STEP Warmfloor and Carpet Applications
About HeatMyFloors.com

- Subsidiary of Wright Hennepin Cooperative Electric Association
- Distributor of electric radiant floor heating products since 1996
- Located in Rockford, Minn.
Your Host

Andy Hoffman

- Snowboarding, biking, hunting, traveling
- Started with Wright Hennepin in October 2012
STEP Warmfloor

• Low voltage
• Reliable
• Self-regulating
• Thin and Flexible
• Durable
# STEP Warmfloor vs. Electric Floor Heating Cables

## Comparison Table

<table>
<thead>
<tr>
<th>Feature</th>
<th>STEP Warmfloor</th>
<th>Cable on a Spool</th>
<th>Cable Mat</th>
<th>Carbon Ink Foil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small rooms</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Large areas</td>
<td>yes</td>
<td>few</td>
<td>no</td>
<td>in ceilings</td>
</tr>
<tr>
<td>Direct contact with floor covering</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Under hardwood</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Under laminate</td>
<td>yes</td>
<td>limitations</td>
<td>limitations</td>
<td>limitations</td>
</tr>
<tr>
<td>Under carpet</td>
<td>yes</td>
<td>limitations</td>
<td>limitations</td>
<td>limitations</td>
</tr>
<tr>
<td>Under tile or stone</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>delamination</td>
</tr>
<tr>
<td>Continuous even heat</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Self-regulating heating element</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Low-voltage 24V</td>
<td>yes</td>
<td>no</td>
<td>few</td>
<td>few</td>
</tr>
<tr>
<td>Risk of overheating</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Loss of heating due to puncture</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>depends model</td>
</tr>
<tr>
<td>GFI required</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Need floor sensor</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Operating cost</td>
<td>most efficient</td>
<td>less efficient</td>
<td>less efficient</td>
<td>less efficient</td>
</tr>
</tbody>
</table>

## Additional Information

- **Heatmyfloors.com**
  - [Website](http://www.heatmyfloors.com)
  - **Phone:** (800) 785-8738
  - 6800 Electric Drive • Rockford, MN 55373
Notes on Carpet

• Carpet is naturally warm
• Insulator
• Stretch in or glue-down
• Polyurethane, rubber, fiber pads
• Broadloom rolls or tiles
VOCs and Off Gassing

- Volatile Organic Compounds
- The evaporation of chemicals from a material
  - Furniture, plastics, vinyl products, paint, new cars, clothing, carpet
- Decreases significantly after several months
  - Ventilate for at least 72 hours after installation
  - Continue to ventilate for several weeks
- Radiant systems can add to this effect
Selecting a Proper Carpet Pad/Cushion

Polyurethane

- Avoid prime and bonded pads
- Bonded is most common
  - Also called rebond or confetti pads
- Froth is regarded as best
Selecting a Proper Carpet Pad/Cushion

Slab Rubber and Waffle

- Slab works better than waffled
- Thinner is better
- Low R-value = Tighter spacing
Selecting a Proper Carpet Pad/Cushion

Fiber

- Lacks moisture barrier
- Low density
- Can be used if system is imbedded
Selecting a Proper Carpet Pad/Cushion

- Moisture barrier
- Low R-value
- Higher density
- Consider thickness

![Diagram showing the difference between a premium pad with a moisture barrier and a standard pad.]

<table>
<thead>
<tr>
<th>Carpet Pad Type</th>
<th>R-value Per Inch</th>
<th>Typical Thickness</th>
<th>Typical R-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpet Pad/Slab Rubber 33 lb.</td>
<td>1.28</td>
<td>1/4”</td>
<td>0.320</td>
</tr>
<tr>
<td>Carpet Pad/Slab Rubber 33 lb.</td>
<td>1.28</td>
<td>3/8”</td>
<td>0.480</td>
</tr>
<tr>
<td>Carpet Pad/Slab Rubber 33 lb.</td>
<td>1.28</td>
<td>1/2”</td>
<td>0.640</td>
</tr>
<tr>
<td>Carpet Pad/Waffle Rubber 25 lb.</td>
<td>2.48</td>
<td>1/4”</td>
<td>0.620</td>
</tr>
<tr>
<td>Carpet Pad/Waffle Rubber 25 lb.</td>
<td>2.48</td>
<td>1/2”</td>
<td>1.240</td>
</tr>
<tr>
<td>Carpet Pad/Frothed Polyurethane 16 lb.</td>
<td>3.53</td>
<td>1/8”</td>
<td>0.53</td>
</tr>
<tr>
<td>Carpet Pad/Frothed Polyurethane 12 lb.</td>
<td>3.48</td>
<td>1/4”</td>
<td>0.87</td>
</tr>
<tr>
<td>Carpet Pad/Frothed Polyurethane 10 lb.</td>
<td>3.22</td>
<td>3/8”</td>
<td>1.20</td>
</tr>
<tr>
<td>Carpet Pad/Frothed Polyurethane 10 lb.</td>
<td>3.22</td>
<td>1/2”</td>
<td>1.61</td>
</tr>
</tbody>
</table>
Selecting a Proper Carpet Pad/Cushion

**Recommended:**
- Healthier Choice
- Sponge Cushion
- Rubber-backed pads
- Moisture barrier
- Frothed pads
- Low VOCs/off gassing

