

BEYOND TILE

The Contractor's Technical Guide to Heating LVT, Engineered Wood, Laminate & Carpet

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A Professional Field Manual for General Contractors, Flooring Installers, and Electricians

WarmlyYours Radiant Heating Systems

Job-Site Quick Reference

Tape this page to the wall. Full details follow in the guide.

The 4 Non-Negotiables

85°F LIMIT

Hard-lock floor-sensor limit to 85°F (29°C).

R-VALUE < 1

Keep total flooring + underlayment resistance below R-1.

NO DEEP CYCLING

Ramp 2°–3°F per day. No deep overnight setbacks.

NO THERMAL TRAPS

No flat-bottom furniture or rubber-backed rugs.

Key Numbers

Check	Spec
Core heating wire resistance	−5% to +10% of factory label
Core-to-ground continuity	Open Loop (OL)
Floor sensor resistance	8 kΩ–18 kΩ (10 kΩ at 77°F / 25°C); set meter to 20 kΩ range
Self-leveling cement (SLC) cover over heating element	≥ 3/8″ to 1/2″ (laminate embedded: ≥ 1/2″) *General/average recommendation — confirm with flooring manufacturer*
SLC cure before energizing	Typically 14–28 days *General/average recommendation — confirm with flooring manufacturer*
Commissioning ramp	2°–3°F per day *General/average recommendation — confirm with flooring manufacturer*
Carpet thickness & R-value (USA only)	1/4″ to 1″ thick; R ≤ 1
Carpet wall/tack-strip clearance (USA only)	6″ minimum
Resistance checks	3 logged stages: before install, secured to floor, after finished floor

Items marked as general/average recommendations should be confirmed with the flooring manufacturer before installation.

Do / Don't

DO

- Embed TempZone™ in SLC under LVT/LVP
- Install a backup floor sensor
- Run cold leads and sensor wires in separate conduits
- Use a standard thermal-magnetic breaker in the panel
- Log resistance at all 3 stages

DON'T

- Use Environ™ mats or uncoupling membranes under LVT/LVP
- Install a GFCI breaker in the panel (thermostat has built-in 5 mA GFCI)
- Embed Environ™ foil in cement
- Use laminate with attached foam pad or metal locking strips directly over Environ™ foil
- Let power stretchers or knee-kickers touch the mat

24/7/365 On-Site Technical Hotline: (800) 875-5285

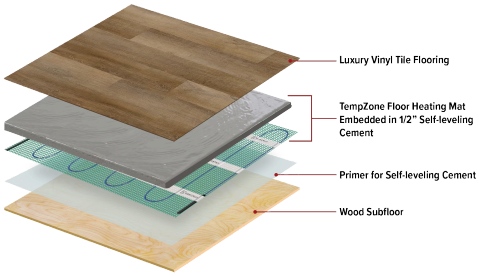
Non-Tile Flooring Radiant Compatibility Matrix

Flooring Material	Installation Method	Approved Heating System	Minimum Substrate Assembly
LVT / LVP / SPC (Rigid or Flexible)	Floating Click-Lock	TempZone™ Flex Roll or Cable	Fully embedded in ≥ 3/8″ to 1/2″ self-leveling cement (SLC).
LVT / LVP (Plank or Tile)	Direct Glue-Down	TempZone™ Flex Roll or Cable	Fully embedded in ≥ 3/8″ to 1/2″ SLC + vinyl adhesive.
Engineered Hardwood (≤ 5″ width, or ≤ 7″ quarter-sawn)	Floating (T&G / Click)	Environ™ Flex Roll	Dry install over ThermalSheet™/cork + vapor retarder.
Engineered Hardwood	Direct Glue-Down	TempZone™ Flex Roll or Cable	Fully embedded in ≥ 3/8″ SLC + wood flooring adhesive.
Engineered Hardwood	Nail-Down	TempZone™ Cable	Sleeper strips anchored between cable runs + ≥ 3/8″ SLC.
Carpet (Stretch-In) (USA Only)	Tack Strip / Stretched	Environ™ Flex Roll	Carpet 1/4″–1″ thick, R ≤ 1. Dry install over 6–8 lb cushion; 6″ wall clearance.
Carpet Tile / Glue-Down	Adhesive Bonded	TempZone™ Flex Roll or Cable	Fully embedded in ≥ 3/8″ SLC + carpet tile adhesive.
Laminate (Direct Contact Approved)	Floating (Click-Lock)	Environ™ Flex Roll	Dry install over ThermalSheet™/cork + vapor retarder. Max 5/8″ (15 mm) plank thickness. No attached pad or metal locking strips. 85°F sensor limit.
Laminate (Embedded / 1/2″ Separation Mandate)	Floating	TempZone™ Flex Roll or Cable	Fully embedded in ≥ 1/2″ self-leveling cement (SLC) to satisfy the manufacturer's separation requirement. 85°F sensor limit.

