

FoilHeat Radiant Floor Heating Systems

Installation Manual



UL listed; suitable for installation under laminate and carpet floors.

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NOTE: These installation instructions are NOT intended to replace or supersede the installation instructions provided by the manufacturer of the wood laminate/carpet. Be sure to comply with both sets of installation instructions when installing this product.

1. PRODUCT SPECIFICATIONS AND DETAILS

FoilHeat Floor Heating Mat for Laminate and Carpeted Floors

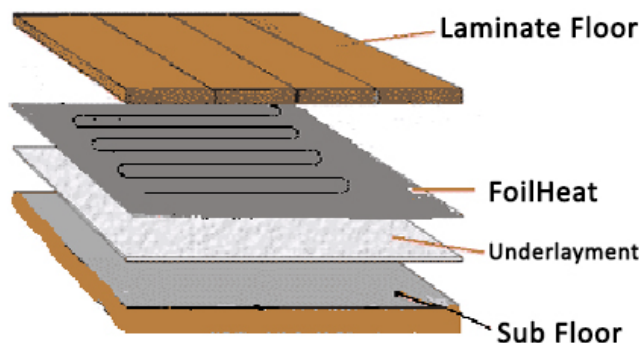
NOTE: Please read through these instructions carefully before you begin installing and check that you are aware of all the components required.

FoilHeat is an ultra thin electric radiant floor heating system primarily for use under laminate, engineered wood, glued hardwood and carpet.

The advantage of using FoilHeat is the ease of installation and uniform heating of your laminate or carpeted flooring. The special materials used makes it free from problems of 'hot-spots' or localized heating.

Construction

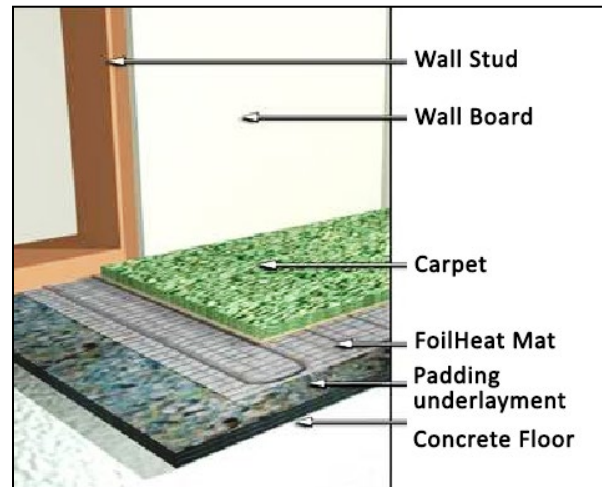
The FoilHeat system is made with fluoropolymer insulated heating cables with metal braiding over two cores. This is sandwiched between two layers of specially reinforced aluminum foil. The uniform spacing of the heating elements, further backed by the aluminum foil, ensures even heat distribution. The efficient heating element is connected to a power-supply cable, which



FoilHeat Installed Under Laminate Floor

exits the laminate mat from one corner. The power lead is a flat, thin two-core flexible cord consisting of two insulated conductors with a metal sheath and an outer sheath.

Depending on your heating requirement, FoilHeat can be supplied within the nominal heat output range of 60-140 W/m² at 120 and 230 or 240 VAC. The standard range of FoilHeat is available at nominal heat outputs of 80 W/m² (7.44 W/ sq.ft.) and 140 W/m² (13 W/ sq.ft.) for laminate floors application and 130 W/m² (12 W/sq.ft.) for under carpet application at 120 V and 240 V. It is available in predetermined lengths with cold tail, prefabricated and tested in a carefully controlled factory environment.



FoilHeat Installed Under Laminate Floor

Packaging Information

FoilHeat is available in a wide range of capacities and lengths to suit your requirements. Your product should contain the following information:

- Catalog Reference
- Serial Number
- Mat Size
- Operating Voltage
- Wattage

2. INTRODUCTION

Thank you for purchasing the FoilHeat electric radiant floor heating mat. This manual contains important information regarding the safe use and installation of your FoilHeat system, so please read through the entire manual carefully before you install your mat.

