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INSTALLATION INSTRUCTIONS FOR HEATLAY HLF SERIES MATS

WARNING

COMPLETLY READ ALL OF THESE INSTRUCTIONS AS WELL AS THOSE FOR ALL THE OTHER PRODUCTS USED IN YOUR FLOOR SYSTEM BEFORE BEGINNING INSTALLATION. FAILURE TO OBSERVE THE PRODUCT WARNINGS COULD RESULT IN DEATH OR INJURY FROM ELECTRICAL SHOCK OR FIRE. MAT FAILURE, IMPROPER OPERATION OR FLOOR DAMAGE MAY ALSO BE A RESULT. A MAT WARRANTY IS PROVIDED (PER NOTED TERMS) BASED ON THE INSTALLATION BEING DONE IN ACCORDANCE WITH THESE INSTRUCTIONS. IMPROPER INSTALLATION MAY VOID WARRANTY.

General

Heatlay foil mats are ultra thin electric radiant floor heating systems for use under floating laminate and engineered wood floors.

This mat system is constructed of a double insulated conductor covered by a metallic braid, this conductor is sandwiched between a layer of textile and one of aluminium foil. The aluminium foil along with the uniform spacing of the heating elements ensures even heat distribution. The heating elements are connected to the cold lead, which exits the mat from one corner. The cold lead is a flat thin flexible cord, consisting of two insulated conductors covered by a metallic ground braid. Heatlay foil mats are built in 12- 15 W/ sqft outputs at 120V, 208V and 240V. The mats are available in over 300 pre-engineered sizes as well as custom sizes. All mats come with a minimum 10ft cold lead with the option for longer lengths. Heatlay foil mats are intended to be installed between the underlayment and the laminate / engineered floor and are for indoor applications only. The foil heating mats are NOT suitable for under tile, stone, hardwoods, carpet and nail/glue flooring applications.

Inspection

Electrical inspection may be required during and or after heating mat installation. **BEFORE BEGINNING INSTALLATION** contact your local electrical and building inspection authorities for more information. Local codes may require this mat and/or the thermostatic control to be installed or connected by an electrician. Heatlay requires all electrical connections be made by qualified personnel and in accordance with the Canadian Electrical Code (CEC) or National Electrical Code (NEC) and all applicable local codes and ordinances.

Pre-Check

Confirm with the manufacturer of your flooring, that their products are compatible with radiant electric floor heating systems. Heatlay foil mats must be installed on top of an underlayment/insulation and directly under the laminate flooring (underlayment is also known as underpad).

Only operate the heating mat with a floor temperature sensing thermostat to ensure the floor does not exceed the maximum temperature of 81˚F (27˚C), or as recommended by flooring floor manufacturer.

Application

This Heatlay foil mat has been designed to warm floating laminate and engineered wood floors.

DO NOT use the Heatlay foil mat for applications other than for indoor floor warming.
DO NOT use the Heatlay foil mat directly beneath carpet, hardwood, tile, linoleum or vinyl floors.
DO NOT use glued locking systems or laminates that have an underpad or cushion material pre-attached to its underside.
DO NOT cut or modify the Heatlay foil mat to fit the area.
DO NOT overlap Heatlay foil mats, install edge to edge.
DO NOT use staples to hold or secure the mat, cold lead or thermostat sensor wire.
DO NOT attempt to repair a damaged heating mat, call Heatlay for instructions before proceeding further.
DO NOT unroll and install mat when it is colder than 10C (50F).
DO NOT install foil mat on walls, ceilings or stairs.
DO NOT fold or wrinkle Heatlay foil heating mats.
DO NOT put acoustic material between the foil heating mats and the flooring.
DO NOT Install the heating mats under cabinets or furniture that will be permanently fitted to the floor. Built in cabinets and other furniture with solid bases must not be placed over the mats.

DO NOT place heavy/sharp tools (or any other potentially damaging object) on top of the heating mats, or walk unnecessarily on the foil heating mats during installation, without protecting them from damage.