⚠ **Important Pro Advisory:** Environ™ heating mats and plastic uncoupling membranes (such as Prodeso) are strictly prohibited beneath LVT/LVP. Resilient floors require a continuous, rigid, monolithic cementitious substrate to prevent joint shear and surface telegraphing.

Cross-Section Assemblies: LVT & Engineered Wood

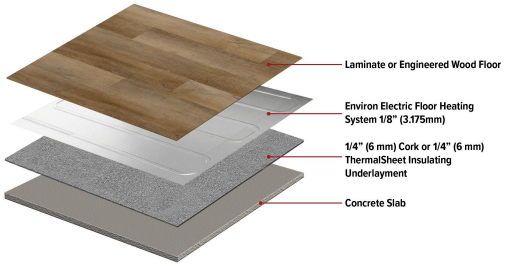
Luxury Vinyl (LVT / LVP / SPC): TempZone™ in SLC



1. Finished LVT/LVP/SPC per manufacturer specs
2. TempZone™ Flex Roll (15 W/sq. ft.) or Cable embedded in polymer-modified SLC, 3/8″ to 1/2″ cover
3. SLC primer (prime subfloor to prevent flash drying)
4. Subfloor: concrete slab or 3/4″ exterior-grade plywood that is clean, dry and deflection-free (L/360). Over uninsulated slabs, add 6 mm ThermalSheet™ (R-1.5) with modified thinset.

Chisel a recess for the cold-lead splice and sensor bulb. Center the sensor between two parallel runs and secure it flat.

Floating Engineered Wood: Dry Assembly with Environ™



1. Floating engineered hardwood
2. Environ™ heating mat
3. Underlayment: ThermalSheet™ 6 mm R-1.5, cork or dense foam
4. 6-mil polyethylene vapor barrier
5. Subfloor: plywood or concrete

Cut a narrow trough in the underlayment for the sensor bulb and cold-lead splice, and tape it flush to avoid high spots.

Wood Selection

Recommended: white oak, walnut, cherry, quarter-sawn/rift-sawn; plank widths ≤ 5″ (≤ 7″ if quarter-sawn).

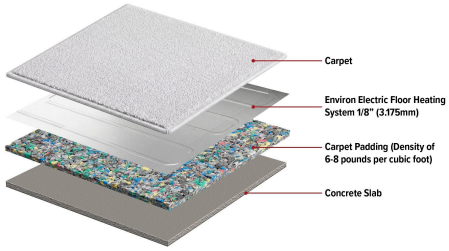
High risk, do not use: maple, hickory, beech, Brazilian cherry (jatoba), plain/flat-sawn wide planks, solid wood planks > 3″ wide.

ⓘ ▶️ Installing TempZone™ Floor Heating under LVT Using Self-Leveling Cement (7:48)

Carpet & Laminate Assemblies

Carpet over Cushion (USA Installations Only)

UL-listed for the United States under UL 1693 (prohibited under the Canadian Electrical Code).