3. IMPORTANT INFORMATION

1. FoilHeat mats are designed for installation on top of underlayment, directly under the wood or laminate flooring.
2. FoilHeat mats are NOT designed for installation under ceramic tile, natural stone or similar hard floor coverings; and MUST NOT be installed under nailed hardwood flooring. Contact Warmzone for more information about other types of floor heating systems.
3. FoilHeat mats should be separated from other heat sources such as luminaries and chimneys.
4. The minimum distance between adjacent runs shall not be less than 40mm.
5. Do not install the FoilHeat mat cable when the ambient temperature is below (59°F).
6. FoilHeat mats must not extend beyond the room or area in which it originates.
7. The minimum distance that the FoilHeat mat must be spaced from the walls is 3 inches.
8. Certain types and thicknesses of underlayments and wood laminates are NOT compatible with FoilHeat mats (see page.6 and 7). DO NOT PLACE ANY HEAVY FURNITURE on the heated floor.
9. FoilHeat mats are not designed to be installed in walls.
10. If you are confronted with a problem you cannot solve, please call 888.488.9276 or email us at info@warmzone.com.
11. FoilHeat mats must not be installed under cabinets or other fittings or furniture that will be permanently installed and attached to the floor. Built-in cabinets and other furniture with solid bases must not be placed over the mats.
12. FoilHeat mats must NOT be installed on top of other in-floor radiant heating systems (for example hydronic or electric cable systems) UNLESS the other system is permanently disconnected in such a way that it cannot be inadvertently switched on while the FoilHeat mats are also in use.
13. Similarly, FoilHeat mats must also NOT be installed on floors where radiant ceiling heating mats are used in the room directly below where the FoilHeat mat is installed.
14. FoilHeat mats must not be installed in thinset cement or in direct contact with a cement or concrete subfloor or slab. There must always be an underlayment under FoilHeat mats.
15. For easy reference, affix the duly filled in 'Control Card' with floor plan at the power distribution board. (The Control Card is provided on page 10 of this manual.)
16. Indicate which branch circuits supply the power to the FoilHeat and retain the UL labels for each under tile heating cable in a convenient location (i.e. taped to the circuit breaker box), for reference by the electrical inspector or homeowner. Leave one UL label attached to FoilHeat mat. Attach the warning label in a convenient place to show where the FoilHeat is installed.
17. Use only listed conduit, fittings and or other components.
18. In Canada, the installation shall be made according to the provisions of section 62 of the Canadian Electrical Code, Part 1.
19. When use in wet locations, the installation shall be in accordance with the National Electric Code, NFPA-70 and CAN/CSA-C22.1, Canadian Electrical Code, Part I (CEC) and that final acceptance is to be made in the field by the Authority Having Jurisdiction (AHJ).
20. The FoilHeat mat should be connected to a CLASS A Ground Fault Circuit Interrupter (GFCI) / Residual Current Device (RCD). (Consult a qualified electrician.)

4. CONTROLLING YOUR SYSTEM

Manufacturer recommends any listed or UL certified programmable thermostat to control the FoilHeat heaters. These sophisticated units also allow you to set the heating time. For example, one may choose to have a warm bedroom floor first thing in the morning upon waking, then shutting off during the day and turning on again for a few hours in the evening.

Most wood laminate manufacturers specify that their floors should not be subjected to temperatures in excess of 84°F (29°C). The only reliable way to achieve this is to install a temperature sensor on top or directly under the FoilHeat mat, placed under the wood laminate. Check with your laminate manufacturer or Warmzone to see any recommendations for installing electric radiant heat under floors.

For safety purposes, the thermostat is preset for 84°F (29°C) maximum.