**Avoid:**
- Prime or bonded (rebond) polyurethane pads
- Pads with a high R-value
- Fiber pads (unless imbedded)
- High VOCs/off gassing
- Adhesives or glue-down pads

Always check with the retailer/manufacturer to make sure the pad and carpet you choose are rated for radiant!
Selecting a Proper Carpet Pad/Cushion

- Manufacturer recommended
- Lowest emissions for best indoor air quality
- Long performance life
- Anti microbial
- Ideal for carpets, laminates and hardwoods
Selecting a Proper Carpet Pad/Cushion

- Manufacturer recommended
- SCI advertises:
  - Lowest available R-values
  - 100% synthetic rubber
  - Will not restrict movement of heat
  - Will not deteriorate due to heat
  - Superior resiliency
  - SCI manufactures products of the type recommended as “best choice” by Radiant Panel Association
Selecting Carpeting

- Think thin!
- Carpet + Pad < R-value of 2.5
- Thicker carpet, thinner pad or thinner carpet, thicker pad
- Synthetic typically performs better than wool
- May be better to spend more on the pad than the carpet

Images from Radiant Flooring Guide 2013
Insulation

- Especially important with carpet applications!
- Insulation is fuel your customer only pays for once
- Heat always migrates to cold
- Critical role in determining expected results. Always add insulation if there is an opportunity
- Perimeter insulation is important with slab on grade applications
Insulation

- Cork
- Polystyrene
- Artificial or synthetic cork
- Avoid foils
Insulation

**Cerazorb**

- 4' x 4' - 3/16" weight 5 lbs
- "Synthetic cork product" will not support mold & mildew, rot or absorb moisture
- Typically used under laminate/engineered wood flooring as well as carpet over concrete slabs
- Install carpet tack strip over the Cerazorb product
Installing the Elements

• Typical spacing is 5-7 inches
  – Can be down to 1 inch spacing, 8 inch max
• Use EP-30-2-24W (7.8 W/ft.)
  – Can use 9 W/ft. element if heat loss requires it
• Fail safe wiring is required if elements are not imbedded
Fail Safe Wiring

This method avoids the elements to short out and is used for installations that are not embedded in concrete or leveling compound and for between joist applications.
Installing the Elements

- Staples or nails - every 2 feet
- Hot melt glue - quarter size every 2 feet
- Thin set - industry methods
- Self leveler - industry methods
Avoid adhesives for glue downs as it can effect the performance of STEP Warmfloor elements.

If a carpet is designed for glue down we recommend lightweight concrete over the elements.
Installing the Elements

Minimum of 12" (30cm) Below Grade

Finish Flooring
Concrete Slab
6 mil Plastic Film
STEP Element
Rigid Foam Insulation
Leveled gravel

Floor Covering
Floor Leveler / Underlayment
STEP Element
Rigid foam insulation
Concrete Slab
STEP Warmfloor Between Thermal Insulation and Pad
Carpet Installation

- Prep floor and install according to industry standards
- Open windows and ventilate
- Test STEP Warmfloor system before and after installation
Quotes

Type of room
- Bathroom
- Kitchen
- Family room
- 4 Season Porch
- Other

Design this room for
- Floor Warming
- Primary heat- Heatloss calculation required- complete back page

Floor Covering/Application
- Tile/Stone
- Carpet
- Wood/Bamboo
- Vinyl
- Between joist
- Other

Subfloor: (please select one)
- Concrete
- Plywood
- Slab on grade
- Slab below grade

Low voltage transformer supply preference
- 120 volts
- 240 volts
- Approximate distance to transformer location

Type of control device
- Non-programmable
- Programmable
- Electronic timer
- On/off switch

Is the room below...
- Finished
- Unfinished

Primary Heat Applications only-heatloss information

Type of Home
- New Home 2000 and newer
- Existing home, minimum insulation
- Existing home, upgraded insulation

Walls R-Value
- Framed 2”x4” = R-11
- Framed 2”x6” = R-19
- Framed 2”x6” Close cell foam = R-21

Wall Height
- 8’
- Vaulted
- Other

Ceiling R-value

Floor or Slab R-Value
- If no insulation below consider adding insulated panels from HeatMyFloors.com on top of slab concrete

Window information
- Single pane
- Double pane
- Triple pane Low E

What is the total square feet of glass in...
- Zone 1
- Zone 2
- Zone 3

Exterior Doors, How many in...
- Zone 1
- Zone 2
- Zone 3

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6800 Electric Drive • Rockford, MN 55373
Quotes

- Custom Designed for each application
Resources

• Radiant Flooring Guide 2013

• Environmental Protection Agency
  – www.epa.gov

• The Carpet and Rug Institute
  – www.carpet-rug.org

• Radiant Panel Association
  – www.radiantprofessionalsalliance.org
Coming Up…

- Steve Walstad presenting tile applications
- Tracy Hettwer presenting staple up applications
Thank you for attending from the HeatMyFloors.com team
Questions and Answers

Andy Hoffman
763-477-3029
ahoffman@heatmyfloors.com
STEP Warmfloor Webinar Schedule

**STEP Warmfloor: Under Wood**
Now Available online at HeatMyFloors.com

**STEP Warmfloor: Under Carpet**
Will be posted online shortly

**STEP Warmfloor: Under Tile**
March 28, from 7-8 p.m. CST

**STEP Warmfloor: Staple Up Applications**
April 4, from 7-8 p.m. CST