DO NOT install foil mats within approximately 1" of any heat conductive building part, such as cold water pipes.

DO NOT place items on the floor surface which will stop the air flow or not allow heat to rise into the room.

DO NOT install foil heating mats under floor materials greater than 15mm in thickness.

Operational Notes

- The wire spacing and power output of each Heatlay foil mat is custom designed and also thermally balanced in multi-mat applications. The power output of each mat will be between 12-15 W/ft^2.
- Each floor is unique and will heat at a different rate as such it may take as little as 30 minutes or as long as 3 hours to reach the optimum temperature, possibly longer under certain conditions.
- Heatlay recommends using a floor sensing thermostat to regulate floor temperature. Heatlay offers a programmable thermostat which allows the mats to be automatically shut off at night or when you are away from home.
- If the overall floor surface feels unusually hot when the system is energized, or if the circuit breaker trips when the system is energized, the mat may be damaged. De-energize the system immediately and contact Heatlay. **Never bypass a tripped ground fault device.**

Planning Ahead

- When installing the mat on a floor which is over an unheated area it is recommended that the area below the floor be insulated. If left uninsulated the finished floor may not be able to achieve comfort temperatures due to heat loss below.

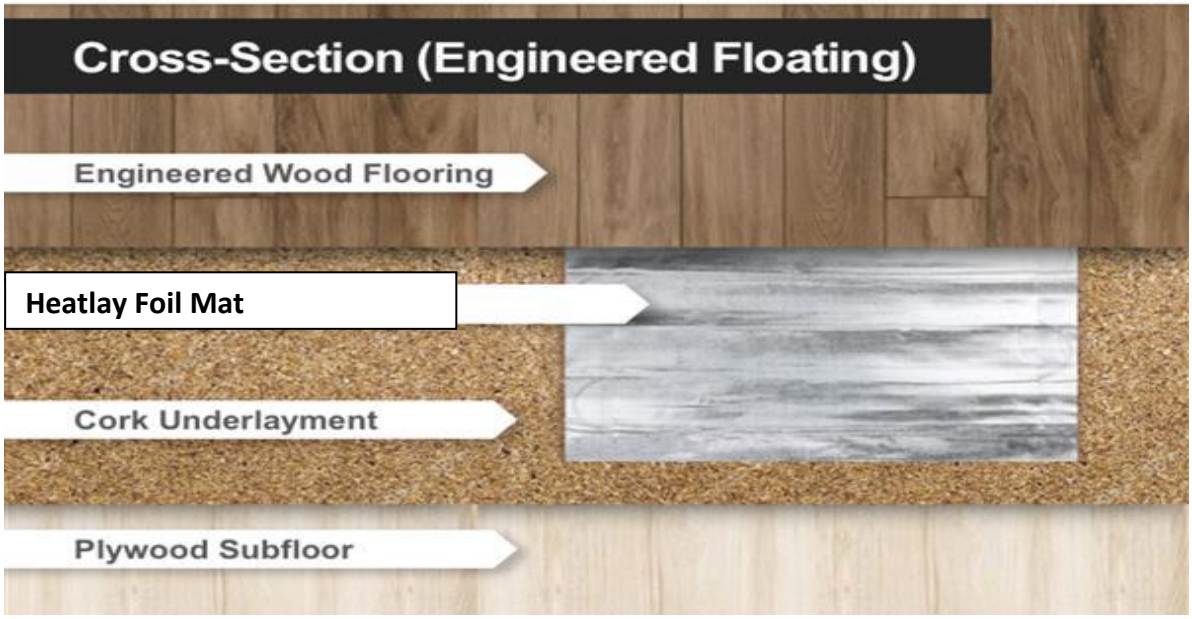
- Heatlay recommends that the mat(s) be installed on a dedicated 20 Amp circuit and controlled by a line voltage ground fault thermostat. There are instances where the load requirements of the mats installed may exceed the dedicated circuit rating. In these instances divide the load (area) into zones and use multiple thermostats or use thermostat relays on multiple circuits controlled via one thermostat. Consult with the local electrical authority for approved methods. Contact Heatlay for control options.