5. PROFESSIONAL ELECTRIC INSTALLATION

CAUTION: *Only a qualified person who is familiar with the construction and operation of the apparatus and the hazards involved shall install this product.*

The installation of electrical systems presents risks of fire and electrical shock which can result in personal injury. Caution should always be taken to guard against each such risk. Only a qualified electrician should connect FoilHeat mats to the thermostat and / or to the electrical supply circuit. All such connections MUST be in accordance with the National Electrical Code and all local Codes.

6. ITEMS REQUIRED FOR SYSTEM INSTALLATION

1. The customized installation plan (layout)
2. Ground fault circuit interrupter
3. Digital ohm meter (multi-meter)
4. Electrical housing boxes/switch plates
5. Electrical conduit
6. Junction box
7. Adhesive tape
8. Aluminum tape strips

7. TESTING

Each and every FoilHeat mat is carefully tested before it is shipped from the factory, and is packed suitably to avoid damage during transit. However, because damage can occur in storage or transit, and even during installation, it is strongly recommended to repeatedly test your mats:

1. In the box (upon receipt).
2. After unpacking them but before you install them.
3. After you have laid them out, prior to installing the floor covering.
4. After installation of the wood laminate but before the thermostats are connected.

A simple test is a visual inspection to make sure there is no visible damage to the heater, and in particular to the cable component in the heater. A simple electrical inspection can be done with an ohms meter to make sure the ohms resistance is correct (see Annexure-1). Ohms resistance can vary significantly depending on the ambient temperature and an allowance of -5% to +10% from the nominal value at 68°F (20°C) is acceptable.

8. PRE INSTALLATION INSTRUCTIONS

It shall be noted that most wooden sub floor manufacturers (and also the wooden floor manufacturers) restrict the level of moisture content as well as relative humidity for installing and maintaining sturdy subfloors. Strictly follow the wooden floor / subfloor manufacturer guidelines for proper installation and maintenance of wooden subfloors to avoid any horizontal or vertical movement of the subfloor and consequential damage to your FoilHeat laminate heating system.

To prevent damage to the mats, special attention should be given to ensure that no nails, screws, staple, tacks and the like are protruding from the subfloor before the underlayment is installed. Sharp objects, including small rocks and pieces of dried plaster can pierce and destroy the FoilHeat mat.

Do not install nails, screws or staples near the FoilHeat mats and power supply cables. Permanent fixtures, including built-in furniture, must NEVER be installed on top of the mats.

It is important to keep an accurate record of where the mats are installed, to assist you (or a future owner) to easily locate them when undertaking remodeling work in the room at a future date.

9. COMPATIBLE UNDERLAYMENTS

Any type of underlayment / padding can be used as long as it has a density of 6 pounds per cubic foot.

Certain underlayments such as ¼-inch (6mm) thick cork, or 6mm to 10mm of Expanded Polystyrene (EPS) are recommended for FoilHeat 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 FoilHeat.

Underlay is necessary to prevent FoilHeat from being damaged when the weight of floor furniture and people is added. Make sure unavoidable wooden floor movements will not harm FoilHeat. Wooden floors expand and contract with temperature and moisture changes. The wooden floor therefore “moves” on TOP of FoilHeat. This will not damage FoilHeat when the installation is done correct and the underside of the final floor covering is even. Underlay also has noise reducing and insulating effects.

When installing over concrete, a ¼-inch underlayment is mandatory. Underlayment available in ¼-inch is acceptable in most cases. Certain underlayment such as Silent Step™, Cerazorb®, Quietwalk®, cork or ¼ to ⅜-inch of expanded polystyrene (EPS) with a density of 2 lbs/cubic foot or more, are recommended for installation under FoilHeat.

10. COMPATIBLE WOOD LAMINATES

Verify that your laminate is warranted for use with radiant heat. Most modern wood laminate floors are compatible with FoilHeat

mats, but the max thickness of the timber / laminate / wooden flooring should not exceed ½ inch (15mm). The floors that have metallic strips as part of their locking systems are NOT compatible as these metallic strips may damage the FoilHeat mats. Also laminates that have their pad already attached to the laminate are not compatible with the FoilHeat 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.

