

Mapeheat™ Mat

Pre-wired floor-heating
fabric

Installation Manual

Technology from





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Section 1: Pre-installation

1.1 Product overview

Pre-built like an electric blanket, *Mapeheat Mat* is part of an electric floor-heating system that brings soothing heat to the following flooring surfaces:

- Ceramic or porcelain tile
- Granite
- Marble
- Natural stone
- Laminate, engineered wood and vinyl

Mapeheat Mat is a pre-wired floor-heating fabric, meaning it does not require any onsite manipulation during installation. Mortar is applied to the subfloor, *Mapeheat Mat* is pressed into the mortar, and flooring can be installed immediately.

Mapeheat Mat is compatible with all standard subfloor material and is only 1/8" (3 mm) thick, making it ideal for installations where minimal floor buildup is desired. The pre-built aspect of *Mapeheat Mat* guarantees even heat distribution because the heating wires are evenly spaced during production.

Mapeheat Mat is available in more than 70 standard sizes (squares and rectangles of various dimensions) that are available off the shelf. A single standard mat can provide adequate floor-heating coverage for most standard bathroom and living areas. Installers can also combine multiple standard mats to heat the desired area.

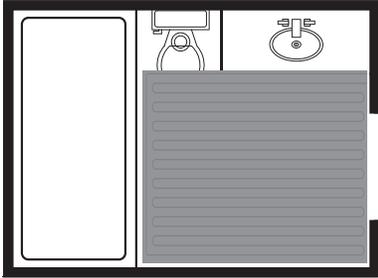
When full coverage cannot be achieved with standard sizes of *Mapeheat Mat* (such as covering areas with curves, angles or obstructions), customized sizes are available to provide optimal coverage. Once area dimensions are submitted/confirmed, the customized *Mapeheat Mat* is manufactured in just three business days and will fit the exact shape of the area indicated in the submitted drawings. As with standard sizes of *Mapeheat Mat*, customized sizes of *Mapeheat Mat* are pre-built, thereby guaranteeing even heat distribution without cold spots. Standard and customized sizes are available in 120 V and 240 V and produce 12 W/ft² (up to 15 W/ft² when required/specified).

Section 1: Pre-installation

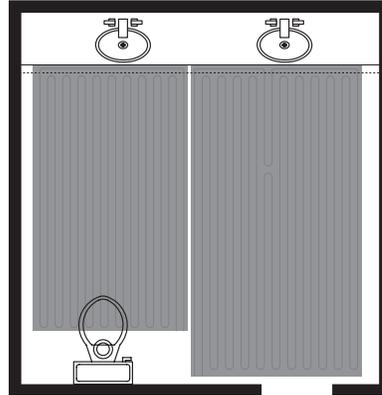
1.2 How to order

Standard-size mats

1. Determine the perimeter dimensions.
2. Refer to a *Mapeheat Mat* table of standard sizes. Determine if one or multiple standard mats can be used to cover the desired area.
3. Locate a *Mapeheat* distributor using “Where To Buy” tool at www.mapei.com.



Single standard mat

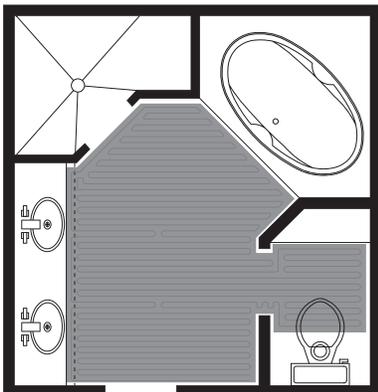


Multiple standard mats

Custom-sized mats

If desired coverage cannot be obtained using one or more standard mats, customized sizes of *Mapeheat Mat* can cover any area regardless of shape or size.

1. Provide an accurate drawing of the area including the full onsite perimeter dimensions, voltage and desired thermostat location with all obstructions identified (vanities, toilets, vents, etc.). Ensure that the contact information of the installer or contractor is provided if we need to verify or confirm the dimensions.
2. Submit the drawing to *Mapeheat* Customer Care Team at mapeheatusa@mapei.com (for U.S. customers) or mapeheatcanada@mapei.com (for Canadian customers). A representative will provide a quote, typically within 24 to 48 hours.
3. Once dimensions are accepted by the customer and payment is confirmed, the customized *Mapeheat Mat* will be manufactured within three business days and shipped to desired location.



