



INSTALLATION INSTRUCTIONS

Please Read Carefully Before Installation

Truly A Smarter Way To Heat

Welcome To The TruHeat System

Congratulations and thank you for your purchase of the world's most innovative low voltage heating system! You are now ready to enjoy the many benefits of our system such as comfort, low energy consumption, added safety and ease of installation.

Introduction

In 2003, a unique technology in efficiency and energy saving heating system for individual and industrial applications was born! The TruHeat system underfloor heating system is a ready-made, comprehensive solution for heating homes, apartments, industrial and commercial buildings, driveways, greenhouses, roofs, etc. What makes the TruHeat system so special is the system's patented unique heating element (TruHeat Tape) which is a flexible aluminum alloy heating strip. The width of the TruHeat tape ranges from 5 to 12 cm which allows the system to produce no heat spots since you are not dealing with a thin copper wire like other systems out there. The tape is laid over the entire area of the heated space and covers up to 65% of the heated area. This percentage of the coverage area by the heating element exceeds any other heating system several times. This enables to significantly reduce the operating temperature of the system; so while cable based systems reach very high temperatures of 90°C (194°F), the TruHeat tape works effectively at a temperature of 28-30°C (82°F-86°F). And more importantly it enables to significantly reduce the heat loss and energy consumption of the system. All these features make the TruHeat system underfloor heating system one of the most efficient, durable and comfortable solutions for heating your home or any other facility.

The operating voltage of the system (from 5 to 42 volts) ensures durability and safety of the system usage even if it is used in rooms with high humidity or outdoors (driveways/pathways, parking spaces, grass lawns, greenhouses). Due to the flexible aluminum tape, the TruHeat system has increased mechanical strength and is serviceable for many years.

Installation Instructions TruHeat Low Voltage Heating System

Warning! Please read this manual and operating instructions carefully prior to the installation

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1. General information

Please read this manual carefully prior to the installation of the system. Make sure that the TruHeat underfloor heating system is suitable to your needs and is in compliance with the area where it is being installed. Remember, in order for the system to work effectively it is imperative that correct installation methods are conducted. Installation and electrical connections shall be performed by a qualified electrician. The manual introduces the TruHeat heating system installation and connection rules. Additional information can also be found on the TruHeat system website: www.truheatsystem.com

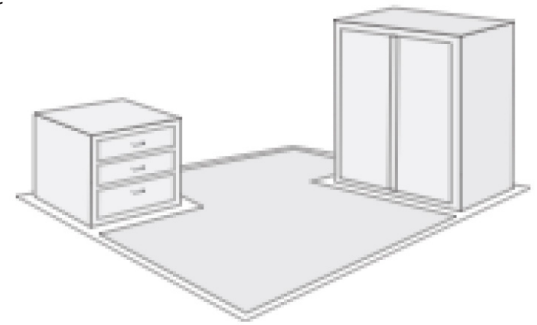
2. General function of under floor heating

The TruHeat underfloor heating system is a ready-made, comprehensive solution for heating homes, apartments, industrial and commercial buildings, driveways, pathways, greenhouses, roofs, etc. The system creates ideal temperature conditions in spaces by delivering efficient and uniform heat distribution. The TruHeat tape can be installed directly under the tile adhesive layer or under the screed as well as under laminate, parquet, linoleum/vinyl flooring or carpet and etc. The TruHeat system – is the perfect solution during the site renovation when it is not ideal to raise the floor height due to low ceilings. In addition, the TruHeat system can be used as a primary heat source or as an additional heating system.

3. Safety instructions

Warning! With the purchase of the product, you need to make sure that the packaging has not been damaged during the transportation. In case of any defects return the product to the supplier without opening the package!

Connection of the TruHeat underfloor heating system to the power supply must be performed only by a qualified electrician in accordance with the instructions and local wiring rules. It is forbidden to connect the system to power supply until all elements are fully installed and the system's electrical circuit integrity is checked and complies with the installation instructions. For safety reasons, the system shall be connected to a residual current device (RCD). During installation process, the TruHeat system or its separate components shall not be exposed to oil, grease or other chemically aggressive substances. It is prohibited, even for the short moment, to connect the TruHeat tape to the electrical power source while the tape is rolled up. Avoid excessive flattening of network and central system unit wires. It is prohibited to lay the TruHeat tape in places of installation of built-in or other furniture with a solid base on the floor. The surface of furniture items placed above the heated area should be at a height of at least 8 cm above the floor level to ensure air circulation. The TruHeat tape is installed 20 - 30 cm (7-12 inches) away from each wall (this requirement does not apply to bathrooms). Before installing the tape, clean and vacuum the floor surface. It is not recommended to walk on the heating strip during its installation. If necessary, use clean shoes with a soft bottom.