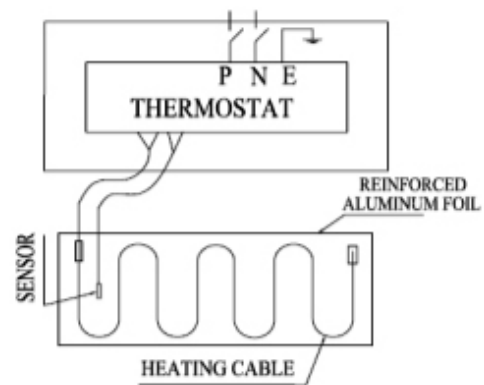
Example R-values:

LAMINATE FLOORING = R 0.675

WOOD FLOORING = R 0.80 maximum.

11. INSTALLING THE THERMOSTAT

If you are using a thermostat with a floor sensor, tape the sensor to the top or bottom surface of the FoilHeat heating mat, centered between two heater wires, at least 6 inches into the heated area. Run the sensor cable off the heater and back to the thermostat. The “heater wires” within the heater are identified as raised parallel lines. The sensor wire should not cross over the foil heater wires.



IMPORTANT NOTE: A qualified electrician must connect the system. FoilHeat mats should be connected to a CLASS A Ground Fault Circuit Interrupter (GFCI) / Residual Current Device (RCD).

12. PREPARATION FOR INSTALLATION OF FOILHEAT MAT UNDER CARPET

12.1: Subfloor Preparation

Prepare your subfloor as you would for a typical carpet installation. Ensure the subfloor is structurally sound and secure with no movement. Screw or nail down any loose areas before fitting the underlayment/carpet cushion. The subfloor should be clean and dry. To prevent damage to the panels, special attention should be paid to ensure that no nails, screws, staple, tacks and the like are protruding from the subfloor before the underlayment pad is installed. Beware of automatic staple guns if you use one to secure the cushion / underlayment to the subfloor. A badly installed staple that protrudes from the floor can pierce and destroy the FoilHeat cable and mat.

Nails, screws or staples should not be installed close to the panels and power supply cables. Permanent fixtures such as built-in furniture, must NEVER be installed on top of the panels.

Keep an accurate record of where the panels are installed so you can easily locate them should you undertake a remodeling project at some future date. Taking a few photographs during the installation process is a good idea.

12.2 Compatible Carpets

Most modern tufted and woven carpets are compatible with the FoilHeat mats. Polypropylene, hessian or jute secondary backings are compatible, but rubber- or foam-backed carpets are not compatible as they trap too much heat.

The carpet must be at least ¼-inch thick, but no more than 1-inch, and the R-value of the carpet should not be greater than 1.

12.3 Compatible Carpet Cushion

Any type of carpet padding can be used as long as it has a density of 6 pounds per cubic foot or more. Most top quality rebounded polyurethane (rebound) and prime polyurethane are at least 8 pounds per cubic foot.

12.4 Risk of Carpet Discoloration: The major factors affecting discoloration of a carpet are:

1. The nature of the fibers
2. The type of coloring process and its application to fibers, yarns, or fabric,
3. The color range from pastels to dark colors,
4. The temperature level if the heat is trapped under a high level of insulation such as a futon mattress, bean seat or a dog bed,
5. The length of time the carpet is exposed to higher temperature.

FoilHeat, when powered at maximum 13-watts per square feet, does not cause carpet discoloration when installed under the conditions of this Installation Manual.

However, if excessive insulation is placed for long periods of time over a heated carpet area, some carpets of lighter colors, and lower quality will probably be the first to be subject to discoloration.