Custom-sized mat

Section 1: Pre-installation

1.3 Installation guidelines

- The installation of this heating product shall be in accordance with the manufacturer's instructions and in accordance with the Canadian Electrical Code Part 1 or the National Electrical Code (US) whichever is applicable.
- This equipment shall be installed only by qualified personnel who are familiar with the construction and operation of the apparatus and risks involved.
- Caution should be taken to guard against risk of electric shock, fire and bodily injury during the installation of this equipment.
- *Mapeheat Mat* should be connected to a dedicated electrical circuit.
- It is mandatory to install a "Class A" GFCI or GFCI circuit breaker with each *Mapeheat Mat* installation.

All *Mapeheat* thermostats come equipped with a built-in "Class A" GFCI.

- Do not use sharp tools or power tools to clean grout lines. Cleaning grout lines with sharp tools or power tools may damage *Mapeheat Mat* and void the warranty.
- Indicate on the electrical panel which circuit is used for the electric floor-heating system.
- Subfloor must be prepared in accordance to ANSI specifications.
- *Mapeheat Mat* cannot be overlapped, crossed, cut, shortened or modified.
- The ambient air temperature must be above 50°F (10°C) when *Mapeheat Mat* is installed.
- For concrete slab subfloors, insulate the slab before installing *Mapeheat Mat*. Insulation will improve the upward heat transfer from the mat to the flooring surface and improve heat-up time.

Section 1: Pre-installation

1.4 Before you start

1. Assemble the required tools

- Multimeter/ohmmeter
- 1/4" x 1/4" (6 x 6 mm) square-notched trowel
- Grouting float/lightweight roller
- Sponge
- Latex-modified mortar
- Mortar mixer
- Large bucket
- Duct tape
- Thermostat sensor probe (included with thermostat)



2. Follow pre-installation guidelines

Avoid the following actions that may damage *Mapeheat Mat* and void the warranty:

- Connecting the mat to power when folded
- Stapling
- Nailing
- Folding, bending or overlapping mats
- Using grout scrapers or utility knives to clean grout lines. Rather, clean grout lines with a sponge as you go.

3. Dry-fit and route a cold lead path

Position *Mapeheat Mat* to fit the contours of the project room. Route a path for the cold lead to the electrical box. The cold lead cannot cross over on the top of *Mapeheat Mat*. Standard sizes of *Mapeheat Mat* can be flipped in any direction to place cold leads closer to thermostat location.

Section 1: Pre-installation

1.5 Insulation and resistance tests

If insulation or resistance tests do not pass the requirements at any point of the installation, halt installation immediately and contact MAPEI's Technical Services Department at 1-800-992-6273 (U.S. and Puerto Rico) or 1-800-361-9309 (Canada).

Insulation test

To ensure that the heating wire is fully insulated...

1. Set a digital multimeter to measure resistance/ohms. If using an ohmmeter, set it to the 200 ohm setting.
2. Place one multimeter/ohmmeter clip on the metal braid wire (ground). Place the other multimeter/ohmmeter clip on the white wire (for a 120 V mat) or red wire (for a 240 V mat).
3. Confirm that the reading on the multimeter/ohmmeter is OL or infinity (open circuit).
4. Repeat steps 2-3 to check the reading between the metal braid wire (ground) and the other wire (black).

Resistance test

To ensure that the heating wire is fully insulated:

1. Set a digital multimeter to measure resistance/ohms. If using an ohmmeter, set it to the 200 ohm setting.
2. Place one multimeter/ohmmeter clip on the white wire (for a 120 V mat) or red wire (for a 240 V mat). Place the other multimeter/ohmmeter clip on the black wire.
3. Confirm that the reading on the multimeter/ohmmeter is within +10% / -5% of the factory resistance listed on the white tag that is attached to the cold lead. The white tag contains information including factory resistance readings, model number, manufacturing date and amperage ratings.
4. Record the resistance test readings in the table on Page 7.

Section 1: Pre-installation

1.6 Mat resistance log

Mat resistance log

For warranty and troubleshooting purposes, the mat resistance log must be completed and remain with the end user.

Mat Resistance Log
Mapeheat Mat model number
Factory measured resistance
Resistance test ohms reading (Test #1 – before installation)
Resistance test ohms reading (Test #2 – during installation)
Resistance test ohms reading (Test #3 – after installation)

Failure to record resistance tests in the above table will void the *Mapeheat Mat* warranty. To submit your warranty, visit www.mapeheatwarranties.com and fill out the online warranty card.

