



Radiant Heating Underlayment Panels

Product Installation Manual

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INTRODUCTION:

Easy to Install

HeatPly panels are designed with center line cut scribes for installation ease. Use these centerlines for cutting panels in half or for centerline cuts on radius panels. Installing HeatPly is quick and easy. Just follow the simple installation steps in this manual to create a perfect base for your floor coverings, and a complete working radiant heat system.

Local Codes and Regulations

Before installing HeatPly underlayment system, be sure to contact the local building department to determine the necessary permit, installation and inspection requirements for the local jurisdiction. The installation of HeatPly panels must be performed in compliance with all applicable building and safety codes. HeatPly panels are intended for installation by a qualified and licensed contractor.

Crawl Space Requirements

Crawl-space requirements may vary based on geographic location. Consult local building codes for more specific information.

Subfloor Requirements

The subfloor system should be designed for a deflection limit of $L/360$ for the span. The subfloor should be APA Span-Rated Plywood or OSB with an Exposure 1 classification or better with T&G or back-blocked at the unsupported edges.

Surface Test for Dryness

Subfloor and/or Concrete slab must be dry before installing HeatPly underlayment panels. Ensure that construction conforms to local building codes for that area.

Subfloor and or slab should be tested for dryness by one of the following methods: Tape an 18" x 18" (457 mm x 457 mm) section of plastic (as per ASTM D4263) to the surface of the underlayment. Lay a 24" x 24" high-density, smooth rubber mat on the underlayment surface and weigh down. Lay a piece of 6-mil vinyl plastic on the underlayment surface, weigh down, and seal the edges. The underlayment is considered dry if there is no discoloration (darkening) of the underlayment or condensation on the test covering after 16 hours. Perform additional tests if necessary. When subfloor or concrete slab has passed the dryness test described above, HeatPly can be installed.

Note: HeatPly should be installed over subfloor or concrete only. Do not use HeatPly panels over existing vinyl flooring with heavy cushioning or thick foam backing.

Save These Instructions

This manual contains important instructions for HeatPly panels that must be followed during installation. Before installing HeatPly panels, read through, understand and follow all cautionary markings and instructions in this manual.

UNPACKING, STORAGE, AND HANDLING:

Unpacking

HeatPly panels are typically shipped on a skid and smaller orders packed in cartons. Inspect the deliveries on arrival for any signs of shipping damage. Any damage to the shipping container must be noted and the product in that area must be inspected closely to ensure that there is no damage. Take pictures of any damage, and report to the shipping company, distributor and/or Noyes Enterprises immediately.

Handling Panels

While this product has been designed for many years of successful performance, it should be handled with care... Specifically: Panels have deep tubing slots and should be handled with care. Throwing them onto the floor, for example will most likely cause damage. Do not bend or twist during installation. Handle panels in an upright position to prevent breakage

Storage of Panels

Always store HeatPly panels flat. Keep panels banded until installation, and in a dry, covered area out of the weather. Allow panels to acclimate to temperature and humidity at job site prior to installation.

INSTALLATION:

Preparation

Clean subfloor and leave free of dust, dirt and debris. Ensure that subfloor is completely dry and concrete has (no more than 12% moisture prior to installation). Verify that fasteners are flush with, or slightly below, subfloor surface.

Materials and Tools Needed

Materials: Select galvanized or clear coated staples with a minimum of 18 gauge shank, 1/4" crown (maximum 3/8" crown.) The length of staple should be no longer than the combined thickness of the sub-floor and underlayment.

Staples should not protrude through subfloor if possible and should be countersunk just below the panel's surface, but no more than 1/8" below the surface.

Do not use divergent staples of any kind.

Adhesive. We recommend Liquid Nails brand Subfloor and Deck Construction Adhesive (low VOC). For proper glue-down attachments, follow manufacturer's surface

requirements instructions to prepare the underlayment. Prior to installation, conduct a sample test to confirm bond compatibility. Our recommended adhesive amount is a 4 to 6 inch grid pattern on the entire back surface of the panels

Radiant Tubing: HeatPly is designed for use with 3/8" ID nominal ASTM F-876 PEX (cross-linked polyethylene) with a 1/2" OD. There may be other tubings that are acceptable. Please check with HeatPly's technical department.

Tools: The following tools are required for a typical installation: Common Construction and Radiant Heating hand tools, a portable table saw, and a pneumatic staple or nail gun. Additional specialized tools may be required for more complex jobs with intricate layouts.