12.5 Tips for Carpet Installer

1. Please ensure that compatible carpet cushion and carpet are being fitted.
2. Remember that you are laying carpet over a thin electrical heating element. Extra care must be taken when working with sharp tools to avoid damage to the FoilHeat mat, which could cause it to malfunction and fail.
3. Ensure all cables have been channelled correctly into the carpet cushion to avoid unsightly lumps or an uneven carpet surface.
4. Do not install nails, screws or staples in direct contact with the FoilHeat and power supply cable. A staple left protruding can destroy the FoilHeat cable.
5. When making a join (or “seam”) in the carpet, ensure that the seaming iron DOES NOT come into direct contact with the FoilHeat, as it will damage the mat. Wherever possible, avoid joins in the carpet over mats. Always use a good quality heat-bond tape, and use an ultra-wide tape when joining heavy wool or similar carpets.

Fit your carpet as normal above the mat, taking special care when working with sharp tools (power stretcher, knee-kicker, knives, scissors etc) in the vicinity of the mats and cables.

12.6 Restrictions on Furniture Placement and Precautions in use

Always remember that you have a thin electrical appliance installed directly below your carpet.

To prevent any damage to the FoilHeat mat, the carpet cushion, and the carpet itself, always strictly enforce the following restrictions and precautions:

1. **Never** pierce the carpet with sharp items such as knives, pins, tacks, staples, needles and the like.
2. **Never** drive nails or screws through the carpet to secure furniture in position or for any other reason.
3. **Never** drop heavy articles onto the carpet.
4. Area rugs and oriental carpets may be placed on top of the heated carpet; but the total thickness of both carpets (i.e. the wall to wall carpet plus the rug) must never exceed 1½ inches.
5. **Never** use chairs on castors directly on the carpet surface. Always use a plastic “carpet protector” that is no more than ½-inch thick and does not have spikes that are long enough to penetrate the backing of the carpet and come into contact with the heater. Most commercial plastic “carpet protector” in the market will be acceptable.
6. **Never** place any furniture that has feet with a “footprint” of ¼-square inch (i.e. ½x½”) or less on the carpet, irrespective of the furniture’s weight.
7. **Never** place any item with a “footprint” of 36-square inches (i.e. 6” x 6”) or more on the carpet, if that item is thicker than 1-inch. (For example, do not leave a mattress, bean bag or dog bed on the carpet.)

Furniture that has feet with a footprint between ¼-square inch and 36-square inches must not exert a force greater

than 100 pounds per square inch (“psi”) on the carpet surface.

Any bulky item of furniture on short legs (e.g. a sofa or bed) must have a minimum of 2-inches clearance between the top surface of the carpet and the underside of the furniture to allow free movement of air through that space. Do not allow bedclothes or drapes to restrict the airflow under a bed.

Specific items of furniture that should never be allowed on the carpet surface:

- Piano
- Stands for hi-fi speakers that have sharp points as feet
- Bookcases
- Closed-bottom furniture

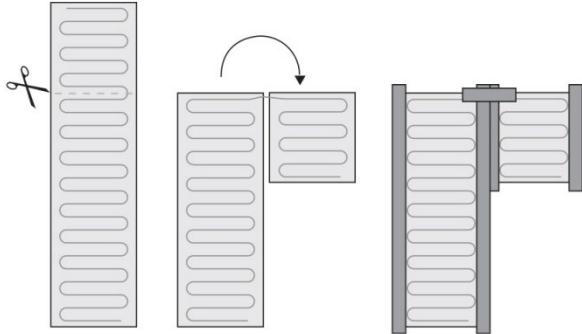
13. INSTALLATION OF FOILHEAT MAT UNDER LAMINATE FLOOR AND UNDER CARPET

1. Once the underlayment/carpet cushion has been fitted in the normal manner, remove your FoilHeat mat from the packaging box, unroll it completely and place it in the required position on top of the underlayment/ carpet cushion.
2. Make sure that FoilHeat heating mats are installed with the correct orientation. The side marked “THIS SIDE UP” is facing upwards.