Make sure that there are no sharp items (nails, clamping irons, etc.) on the floor surface, as well as other barriers that could damage the heat tape. Make sure that connections, power wires, transformer, electronics modules, regulator, and heat tape are securely connected. Do not install the system if the room temperature is below 5°C.

Do not cut or lengthen the TruHeat tape!

In case of over measured tape, place it in the highest traffic area with a smaller distance between the tape when laying it down. If there is a shortage, lay the tape with a long distance between the lines of the tape in the areas with the least amount of traffic.

Prevent children from accessing the system! It is prohibited to open, disassemble the built-in control and transformer unit, as well as to replace parts or make your own repairs.

Warning! These instructions are subject for mandatory performance during mounting and installation of any of the TruHeat systems. Instructions should be given to the specialist who is carrying out any work with the system. Failure to comply with these instructions may cause damage of the product and warranty cancellation. Be careful, noncompliance with safety rules can lead to injury or other damages!

4. List of equipment

- TruHeat underfloor heating system includes:
- Built – in wall mounted system unit (built – in transformer and control unit)
- Wall mounted thermostat with LCD display
- TruHeat tape (length varies from kit to kit)
- Terminals for fastening TruHeat tape with transformer (2 pcs.)
- Installation and operating manual

5. Technical specifications

Heating element – Low-voltage aluminum plasticized strip

Kit No.	№ 1	№ 2	№ 3	№ 4	№ 5	№ 6	№ 7
Maximum transformer power (W)	500	750	1000	1500	2000	2500	3000
Secondary operating voltage (Volt)	5 – 42 Volt						
Resistance (Ohm)	0.5 – 0.8						
Central unit power supply (Volt)	North America (120 – 240, 60 Hz) / Europe (220 – 230 v, 50-60 Hz)						

6. Transportation and storage

Transportation and storage of the unit is allowed only in original packaging form. In order to prevent damage of the heating strip, do not open wrapping outside the installation place.

7. Installation planning

- Determine the heated area (deduct location of any fixed furniture, furniture without legs, household appliances, etc. from the total area of the room (see the figure), but if you plan further furniture rearrangements, for more comfort we recommend placing the heat tape on the entire premise, while doing that the furniture must meet the safety requirements specified in paragraph 3 herein);
- Select the right kit based on your coverage area. For more comfortable temperature regulation, we recommend installing separate kits in different rooms, especially in rooms with large heat losses (large glazed area, high ceilings, enclosed balcony, bathroom);
- Make sure that the rough floor surface on which the heating strip is to be installed is smooth and free of dust/debris;
- Installation of the system on a subfloor or well insulated floor is always recommended for the system to work efficiently;

DISTANCE BETWEEN LAYED HEATING TAPE					
Kit No.	TruHeat Tape Width	Indoors	Outdoors	Roofs	Greenhouses
1	5 cm	4-6 cm	3 cm	8 cm	10 cm
2	5 cm	4-5 cm	3 cm	8 cm	11 cm
3	8 cm	5-7 cm	4 cm	11 cm	14 cm
4	8 cm	6-7 cm	4 cm	13 cm	17 cm
5	10 cm	6-8 cm	5.5 cm	14 cm	18 cm
6	12 cm	7-9 cm	6 cm	15 cm	20 cm
7	12 cm	11-13 cm	10 cm	21 cm	26 cm

Do not cut or lengthen the TruHeat tape!

8. Electrical installation

- Check if available electric circuit wiring in the object has additional power connection. The nominal power of each unit is given in the technical specifications section (Point 5);
- Take into account additional electrical devices which can be connected to the same network. Also check the permissible current of the safety devices (automatic circuit breaker);
- Each TruHeat kit shall be connected via special circuit wiring and a separate 16A automatic circuit breaker (RCD with operating current not more than 30 mA).
- Select the placement of the thermostat in the heated room, remember, the thermostat is a thermometer, it measures the temperature of the air in the room in which it is located. Usually it is installed on the wall at a height of 140-160 cm from the floor, in the most convenient place and in a way not to interfere with the furniture arrangement.

9. Underfloor heating installation

It is important to note that durability and safety of the underfloor heating system operating at peak effectiveness is dependent on proper installation of the system. The connection shall be performed by qualified electrician. Remember, it is forbidden to connect the system to power supply until all elements are fully installed in accordance with the manufacturer's instructions and checked.