Procedure

- Layout each room with equivalent tubing lengths (ideally between 150-225 linear feet each). Be sure not to exceed 250 feet per circuit including runs to and from the manifold locations. For areas with heat loss greater than 25,000 btu/sqft the maximum should be kept to 200 feet. The following calculation can be used to determine the number of circuits and circuit lengths for a given room: Total sqft x 1.8 results in total linear feet of tubing required. Then divide the total evenly into circuits that are between 150-225ft each. Example: a 20' x 25' room is a total of 500sqft. $500 \times 1.8 = 900$ linear feet of tubing. And $900/4 = 225$ linear feet per circuit and 4 circuits are required.

Figure 1: Sample Room Layout

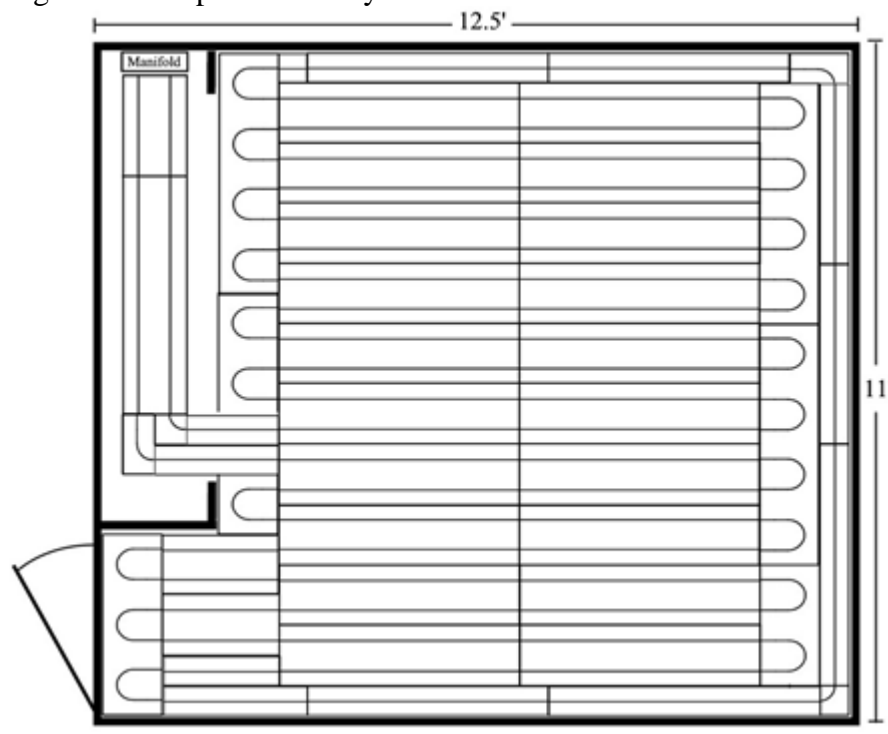
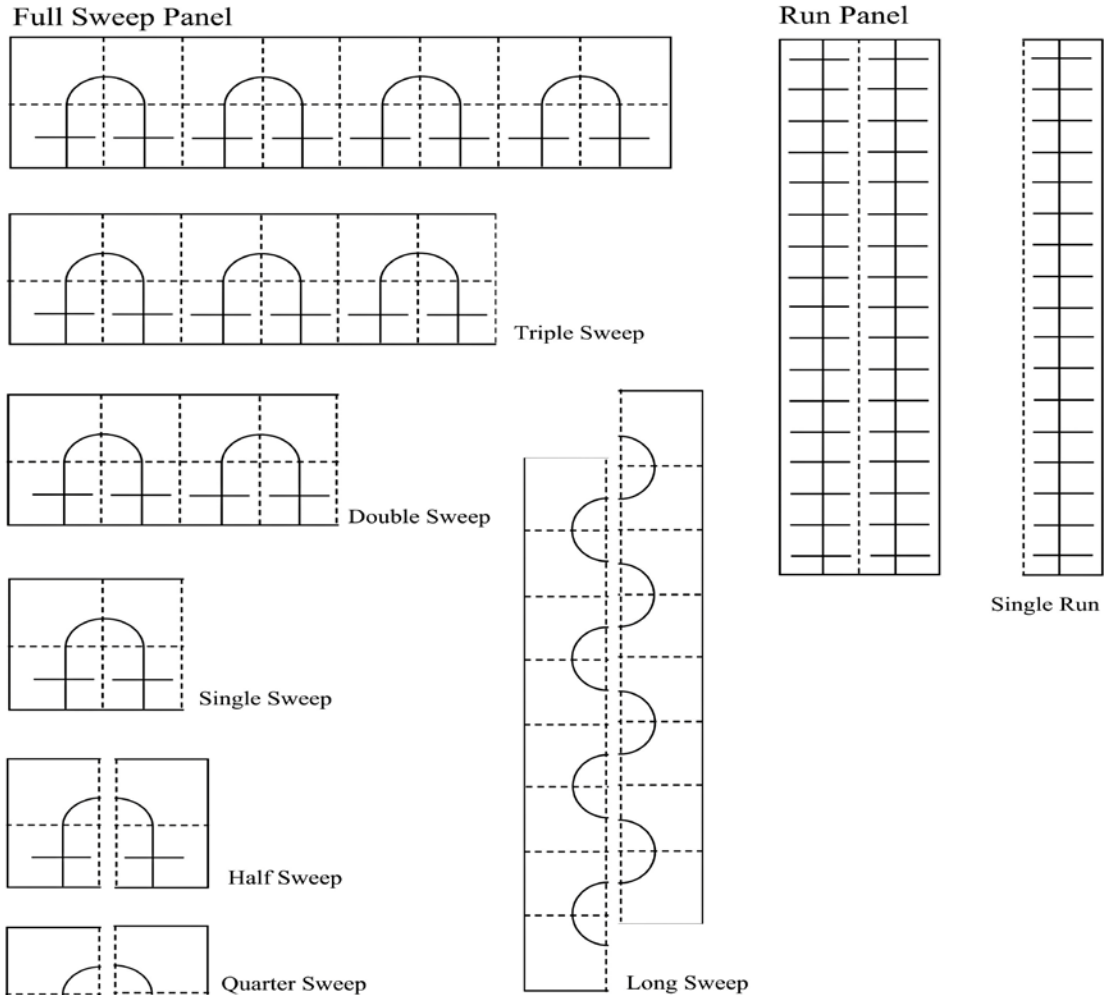