When positioning the mat on the underlayment, be aware of the following:

1. Keep it at least 300mm from any edge of the area to be laminated / carpeted, (to prevent the spikes of the power stretcher damaging the mat when the laminate is being fitted).
2. Ensure the power supply cables can reach the thermostat point to which they will be connected.
3. Wherever possible, run the power supply cables parallel or at right angles to the walls, and avoid high-traffic areas.
4. Wherever possible, keep the corner where the power supply cable enters the mat away from high traffic areas.
5. NEVER run the power supply cables under or over the mats.

6. The power supply cables (non heating leads) must be installed in accordance with applicable national electric building codes.
7. The power supply cables (non heating leads) are to be installed in listed conduit as the cables exit the floor.
8. FoilHeat mats can be cut and turn at 90° or 180° while laying to cover the total area. (The cable must not be cut.)



IMPORTANT NOTE: FoilHeat mats must never be cut or trimmed to fit into a space that is too small.

Smooth out the mat and secure the mat to the underlayment / carpet cushion using adhesive tape. After deciding the route that your power supply cables will take from the mat to the point of supply, cut a 6mm wide channel in the underlayment / carpet cushion along this route and drop the power supply cables into this channel. Similarly you have to cut a small section / channel in underlayment or laminate depending on the position of Thermostat sensor. You may also need to remove a small section of underlayment/ carpet cushion from under the mat at the point where the power supply cord enters the mat, to prevent an unsightly lump on the laminate / carpet surface and excessive wear on that part of the mat.

When installing two or more FoilHeat heating mats next to each other make sure that the heating wires in adjacent mats do not overlap. It is recommended to use adhesive tape to assure that they will not shift and overlap over a period of time.

FoilHeat mats must be fitted directly on top of the underlayment / carpet cushion, and directly under the wood laminate flooring or under the carpet. (The underlayment or carpet cushion is also known as the “pad”.)

To avoid damage to your mats during installation, care must be taken so that tools with sharp edges or points are not dropped or used carelessly on top of the mats. Do not walk on the mats more than is absolutely necessary during installation, and do not drop or place heavy articles on the mats.

FoilHeat mats must not be folded, and care should be taken not to fold or crease the mats at any time during installation. For this reason FoilHeat mats are not suitable for use on stairs. Should you wish to move your mat at some later stage, remember to roll the mat rather than fold it.

NOTE: These installation instructions are NOT intended to replace or supersede the installation instructions provided by the manufacturer of the wood laminate/carpet. Comply with both sets of installation instructions.

In the event of any apparent contradiction between the FoilHeat installation instructions and the wood laminate flooring installation instructions, contact Warmzone for clarity on how to proceed.

WARNING: All electrical work must be done by a qualified, licensed electrician in accordance with local building and electrical codes, and the National Electrical Code (NEC), especially Article 424, Part IX of the NEC, ANSI/NFPA 70 and Section 62 of CEC Part I.

Important Warnings and Labeling Information for your System:

1. Flexible floor heating system is installed in the room.
2. Do not affix materials other than those recommended in the manual.
3. Do not insert nails or screws. This will damage the heating system and void your warranty.

The following labels which are supplied with the product should be fixed to the panel board.

- A. A warning label marked with the word “WARNING”, and the following statement, “RISK OF ELECTRIC SHOCK – ELECTRIC WIRING AND HEATING PANELS CONTAINED IN FLOOR. DO NOT PENETRATE FLOOR WITH NAILS, SCREWS OR SIMILAR DEVICES”.
- B. A warning label marked with the word “CAUTION”, and the following statement, “RADIANT HEATING PRODUCTS INSTALLED IN THIS AREA. AVOID ACTIONS WHICH MAY RESULT IN MECHANICAL DAMAGE TO THE PRODUCT.”
- C. A label marked with the words RADIANT FLOOR HEATING.