Floor sensor probe test

To ensure the floor sensor probe is not damaged:

1. With a digital multimeter (or ohmmeter), set the device to the 20K Ω (Kilohms) setting.
2. Place a multimeter clip on each of the wires. It does not matter which clip is attached to which wire. Note: Some multimeters do not have the 20K Ω (Kilohms) setting, so find a suitable multimeter that has this setting.
3. Confirm that the reading on the device is between 8 and 12K Ω (Kilohms) at room temperature.
4. If test readings do not pass requirements at any point of the installation, halt installation immediately and contact MAPEI Technical Services at 1-800-992-6273 (U.S. and Puerto Rico) or 1-800-361-9309 (Canada).

Section 2: Installation

2.1 Securing mat to the subfloor

1. Prepare mortar mixture.
2. Spread mortar onto subfloor.

Use a 1/4" x 1/4" (6 x 6 mm) square-notched trowel to spread a 1/4" (6 mm) layer of acrylic/latex modified mortar onto subfloor. Work on one manageable section at a time.



Trowel mortar

3. Place *Mapeheat Mat* onto fresh mortar and press.



Roll *Mapeheat Mat* onto fresh mortar

Press *Mapeheat Mat* firmly into mortar with a grout float or lightweight roller. Create 100% contact between *Mapeheat Mat*, mortar and subfloor. Press out air bubbles underneath mat. Route cold lead(s) to electrical box.

Section 2: Installation

4. Perform the insulation and resistance tests found on Page 6.
5. Secure the floor sensor probe.

Duct-tape the floor sensor probe on top of *Mapeheat Mat*. The probe's tip should be between the heating wires. Ensure that the probe's tip is located in an area that can represent the overall floor temperature and away from other heating/cooling sources (such as heat ducts vents, direct sunlight, drafts caused by large windows/doors, and areas covered by rugs or fixed furniture). The probe wire can cross on top of the heating wire(s).



Secure the floor sensor probe

Section 2: Installation

2.2 Installing tile and stone flooring

1. Apply thin layer of mortar.

Use a 1/4" x 1/4" (6 x 6 mm) square-notched trowel to spread a 1/4" (6 mm) layer of acrylic/latex modified mortar on top of *Mapeheat Mat* per flooring manufacturer's instructions.



Install tile/stone flooring

2. Install tile/stone per the flooring manufacturer's instructions.
3. Clean grout lines.

Do not use sharp tools or power tools to clean grout lines. Doing so may damage *Mapeheat Mat* and void the warranty.



Clean grout lines

Section 2: Installation

4. Perform insulation and resistance tests found on Page 6.
5. Make electrical connections.

Before activating *Mapeheat Mat*, ensure that setting compound has fully cured. Refer to the setting compound manufacturer's specifications for curing times. Then installation of *Mapeheat Mat* will be complete.

2.3 Installing laminate, engineered wood and vinyl flooring

1. Apply a smooth layer of mortar.

Use a smooth trowel to spread a minimum 1/4" (6 mm) layer of acrylic/latex modified mortar on top of *Mapeheat Mat*. Ensure that the mortar layer is level and smooth. Self-leveling compounds may also be used. Allow mortar or self-leveler to cure per flooring manufacturer's instructions.

2. Perform insulation and resistance tests found on Page 6.
3. Install laminate, engineered wood or vinyl flooring.

Install vapor barrier, if applicable, and underlayment per flooring manufacturer's instructions. Install laminate, engineered wood or vinyl flooring per manufacturer's instructions.

4. Make electrical connections.

Before activating *Mapeheat Mat*, ensure that setting compound has fully cured. Refer to setting compound manufacturer's specifications for curing times. Then installation of *Mapeheat Mat* will be complete.

Section 3: Electrical connections and guidelines

3.1 Electrical connections

1. Connect the tin-plated copper ground braid/wire of *Mapeheat Mat* to the ground screw or ground conductor inside the electrical box using approved wire connectors.
2. Attach corresponding lead wires to electrical box using CSA Certified/UL Listed cable fittings. Make electrical connection only after flooring is complete.
3. *Mapeheat Mat* must be connected to minimum 14AWG supply conductors. Supply conductors shall be suitable for residential wiring according to local and national electrical code.

When multiple mats are controlled with one thermostat, all mats may be connected directly to the thermostat, provided that the total amperage does not exceed the 15-amp maximum load of the *Mapeheat* thermostat. Alternatively, the mat cold leads can be run to a separate electrical box and connected to the *Mapeheat* thermostat using suitable electrical house wiring. Consult with a licensed electrician to determine the best method for the installation. In all cases, ensure that the electrical box can easily fit all the connections.