Figure 2: HeatPly Common Cut Panel Examples

Common Cut Examples



- Work one room at a time. Start by laying out the panels from the manifold location and layout circuits until the panels are laid out throughout the room.
- When room layout is complete and panels are in place, cut short 12-16" inch PEX tubing lengths and insert them into panels at junctions to align the tubing slots. This can be done one section at a time as to not waste PEX tubing. The lengths of PEX can be reused for the entire job.
- Working one section at a time, flip HeatPly panels over and apply Liquid nails to backs of panels, piece by piece (refer to Materials Section for amount). Then replace the adhesive backed panels into place and push them down securely to the floor. Next

insert the alignment tubing and secure each panel into place with appropriate fasteners (see Fastener Section of manual). Continue this process until the entire room is glued and fastened to the subfloor or slab.

- Once the panels in the entire room have been secured, remove the alignment tubing pieces and thoroughly clean debris from the radiant tubing channels. Vacuuming works best for this.
- Next the PEX Tubing can be inserted into the slots. Work on one circuit at a time to press and secure PEX tubing into the tubing channels. Use rubber mallet if necessary.
- Pressure test the tubing lines for leaks. We recommend leaving the system pressurized for 24 hours to check for leak-down.

Fastening:

Fastening Over Wood Subfloor: Fasten HeatPly panels to subfloor using staples, screws, or nails spaced 8” o.c., with perimeter fasteners ½” from ends and edges. Make sure that fasteners are flush or slightly below the panel surface.

Fastening Over Concrete Slab: Fasten HeatPly panels to concrete using Tapcon or Hilti type fasteners. Be sure to have adequate penetration into slab. See fastener manufacturer instructions for recommended specifications. This procedure should be performed by a qualified Contractor. Make sure that fasteners are flush or slightly below the panel surface.

INSTALLING NEW FLOOR COVERING:

Floorcovering should be installed immediately after the installation of HeatPly panels to avoid damage or environmental influences. Prolonged exposure to foot traffic will impact the performance of the HeatPly panels. Prior to installation of final floor covering, avoid heavy traffic and moving heavy items across panels.

Follow the floorcovering manufacturer’s instructions carefully before installing the floorcovering.

Use only adhesives recommended by the floorcovering manufacturer for use over wood underlayment.

Avoid fastening into Radiant Heat tubing lines.

PERFORMANCE:

Optimum performance of HeatPly Radiant Heating Panels and any implied warranty is dependent on correct handling and installation procedures.