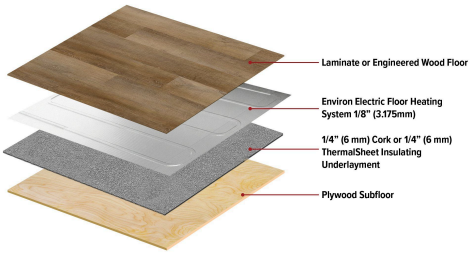
Layer	Description
[1]	Stretch-In Carpet (1/4″ to 1″ thick; R ≤ 1)
[2]	Environ™ Heating Mat
[3]	High-Density Carpet Pad (6–8 lb/cu.ft.) — 6″ WALL CLEARANCE from tack strip and wall
[4]	Subfloor

ℹ ▶️ Carpet Seaming and Stretching on top of Radiant Floor Heating (1:19)

Laminate: Direct vs. Embedded

Laminate expands and contracts with humidity and temperature. Verify whether the manufacturer allows direct electric radiant contact or requires an embedded assembly.

Option 1: Direct Floating (Environ™ Foil), for laminate lines approved for direct contact



⚠ Laminate planks with integrated foam backing or metal locking strips are prohibited directly over Environ™ foil.

ℹ ▶️ Environ Floor Heating Installation under Floating Wood Laminate (Condensed) (1:07)

Option 2: Embedded in SLC (The 1/2″ Separation Rule)

Major manufacturers (such as Shaw) require a minimum 1/2″ (12.7 mm) separation between the heating element and the laminate core. Use the TempZone™-in-SLC assembly shown on the previous slide with ≥ 1/2″ cover, and install floating laminate with approved underlayment on top.

ℹ Environ™ foil mats cannot be embedded in cement. When the 1/2″ separation rule applies, TempZone™ in SLC is the only compliant option.

Electrical & Trade Sequencing

Trade Scope Matrix: Who Does What on the Job Site?

ELECTRICIAN'S SCOPE

- Sets 4×4 deep box with single ring
- Runs separate cold-lead and sensor conduits into wall box
- Verifies dedicated non-GFCI breaker
- Performs Stage 1 and Stage 3 ohm readings
- Makes line/load thermostat splices

FLOORING PRO'S SCOPE

- Cleans, primes and preps subfloor
- Installs underlayment/thermal break
- Lays out heating rolls and fixes wire
- Channels sensor flush into base
- Verifies Circuit Check beeper
- Pours SLC and installs finished floor

The Dual-GFCI Trip Hazard (Electrician Advisory)

The **nSpire Touch** and **nJoy** thermostats have a built-in 5 mA Class A GFCI. Do NOT install a GFCI breaker in the panel; use a standard thermal-magnetic breaker.

Conduit Separation: NEC requires 120V/240V high-voltage cold leads and low-voltage floor-sensor wires to run in separate conduits or raceways entering the junction box.

The Backup Sensor Insurance Rule

Every heating element comes with a floor sensor attached, and a second sensor is included in the thermostat packaging. Install both sensors at rough-in, centered between heating loops. Wire one to the thermostat and curl the spare inside the electrical box, so it is ready to connect without disturbing the floor if the first sensor is ever damaged.

The 3-Stage Quality Control & Resistance Sign-Off Log

Failure to log resistance readings at all three stages may void warranty coverage. Keep resistance within −5% to +10% of the factory label.

Testing Stage	Test Timing	Core Heating Wire Resistance (−5%/+10%)	Core-to-Ground Continuity (Must read Open Loop / OL)	Floor Sensor Resistance (8 kΩ–18 kΩ)*	Tested By (Print Name & Date)	Sign-Off Signature
Stage 1	Out of package before installation	___ Ω	[ ] Pass / OL	___ kΩ	_____	_____
Stage 2	Secured to floor, before SLC pour or floor lay	___ Ω	[ ] Pass / OL	___ kΩ	_____	_____
Stage 3	After SLC cure & finished floor install	___ Ω	[ ] Pass / OL	___ kΩ	_____	_____

ⓘ ***TECH SUPPORT PRO-TIP:** Set your digital multimeter to the 20 kΩ range when testing sensor resistance. Auto-ranging meters often misread 10 kΩ NTC thermistors as open loops. The expected baseline is 10 kΩ at 77°F (25°C).

Need Help on the Job Site?

24/7
Live field troubleshooting whenever your crew is on site.

Call
(800) 875-5285

Online Support Portal
www.warmlyyours.com/support