Invasive – affects furniture placement, room use |