Preparatory works for all installation options:

1. Draw a plan of the area where the installation of the heating system is planned (indicate the stationary furniture on the plan, see point 3). Draw a layout of the TruHeat system installation (system unit, power, heating strip and thermostat), taking into account the requirements stipulated in this manual. Keep the plan and layout together with the installation instructions.
2. The transformer unit is to be placed inside the wall at a height of 10 cm from the finished floor level. Allow for a 10 cm deep cut-out into the wall for the transformer unit to achieve a flushed placement into the wall;
3. Under the transformer unit leave a 5 cm deep groove in the wall for the heat tape to feed from the bottom of the transformer unit and be covered up after installation;
4. Install transformer unit;
5. Make the connection from the transformer unit to the thermostat. The thermostat should be at a height of 140-160 cm from the floor. If the cable is too long, fold up extra cable, put it behind wall cut-out or leave it in the concrete wall groove and apply the plaster. If the cable is shorter than you require, replace it with a similar cable, connect in the same order and make sure that connection is secure; **Thermostat wire info: brown wire which is the live wire goes in terminal 1 and the neutral wire (blue) goes into terminal 2 of the thermostat (Read thermostat instructions for further information)**
6. Make sure that the surface of the rough floor is smooth, clean and free from the dust, chemical traces and aggressive components.

Make sure the kit is not connected to the electrical source!

Laying the heating tape by the use of any installation options, starts from the transformer and ends at the transformer!

Option 1: TruHeat system under concrete

1. Clean the surface of the rough floor;
2. Lay the TruHeat tape in mapped out area according to the laying distance as specified in point 7 above, fix the tape onto the floor at the bends with duct tape or gaffer's tape;
3. When laying the tape make sure to have sufficient tape length at both ends for the tape to be freely connected to the connection terminals inside the transformer box (see figure 1 in point 10);
4. Concrete must be insulated below for the system to operate efficiently;
5. Cover laid TruHeat tape with fiberglass mesh (steel mesh or any other metal item is prohibited to place on top of the TruHeat tape as it will interrupt the electrical connectivity of the tape);
6. Using a circuit analyzer, test the heating tape for continuity (make sure that the TruHeat tape has no damage during the laying process). When checking for continuity, the tape ends should not be connected to transformer box;
7. Using an even and wide trowel, apply a thin layer of concrete layer on top of the mesh;
8. Once the concrete layer is dried, read point 10 for connection and start up;

Option 2: TruHeat system under ceramic/stone tile

1. Make sure insulating layer is present below TruHeat tape. Recommended insulated tile underlayments: WEDI building panel Dukk-aboard, MARMOX board, or other cementous building panels;
2. Lay the TruHeat tape in mapped out area according to the laying distance as specified in point 7 above, fix the tape onto the surface at the bends with duct tape or gaffer's tape;
3. When laying the tape make sure to have sufficient tape length at both ends for the tape to be freely connected to the connection terminals inside the transformer box (see figure 1 in point 10);
4. Cover laid tape across entire area with fiberglass mesh (steel mesh or any other metal item is prohibited to place on top of the

TruHeat tape as it will interrupt the electrical connectivity of the tape);

5. Using a circuit analyzer, test the heating tape for continuity (make sure that the TruHeat tape has no damage during the laying process). When checking for continuity, the tape ends should not be connected to transformer box;
6. Apply tile scratch coat layer on top of the mesh until surface is flat and let it dry. Covering the tape with thin concrete layer will create heat sink and will ensure even heat distribution;
7. It is allowed to connect the system only once all coated materials are dry. Read point 10 for connection and start up;

Option 3: TruHeat system under commercial vinyl tiles or sheet vinyl

1. Make sure floor surface is insulated where the heat tape is to be placed so it is not heating the cold floor below;
2. Lay the TruHeat tape in mapped out area according to the laying distance as specified in point 7 above, fix the tape onto the surface at the bends with duct tape or gaffer's tape;
3. When laying the tape make sure to have sufficient tape length at both ends for the tape to be freely connected to the connection terminals inside the transformer box (see figure 1 in point 10);
4. Cover laid strip across entire area with fiberglass mesh (steel mesh or any other metal item is prohibited to place on top of the TruHeat tape as it will interrupt the electrical connectivity of the tape);
5. Using a circuit analyzer, test the heating tape for continuity (make sure that the TruHeat tape has no damage during the laying process). When checking for continuity, the tape ends should not be connected to transformer box;
6. Apply a thin layer of concrete on top of the mesh until surface is flat and let it dry. Covering the tape with thin concrete layer will create heat sink and will ensure even heat distribution;
7. Install flooring on top of the layer of concrete. Sheet vinyl (loose lay) or floating vinyl tiles can go directly on top of the system without the need for concrete layer as long as flooring is thick enough to not show indentation of tape. Please check with the flooring manufacturers if the choice of flooring has subfloor heat threshold of 28°C (82°F) or higher;
8. Read point 10 for connection and start up;