YOUR FLOOR PLAN

CONTROL CARD

Cat Ref:			
SI No.			
Test	Before commencing of installation	After installation but before final flooring	After final flooring
Continuity			
Resistance of Cable (Ohms)			
Insulation Resistance (M Ohms)			
Address of Installation:			
Date of Installation:			
Name of Qualified Electrician:			
Signature of Qualified Electrician:			

Note: Ensure that this control card is filled and signed by authorized electrician and safely stored along with your floor plan.

Manufacturer's Limited Warranty

For a period of five (5) years from the date of purchase, Manufacturer warrants to the original purchaser that the FoilHeat Floor Heating Mats ("Product") are free from defects in materials and workmanship under normal use and maintenance, provided the Product is installed in accordance with the accompanying installation manual, any special written design or installation guidelines for a particular project, the National Electrical Code (NEC) or the Canadian Electrical Code (CED), and all applicable local building and electrical codes. The limited warranty is valid only if all measurements have been taken and recorded and the warranty certificate has been properly completed and mailed. Warranty is for Product only and does not cover thermostats, controls or any other equipment.

Under this Limited Warranty if the Product is determined by Manufacturer to be defective in materials and workmanship, has not been damaged as a result of abuse, misapplication, misuse, modification, neglect, alteration or improper installation, operation, maintenance, repair or testing, the Manufacturer will repair Product or supply replacement Product or refund the purchase price of the Product on Product covered by this Limited Warranty whichever Manufacturer may elect at its sole discretion.

This Limited Warranty does not cover and Manufacturer shall in no event be liable for:

1. Any direct, indirect, incidental or consequential damages, including inconvenience, loss of time, loss of or damage to or loss of use of facilities or other property, loss of revenue, loss of anticipated profits or loss of income.
2. Any labor or materials required to repair or replace the Product.
3. Any labor or materials required to remove, repair or replace covering materials.
4. Any freight or delivery costs related to the Product, or any related covering or electrical products.

Manufacturer assumes no responsibility under this warranty for any damage to the Product caused by any persons; including any trades people or owners or visitors to the job site or damage caused as a result of pre or post-installation work. Owing to differences in surfaces, applications, environment, climate and installation practices, Manufacturer makes no representation that application containing the products will reach or maintain a specific temperature or comfort level.

MANUFACTURER DISCLAIMS ANY WARRANTY NOT PROVIDED HEREIN, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. MANUFACTURER FURTHER DISCLAIMS ANY RESPONSIBILITY FOR SPECIAL, INDIRECT, SECONDARY, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING FROM OWNERSHIP OR USE OF THIS PRODUCT, INCLUDING INCONVENIENCE OR LOSS OF USE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE OF THIS DOCUMENT. NO AGENT OR REPRESENTATIVE OF MANUFACTURER HAS ANY AUTHORITY TO EXTEND OR MODIFY THIS WARRANTY UNLESS SUCH EXTENSION OR MODIFICATION IS MADE IN WRITING BY A CORPORATE OFFICER.

Some states do not allow the exclusion or limitation of implied warranties or liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights, which vary from state to state.

Incoming materials should be inventoried and a resistance reading taken immediately for completeness and for possible shipping damage. Any visible damages or shortages must be noted prior to accepting the material. Any discrepancy concerning type or quantity of material shipped or Ohms measurements must be brought to the attention of Manufacturer or Manufacturer authorized agent within 15 days of the shipping date entered on the packing slip for the order.

How to Claim this Warranty

In order to receive the remedy set forth above, you must contact the manufacturer or manufacturer's authorized representative during the warranty period and include sufficient details relating to the nature of the defect, the installation, the history of operation, and any repairs that may have been made, including:

1. Provide Resistance readings taken by installer, Ohms measurement: within 4 hours before installing Product, after installing Product, and after covering is installed over Product.
2. Provide proof that Product was installed in accordance with the installation manual, any special written design or installation guidelines, the National Electrical Code (NEC) or the Canadian Electrical Code (CED), and all applicable local building and electrical codes.
3. Provide dated proof of purchase.

Warranty Registration

Mail: PO Box 1268
Riverton, UT 84065
Phone: 801.948.7566



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