- Ensure electrical junction boxes are properly positioned such that the leads from each mat will be able to reach into and extend 6” beyond the box. A large volume single gang 2” x 4” box is usually suitable for 1 or 2 mat installation, a 4” x 4” double gang box (with a single gang plaster or mudring) is recommended for installation with 2 or more mats.

Take Pictures and Keep Notes of Installation Detail

Heatlay recommends you keep track of the details of your installation and save for future reference. The tables at the back of this instruction are set up to help you record the installation details. We recommend taking photos of the installation as it progresses from mat installation to a finished floor.

The following diagram shows typical cross sections of the most common floor constructions. Use this as a visual reference as you read further.



Tools required

- Electrical and construction tools: (screwdriver, wire stripper, etc.).
- Digital ohmmeter capable of 20 to 20,000 ohms readings.

Materials

- Heatlay foil mat
- Cardboard sheets
- Foil Tape or hot melt glue.
- Floor-sensing thermostat with integral ground fault protection.

- Thermostatic relay and ground fault protection device (only as required for multiple mat installations).
- Electrical junction box for thermostat. A 2”x4” box is suitable for a single mat installation, a 4”x4” box is recommended for two or more mats. Conduit (if required by local code).

Installation

Underlayment

- Heatlay foil heating mats must be installed on top of suitable underlayment and cannot lay directly on the concrete slab.
- Any type of underlayment / padding can be used as long as it has a density of 6 pounds per cubic foot. Certain underlayment such as 6mm thick cork, or 6mm to 10mm of Expanded Polystyrene (EPS) are recommended for foil heating mats.
- It is also acceptable to place a vapor barrier, such as a plastic sheet, under the underlayment.
- Underlayment papers are not compatible with foil mats.
- Underlayment is necessary to prevent the foil mat from being damaged when the weight of the floor furniture and people are added. Wooden floors expand and contract with temperature and moisture.

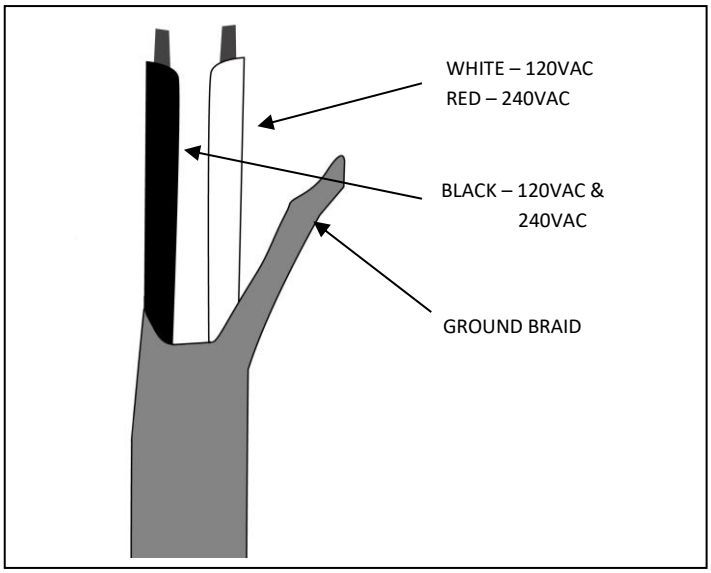
Subfloor Preparation

- Before beginning installation ensure the subfloor is clean. level and free of loose material.
- Protrusions such as nails or screw heads sticking above the floor level must be removed and ridges levelled smooth.
- Beware of automatic staple guns if you use one to secure the underlayment/insulation to the sub floor. A badly installed staple that protrudes from the floor can pierce and damage the mat.