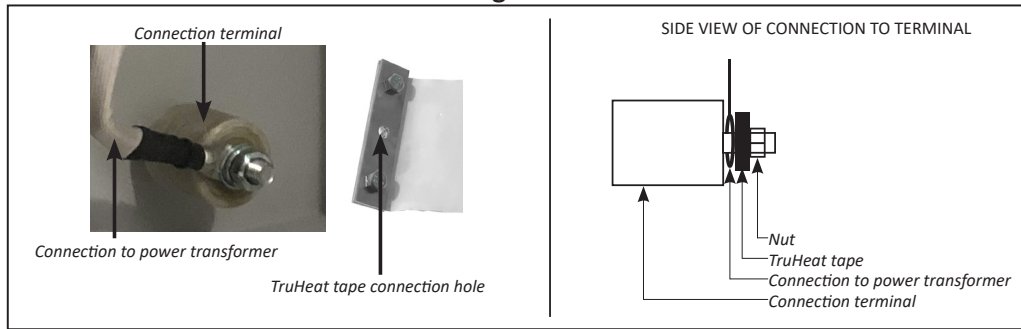
Option 4: TruHeat system under laminate floors, hardwood floors, vinyl plank floors

1. Make sure floor surface is insulated where the heat tape is to be placed so it is not heating the cold floor below;
2. Lay the TruHeat tape in mapped out area according to the laying distance as specified in point 7 above, fix the tape onto the surface at the bends with duct tape or gaffer's tape;
3. When laying the tape make sure to have sufficient tape length at both ends for the tape to be freely connected to the connection terminals inside the transformer box (see figure 1 in point 10);
4. Cover laid strip across entire area with fiberglass mesh (steel mesh or any other metal item is prohibited to place on top of the TruHeat tape as it will interrupt the electrical connectivity of the tape);
5. Using a circuit analyzer, test the heating tape for continuity (make sure that the TruHeat tape has no damage during the laying process). When checking for continuity, the tape ends should not be connected to transformer box;
6. Apply a thin layer of concrete on top of the mesh until surface is flat and let it dry. Covering the tape with thin concrete layer will create heat sink and will ensure even heat distribution;
7. Floating floors can be installed directly on top of the TruHeat tape however before installation check with the flooring manufacturers if the choice of floors have a subfloor heat threshold of 28°C (82°F) or higher;
8. For laminate floors, the underpadding can be laid on top of the TruHeat tape;
9. When installing hardwood, there is no issue with nails piercing the TruHeat tape as it is puncture proof;
10. Read point 10 for connection and start up;

10. Connection and startup operations

1. Make sure to switch off the circuit breaker and make sure that prepared power wires are not under voltage;
2. Make the connection of the TruHeat tape to the connection terminals located inside the transformer by bringing the tape into the transformer box from the opening located at the bottom of the transformer box. Remove the nut from the connection terminal and connect the tape by putting it through the hole located in the centre of the tape's end (see figure 1). Tighten the nut with a wrench safely. Do this for both ends of the tape;
3. Connect the system power cable to the prepared electrical cable (we recommend to use connecting terminals for safety connection). The connection is to be made in the standard order (**Brown** – Live wire, **Blue** - Neutral, **Green-Yellow** - Ground);
4. Close the cover of the transformer unit using the 4 provided screws;
5. Switch on the power supply of circuit breaker;
6. Adjust needed temperature on the thermostat (usually the comfort temperature is 22°C). Read thermostat instructions;
7. The system has started operating and will be turned off automatically when the set point air temperature in the room will be reached, and, will be turned on to maintain it. Further, you can adjust the thermostat for comfortable temperature or set a weekly timer. Before proceeding further settings, we recommend waiting 2-3 days, till your house is evenly warmed up.

Figure 1



11. Warranty

Warranty period:

Aluminum heating strip– 20 years

Electronic unit, transformer, thermostat – 5 years

The manufacturer undertakes to perform the warranty repair service of the unit in the event that all installation and operational requirements have been fulfilled, upon providing filled in Warranty Certificate, detailed layout of the premise and installation scheme, detailed defect description, copy of the document proving the purchase (bill, receipt). Warranty repair is not applicable for items with defects resulting from mechanical damages, improper transportation, wrong connection or operation of the system or its separate parts.

In case of warranty claim, the seller is to fill out the warranty certificate below and be sent to the manufacturer.