Figure 3: Performance Chart

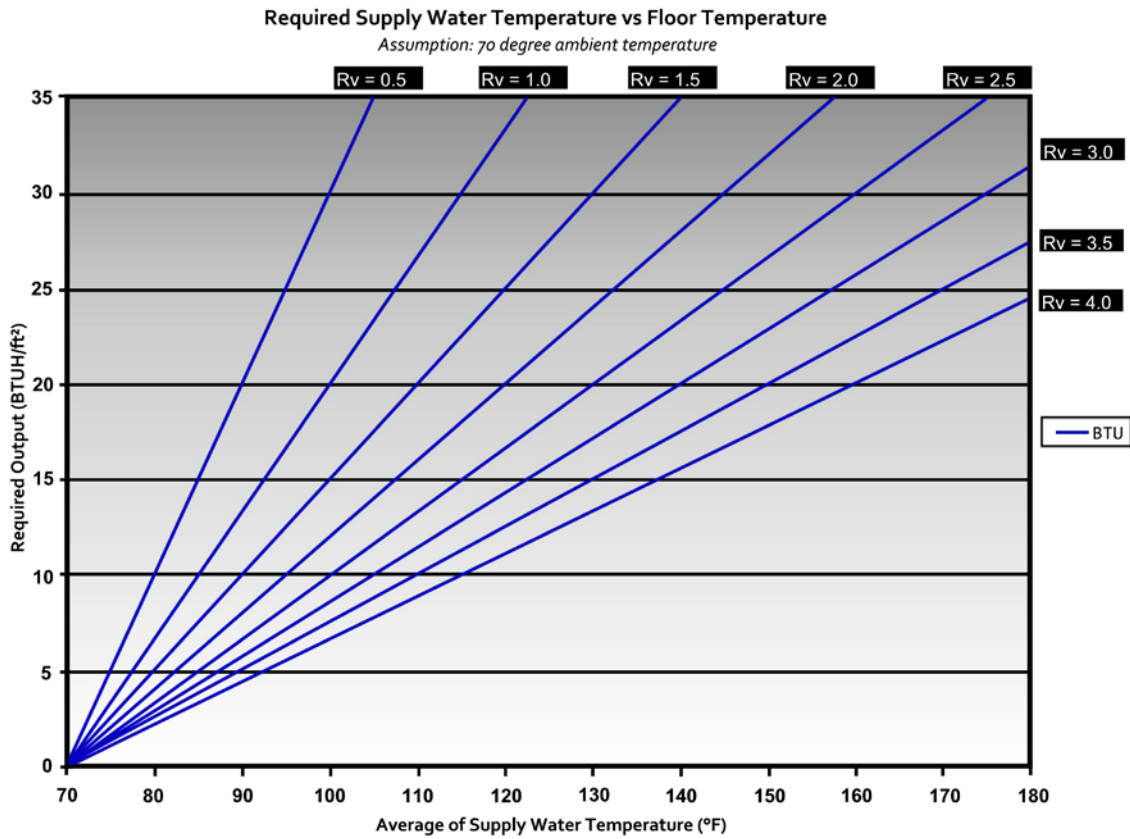


Figure 4: R-Values of Finished Floors

| Material | Typical R-Value | R-Value per inch | Typical Thickness |
|------------------------------|-----------------|------------------|-------------------|
| Plywood | 0.825 | 1.10 | 0.750 |
| OSB | 1.000 | 1.40 | 0.750 |
| Softwood | 1.050 | 1.10 | 0.750 |
| Sheet Vinyl | 0.825 | 1.60 | 0.125 |
| Vinyl Composition Tile (VCT) | 0.200 | 1.60 | 0.125 |
| Linoleum | 0.200/0.400 | 1.60 | 0.250/0.125 |
| Dense Rubber Flooring | 0.200 | 1.30 | 0.325 |
| Recycled Rubber Flooring | 0.250 | 2.20 | 0.500 |

| | | | |
|--------------------------------------|-------------------|------|-------------------|
| Cork Underlay-WECU SoundLess 6mm | 1.100 | 1.04 | 0.250 |
| Brick | 2.600 | 2.25 | 1.500 |
| Marble | 3.375 | 0.80 | 0.500 |
| Ceramic Tile | 0.400 | 1.00 | 0.250 |
| Thinset Mortar | 0.250 | 0.40 | 0.125 |
| MDF/Plastic Laminate | 0.050 | 1.00 | 0.500 |
| Laminate Floor Pad | 0.500 | 1.92 | 0.160 |
| Engineered Wood Flooring | 0.300/0.375/0.500 | 1.00 | 0.375/0.625/0.750 |
| Floating Floor Laminate/Wood Padding | 0.750 | 1.60 | 0.125 |
| Engineered Bamboo | 0.200 | 0.98 | 0.625 |
| Solid Oak Flooring | 0.600 | 0.85 | 0.750 |
| Solid Maple Flooring | 0.638 | 1.28 | 0.750 |
| Carpet Pad / Slab Rubber 33 lb. | 0.750/0.320/0.480 | 1.28 | 0.250/0.375/0.500 |
| Carpet Pad / Waffle Rubber 25 lb. | 0.640/0.620 | 2.48 | 0.250/0.500 |
| Carpet Pad - Jute/Fiber | 1.940/1.250 | 3.88 | 0.500/0.325 |
| Prime Urethane Carpet Pad | 1.400/2.150 | 4.30 | 0.325/0.500 |
| Bonded Urethane Carpet Pad | 1.350/2.100 | 4.20 | 0.325/0.500 |
| Carpet - Synthetic Fiber | 0.700 | 2.80 | 0.250 |
| Carpet - Synthetic Fiber | 1.400/2.100 | 2.80 | 0.500/0.750 |
| Carpet - Wool | 1.575/2.100 | 4.20 | 0.375/0.500 |