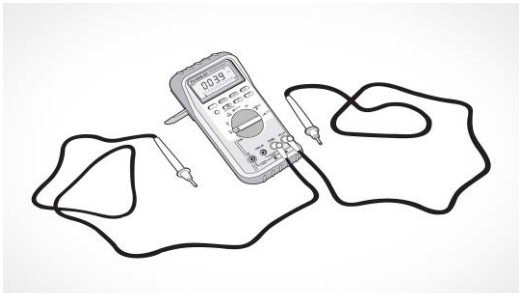
Electrical Tests

- Conduct electrical tests: 1) after unboxing, 2) after dry fit and 3) after installing the flooring.
- If there are problems with any of these tests resolve before proceeding further.
- Check the resistance of the mat. The resistance for 120V mats is measured between the black and white conductors; the resistance for 240V mats is measured between the red and black conductors. The resistance value measured should be +/- 15% of the resistance value noted on the rating label.
- Heatlay recommends that the insulation resistance of each mat be tested by connecting a megohmmeter across the black lead and the ground braid. Test 500VDC, 20 megohm minimum insulation resistance. Ground the black conductor after each test to discharge any energy build-up. If a megohmmeter is unavailable measure the continuity across the black lead and the ground braid. The continuity reading should be infinite or “OL”.
- Measure the resistance across the two conductors of the temperature sensor, the resistance value will change with temperature, as such it may read anywhere from 8,000-14,000 ohms.
- As the tests are completed record the measurements in the tables on the back page.
- **IMPORTANT**. Heatlay requires all electrical connections be made by qualified personnel and in accordance with the Canadian Electrical Code (CEC) or National Electrical Code (NEC) and all applicable local codes and ordinances.
- Only connect the mat to the rated voltage. **DO NOT** use higher voltages as this will increase current draw and cause the mat to overheat; possibly resulting in death or injury from electrical shock or fire, mat failure, improper operation or floor damage.
- Consult the thermostat manufacturer’s instructions for proper wiring detail.
- A circuit protected by a ground fault protection device must be used to power mats connected through a relay.

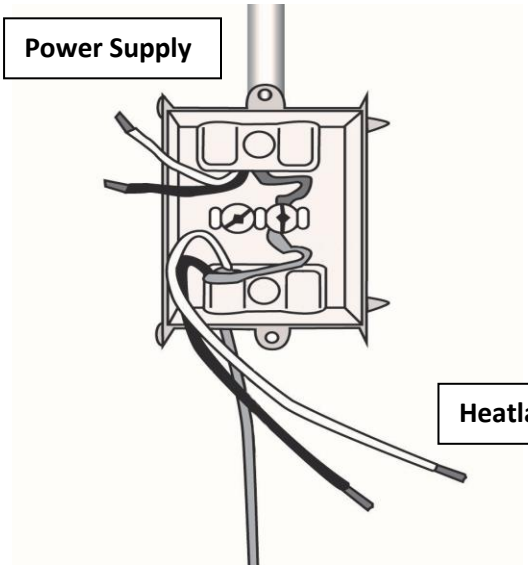
HL Foil Mat Leads



Multimeter



Wiring Reference



- Each Heatlay foil mat has one lead with 2 conductors.
- Each lead has its own grounding braid.
- Ensure that the cold lead braid is directly connected to electrical ground. If the ground braid is not connected to electrical ground there will be a risk of electrical short circuit, overheating or electrical shock.

Test Fit - Dry

1. Verify the mat voltage is correct; 120V mats have black and white leads, 240V mats have red and black leads.

2. Completely roll out the mat(s) on the floor to ensure it fits the floor space and run the leads into the junction box. *Multiple mats install edge to edge, do not overlap.*

2. Confirm the leads are long enough to reach the electrical junction box and will extend a minimum of 6" beyond the box.