WARRANTY CERTIFICATE		
TruHeat system is meant to be used as <u>additional</u> / <u>basic</u> heating system (underline as applicable)		
Installed by the address: _____, in _____ (premise type)		
Entire area _____ sq.ft. Unit is mounted over area _____ sq.ft.		
TruHeat System , kit number _____	Capacity _____	Sale date _____ 20____.
Seller _____ (signature)		Buyer _____ (signature)
Unit installation is performed by		
Full name _____, address _____,		
Tel. _____		
Date _____ 20____		(Signature) _____

Warning! The manufacturer and the seller shall not be liable for life injury, health or property of the consumer caused by failure to comply with the product installation or operation rules.

The manufacturer reserves the right to update or modify the product, to improve the unit, to amend instructions or technical certificate without notice on the site.

TruHeat System Inc. company info:

605 Alden Rd.

Markham ON

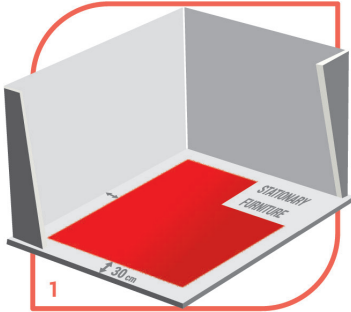
L3R 3L5 Canada

Email: info@truheatsystem.com

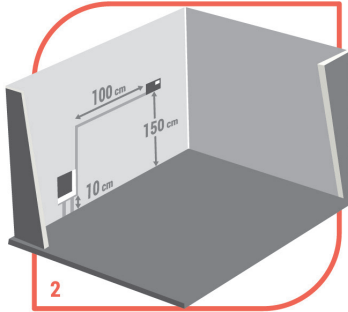
Website: www.truheatsystem.com



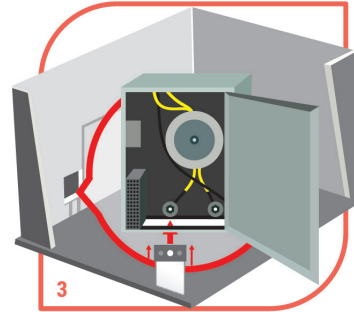
INSTALLATION DIAGRAMS



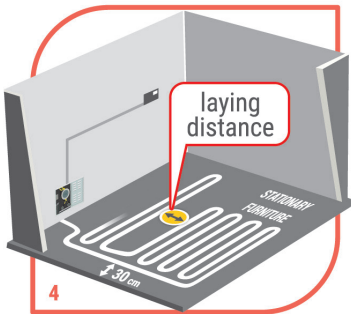
Plan out the heating system placement by excluding fixed furniture. Leave a 30 cm gap from the walls.



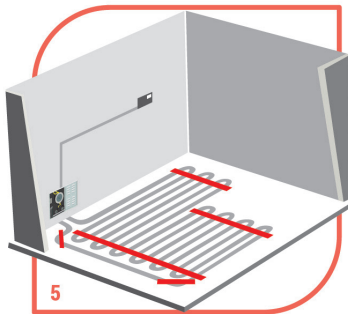
Prepare locations for the transformer (10 cm above the floor) and thermostat (150 cm above the floor).



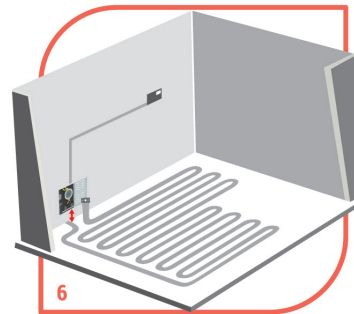
Install the transformer unit & fasten 1st end of the TruHeat tape in the block together with 1st cable of the transformer.



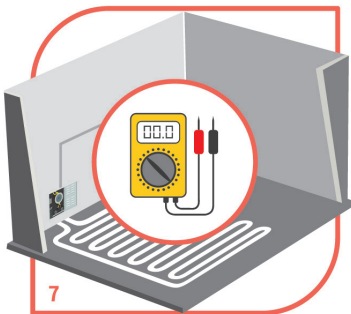
Begin laying the TruHeat tape. The laying distance depends on how well the floor is insulated. (Read point 7)



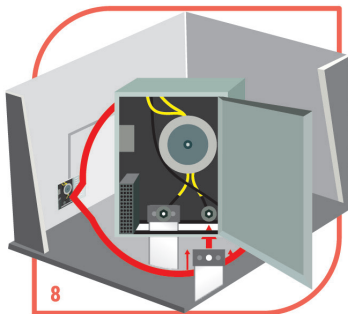
Fix the strips at bends to the floor with reinforced duct tape or any other high strength tape.