PRODUCT WARRANTY:

This limited warranty applies to the original retail purchaser ("Purchaser") of HeatPly underlayment (the "Product") and to any owner of a residential building on which the Product is originally installed ("Owner"). Noyes Enterprises LLC ("HeatPly") warrants that its Product will, at the time of shipment, meet or exceed the physical and mechanical properties for its intended use as a radiant heat underlayment panel. Subject to the installation requirements and conditions set forth below, Noyes Enterprises warrants that, for a period of 15 years from the date of installation, the panels:

- Will not delaminate or contribute to discoloration of the floor covering material.
- Will hold the floorcovering material permanently to the floor.

Panels must be installed in accordance with the manufacturer's instructions and prescribed fastening patterns and adhesives spread rates for this warranty to apply.

Warranty shall only be effective if panels are stored, handled and installed in accordance with the attached HeatPly installation instructions. Warranty applies to residential installations only.

Length of Coverage: This transferable warranty is valid for 15 years from the date of installation.

If any panels should fail to meet the above limited warranty, Noyes Enterprises will, at its discretion:

- Supply replacement panels for those found to not satisfy the warranty; or
- Refund the full purchase price of the defective panels if the floor covering has not yet been installed; or
- Pay an amount equal to the purchase price of the defective panels, adhesives, and floorcovering, and reasonable installation cost of the floorcovering.

Claims regarding panels that fail to meet the limited warranty will only be honored subject to the following conditions:

- A written notification of claim must be delivered to Noyes Enterprises within (30) days of the time you discover possible defect with the panels, including a brief description of the problem, along with photographs and samples if available.
- The claim must include proof of purchase sales receipt, invoice, dealer's name and address, along with address and date installed.
- Noyes Enterprises must be provided the opportunity to inspect the reported damage claim prior to any

alteration, change or repair for period of at least (30) days after it's receipt of the notice of the claim.

- Send claims to Noyes Enterprises LLC, 831 Petaluma Blvd So., Petaluma, CA 94952

Noyes Enterprises does not accept responsibility for:

- Telegraphing at panel edges caused by uneven floor joist, movement of the sub-floor, telegraphing or foreign material due to improper cleaning, tile or vinyl shrinkage, insufficient or improper use of floor-patch or poor workmanship.
- Damage due to structural movement of the building or failure of the structure material to which panels are attached.
- Deficiencies in the sub-floor / floor joist assembly including but not limited to irregular subfloor surface, or voids in the subfloor.
- Improper storage, handling or installation, or failure to install in accordance with the attached installation instructions for HeatPly underlayment panels.
- Defects, incompatibility or failures of the manufacturers' products in the floor assembly including but not limited to fasteners, adhesives and floorcovering.
- Damages arising from acts of God such as earthquakes, lightning, floods, natural disasters, etc.
- Panel failure resulting from exposure to moisture.
- Failure of the owner to maintain the building with reasonable care.

Exclusion of Implied Warranties; No Other Express Warranties

THIS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE REMEDY PROVIDED IN THIS WARRANTY SHALL BE THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF THE WARRANTY. NOYES ENTERPRISES LLC SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES, REGARDLESS OF THE THEORY UNDER WHICH SUCH DAMAGES ARE SOUGHT.

IN NO EVENT WILL NOYES ENTERPRISES BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE PANELS, INCLUDING, BUT NOT LIMITED TO, DAMAGE TO PROPERTY OR LOST PROFITS.

Note: Products described here may not be available in all geographic markets.

Notice: We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

Safety First! Follow good safety and industrial hygiene practices during handling and installation of all products and systems. Take necessary precautions and wear the appropriate personal protective equipment needed. Read material safety data sheets and related literature on product before specification and/or installation.