3. Conduct Electrical Tests as previously described.

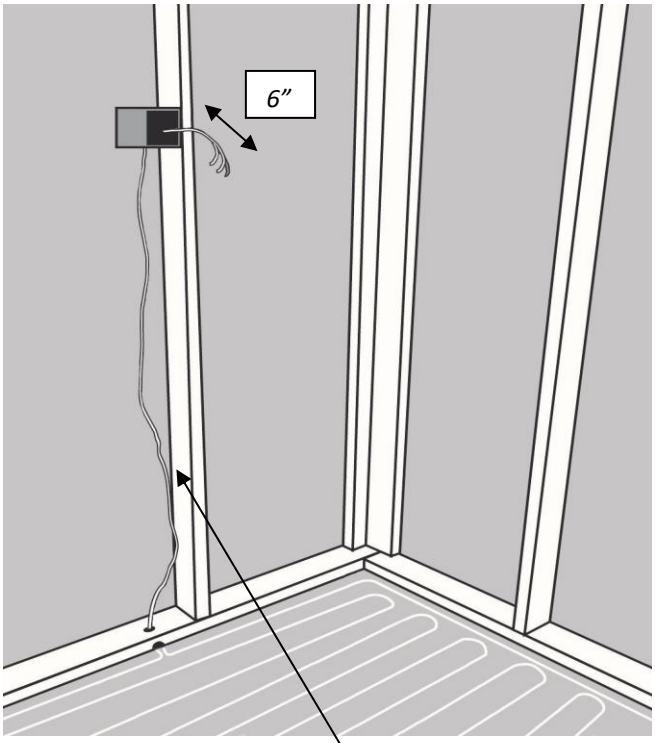
4. Use a marker to trace the cold leads and mark the splice locations on the subfloor.
   - ❖ The cold lead and splices are slightly thicker than the mat, some removal of sub-floor and underlayment material may be required where the splices will set or where the cold leads will run to eliminate any possible interference with the flooring. See side note.

5. Carefully roll the mat back up and have ready for the next step.

6. Drill or cut holes at the bottom wall stud plate for routing the cold lead and thermostat sensor wire to the electrical junction box.

- ❖ **DO NOT** cut or modify the Heatlay mat to fit the area, if there is a problem with fit contact Heatlay.

- ❖ Ensure that you have the sensor for the thermostat; it is usually packed in the same box as the thermostat and will be needed prior to putting on the laminate or engineered wood floors.

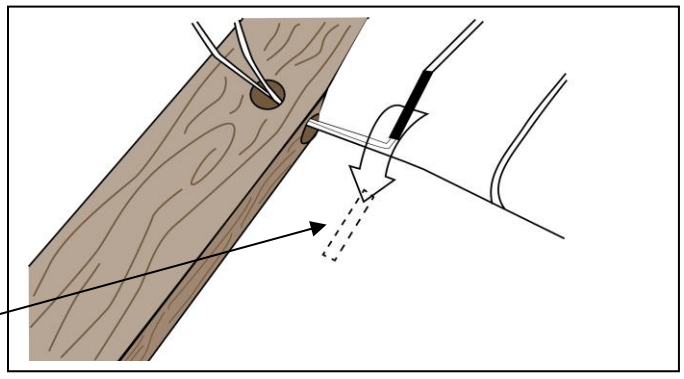


Cold Lead and Conduit Note

The braided cold lead may be installed with, or without, electrical conduit. Confirm conduit requirements with your local electrical and building inspection authorities.
Each mat has 1 lead with 2 conductors.

Splice Thickness Note

The splice is thicker than the majority of the mat. This thickness difference is typically balanced out by the underlayment and thus will not affect the final floor height level. If you are concerned it may present a height issue then it is suggested to cut, or chip, a recessed notch in the floor.



Splice notch.

Installing the Mat

- **Before installing.** Read the laminate or engineered flooring manufacturer's installation instructions; review any specific instructions they may have with regard to the use of their product with electric radiant heating.

- Wood flooring with metallic strips as part of their locking systems are NOT compatible as these metallic strips may damage the foil mats. Laminates that have their pad already attached to the laminate are not compatible with the foil mats. R-Value of floor covering: The type and thickness of floor covering materials used with this product must not exceed a thermal insulation "R" value of 1. Example R-values: Laminate Flooring = R 0.675; Engineered wood flooring = R 0.80 maximum.