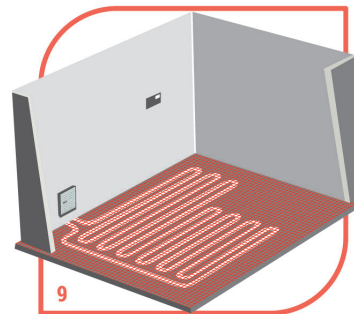
Lay the TruHeat tape in a way that allows the second end of the tape to freely be fastened back to the transformer unit.



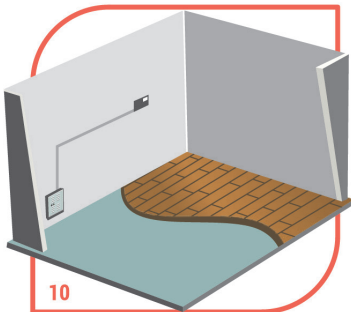
Using a tester, check electrical continuity of the TruHeat tape and the absence of damages on the tape.



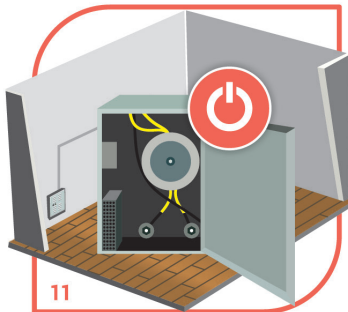
Securely install the 2nd end of the TruHeat tape into the transformer unit together with the 2nd cable of the transformer.



Cover the entire area of the room over the laid TruHeat tape with fiberglass tiling mesh.



Apply a layer of thinset if tiling over the TruHeat tape. Applying cement layer over the tape will allow for greater even heat distribution.



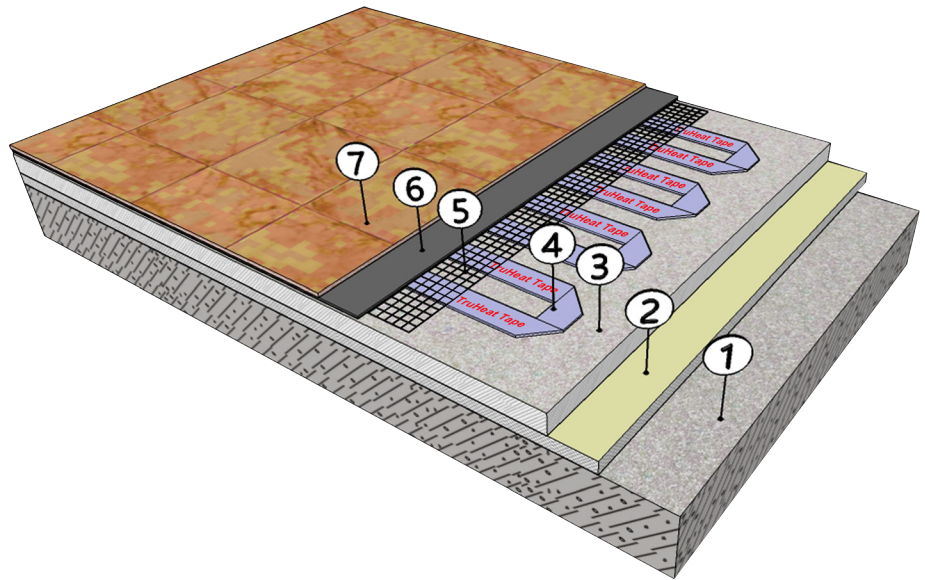
Make all the necessary electrical connections to power on the system. (See full details in installation instructions)

READ DETAILED INSTALLATION INSTRUCTIONS BEFORE INSTALLATION

Recommended Installation Schemes

Ceramic Tiles / Vinyl Floors

1. Concrete layer
2. Rigid thermal insulation
3. Cement underlayment
4. TruHeat tape
5. Fiberglass mesh
6. Tile adhesive
7. Ceramic/vinyl flooring

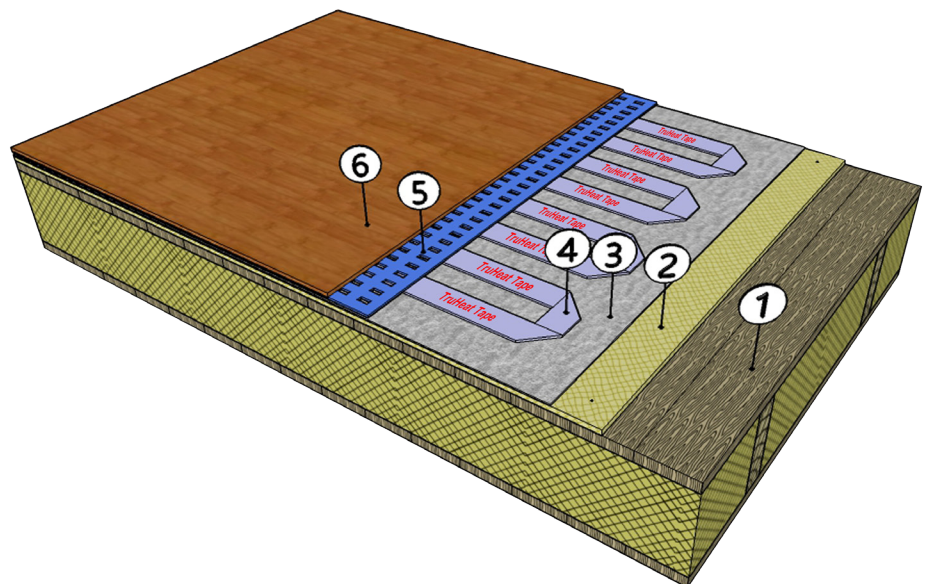


Steel mesh is prohibited as it will ruin the electrical connectivity of the TruHeat tape.

Ensure no metal is placed on top of the TruHeat tape as it will also create an electrical interruption with the TruHeat tape.

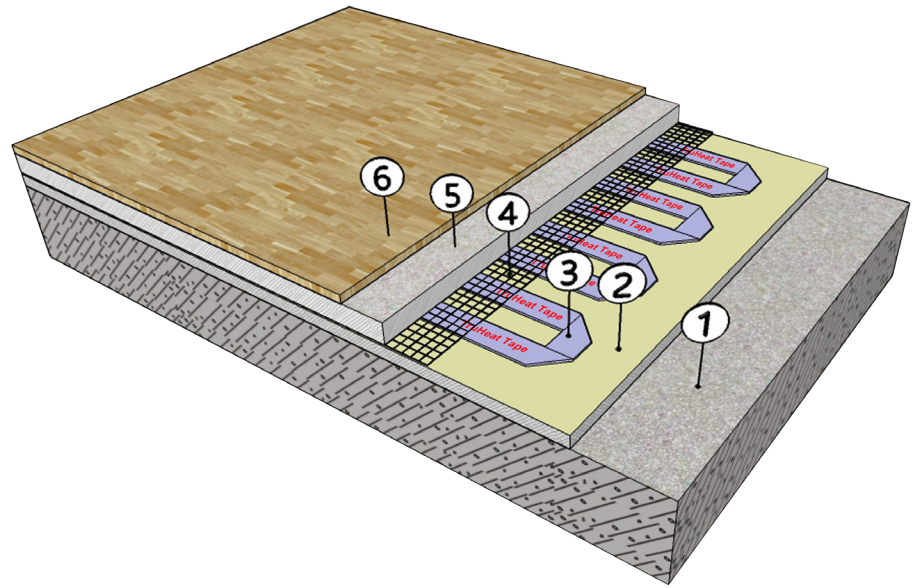
Laminate Floors / Vinyl Floors

1. Subfloor or Concrete slab
2. OSB / Plywood underlayment
3. Reflective film or thermal underlay
4. TruHeat tape
5. Foam underpad for laminate floors
6. Laminate/Vinyl flooring



Wood Floors

1. Concrete layer
2. Rigid thermal insulation
3. TruHeat tape
4. Fiberglass mesh
5. Thin concrete layer
6. Wood flooring

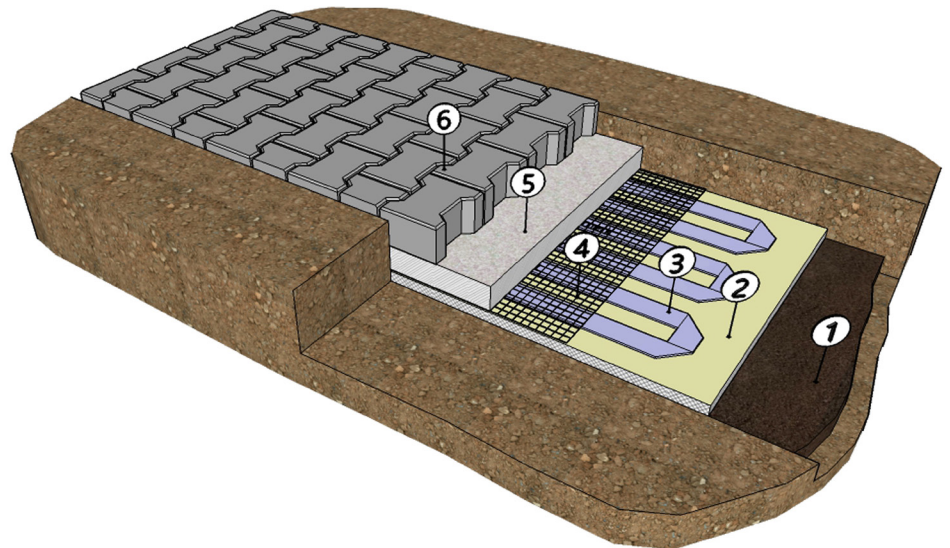


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Ensure no metal is placed on top of the TruHeat tape as it will also create an electrical interruption with the TruHeat tape.