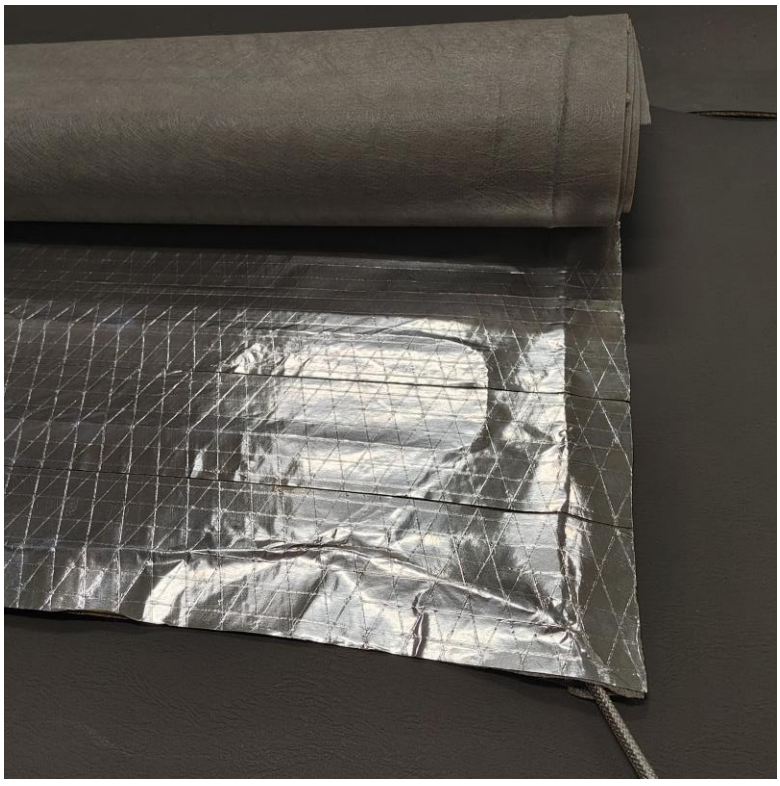
- Install a vapour barrier (if necessary) and any under insulation and underlayment as per manufacturer's instructions.

- Install the laminate or engineered wood flooring as per the manufacturer's instruction. Allow the floor time to acclimatize to the room's temperature and humidity levels before using the floor heating (1-3 days).

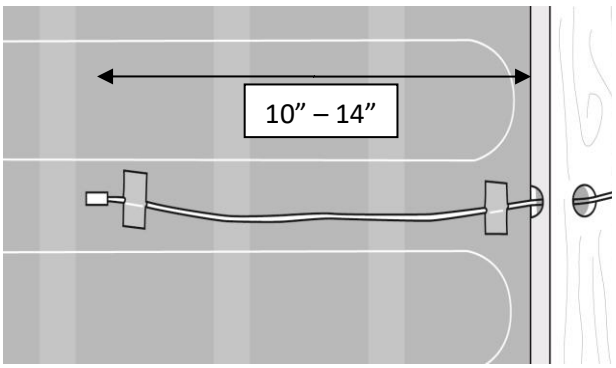
Steps

1. Foil side up.

2. Use soft soled shoes and soft kneepads. Kneeling on the mat with hard surface kneepads may damage the embedded wire. Limit traffic across the floor, use cardboard to create walking paths over the mat if traffic cannot be avoided.
3. Do not place any heavy equipment on the mat.
4. Layout insulation/vapour barrier and underpad and secure to the floor. Roll out mat into the floor.



5. Secure the thermostat floor sensing probe **IMPORTANT.** The thermostat floor sensing probe must be installed prior to covering with the flooring. Secure the probe on top of the mat with tape or hot melt. The sensor should be positioned in the middle of two heating cable runs, and 10” – 14” from the edge of the mat. Avoid placing it in an area where the floor sees direct sunlight. Run the free end of the sensor wire back to the junction box.



6. Install flooring on top of the mat taking care not to damage the embedded wire.

7. Run the cold leads into the electrical junction box and protect at the bottom wall stud with a guard plate.

8. If there is more than one mat being installed ensure the edges of the mats are aligned edge to edge, this ensures even heating across the floor.

9. Conduct Electrical Tests as previously described. Your installation may require inspection at this point; consult with your local building and electrical inspection authorities.