Driveways / Pathways

1. Well compacted soil
2. 10 cm rigid foam insulation
3. TruHeat tape
4. Fiberglass mesh
5. Concrete screed
6. Stone or asphalt

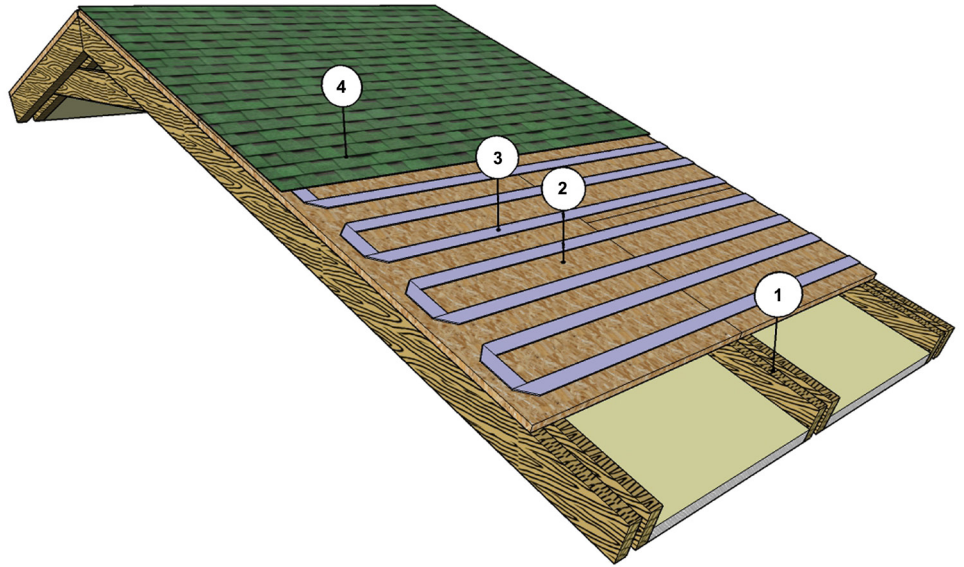


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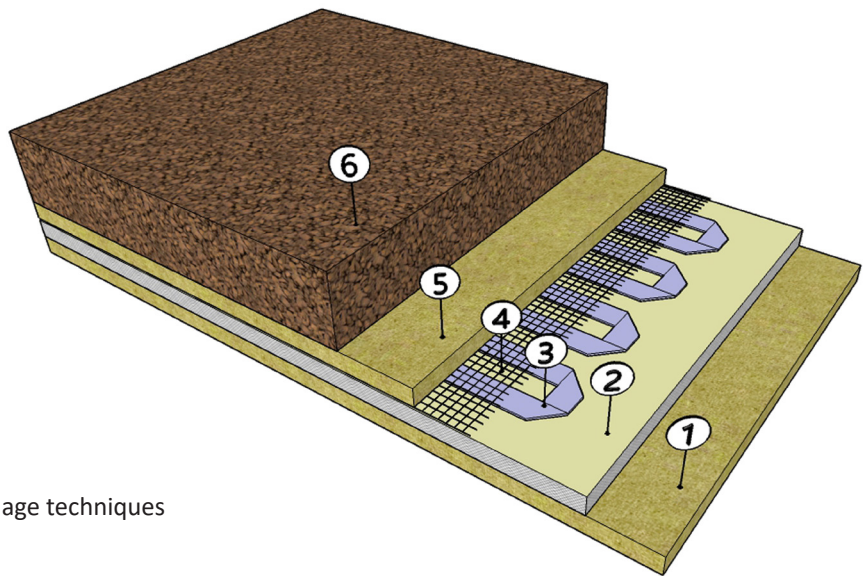
Roofs

1. Joists with insulation layer
2. Decking (OSB panels or similar)
3. TruHeat tape
4. Shingles



Green houses

1. Sand layer to flatten the surface
2. Insulation layer
3. TruHeat tape
4. Fiberglass mesh
5. Sand
6. Topsoil (topsoil thickness depends on the tillage techniques)



Steel mesh is prohibited as it will ruin the electrical connectivity of the TruHeat tape.

Ensure no metal is placed on top of the TruHeat tape as it will also create an electrical interruption with the TruHeat tape.