Installation Warnings

Do not hammer high spots to level floor, hammering high spots can damage the heating mat resulting in risk of electrical shock and/or mat failure.

Do not cut mat, cutters and scrapers can penetrate and cut into the heating mat below possibly resulting in death or injury from electrical shock or fire, mat failure, improper operation or floor damage.

Do not place any heavy equipment on the mat.

Installation Record

Floor Installer Information

Business Name		Installer's Name	
Business Address (Street/Town/Code)		Business Email	
		Business Fax	
Business Phone		Date Completed	

Electrician Information

Business Name		Installer's Name	
Business Address (Street/Town/Code)		Business Email	
		Business Fax	
Business Phone		Date Completed	

Multimeter Resistance Measurements

Room					
Mat ohms unboxed.		Mat ohms at dry fit.		Ohms after finishing.	
Mat ohms unboxed.		Mat ohms at dry fit.		Ohms after finishing.	

LIMITED WARRANTY AND LIABILITY

Heatlay Ltd. (the company) warrants its electric foil floorwarming mats to be free from defects in materials and workmanship for fifteen (15) years from the date of purchase by the original purchaser. The maximum liability of the company is limited to the purchase price of the original mat and does not include; labour, removal, installation, incidental, consequential or other costs. This warranty is not transferrable; it is exclusively for the sole benefit of the original purchaser.

If the malfunction of the mat is determined to be a result of defective materials or workmanship by Heatlay Ltd. then a refund of all or part of the original purchase price of the mat will be paid in accordance with the following: 100% for the first five (5) years, then on a declining scale calculated by multiplying the original purchase price by the percentage of remaining warranty (e.g.; a valid claim in year 6 will be able to receive 6/15 of the original mat purchase price).

A refund of the purchase price described above is conditional upon all of the following being provided to Heatlay Ltd.:

a) Confirmation of proof of purchase.
b) Confirmation the mat was installed in accordance with the installation instructions.
c) Confirmation the mat was installed in accordance with the Canadian Electrical Code (CEC) or National Electrical Code (NEC) and all applicable local codes and ordinances.
d) Confirmation the mat was installed by qualified personnel.
e) Confirmation the mat was not damaged or in any way by activities unrelated to the operation of the mat.
f) Full details of the installation, operation, and any repairs or modifications that may have been made.
g) The installation made available for examination by the company's representatives.

A refund of your purchase price as described above shall be your singular and exclusive remedy for a breach of this warranty.

The following are not covered by this Limited Warranty:

a) Any incidental or consequential damage, loss of time, loss of use or loss of income.
b) Any labour, materials or freight costs associated with removing, repairing or replacing flooring materials.
c) Any investigative costs related to the claim.

Heatlay Ltd. makes no claim as to the amount of floor temperature rise, the time to reach a given floor temperature or final floor temperature due to the innumerable variations in building construction and environmental conditions.

Heatlay Ltd. disclaims any warranty not provided herein, including any implied warranty of merchantability or implied warranty of fitness for a particular purpose. Heatlay Ltd. further disclaims any responsibility for extraordinary, incidental, or consequential damages arising from ownership or use of this mat including or loss of use, loss or time or loss of income. Heatlay Ltd. makes no other express warranty regarding any mat beyond this document. Any samples shown are merely for demonstration purposes and do not represent the final product. No employee agent or representative of Heatlay Ltd. has any authority to extend or revise this warranty unless such extension or revision is made in writing by the president of Heatlay Ltd.

Any implied warranties that may not be disclaimed, including implied warranties of merchantability or fitness for a particular purpose are limited in duration to fifteen (15) years from the date of purchase, unless prohibited by law, in which case all such implied warranties shall expire at the earliest time permitted by applicable law.

Some states do not allow limitations on how long an implied warranty may last, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

To begin the warranty refund process, please send a description of the defect and proof of purchase, postage paid, to Heatlay Ltd. at the address noted herein.

Heatlay Ltd., 343 Montrose St. N, Cambridge, ON N3H 2H6