Risk of electric shock and fire. Damage to supply conductor insulation may occur if conductors are routed less than 2" (5 cm) from heating wire. Refer to installation instructions for recommended means of routing supply conductors.

4. Affix the supplied orange label to the panel board beside the appropriate circuit indicating the branch circuit supplying power to *Mapeheat Mat*.
5. Affix the supplied "Concealed Area Warning" label to adjacent points of access to concealed areas in which installed heating products are accessible.
6. Affix the supplied "Radiant Floor Heating" sticker to the room control for the *Mapeheat* floor-heating system.

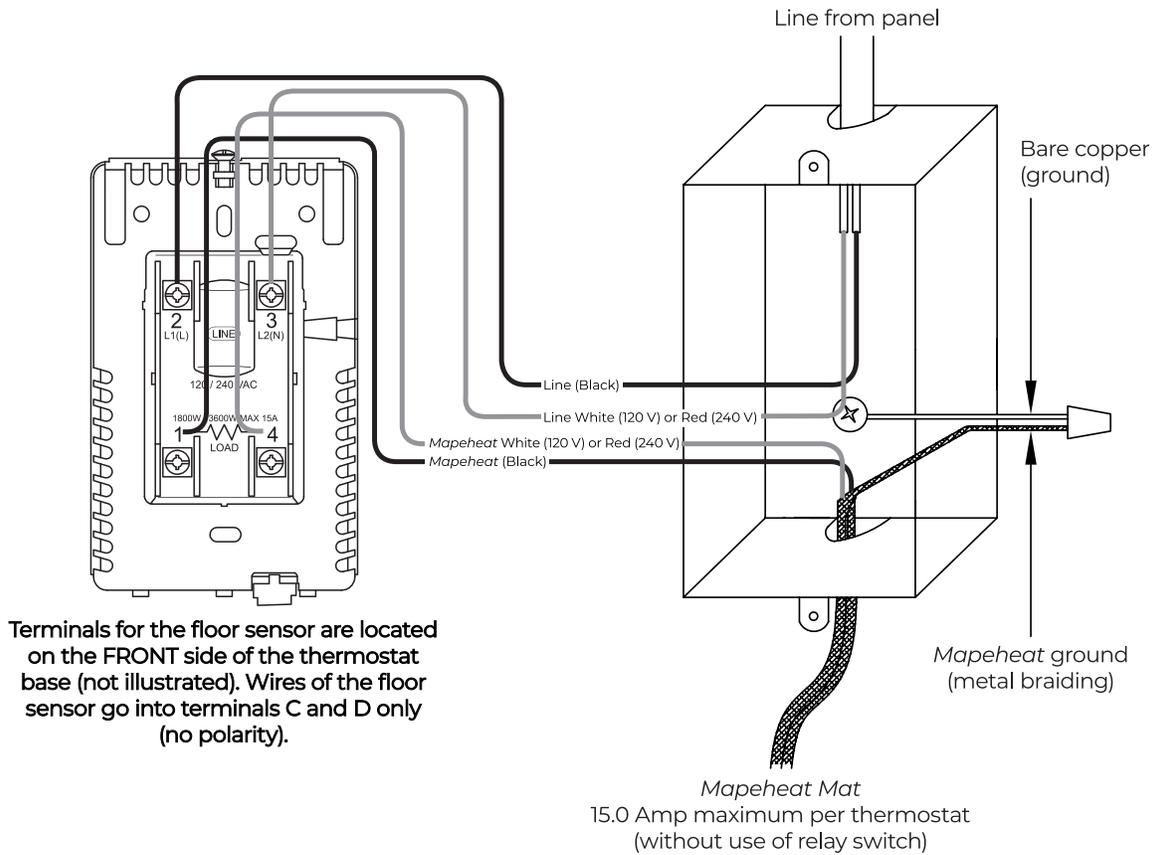
All wiring must follow specifications set out in Part 1 of Canadian Electrical Code, or Article 424 of the National Electrical Code ANSI/NFPA 70, or whichever is applicable to local electrical inspection regulations and authorities. All *Mapeheat* thermostats are equipped with built-in "Class A" GFCI protection. If *Mapeheat Mat* is connected directly to a *Mapeheat* thermostat, a non-GFCI equipped breaker should be used. If *Mapeheat Mat* is controlling an external relay for a separate circuit, it is mandatory to install a "Class A" GFCI or GFCI circuit breaker for the external/separate circuit.

The cold leads of *Mapeheat Mat* may need to be routed inside a suitable conduit according to local electrical codes. Check with the local authority having jurisdiction to determine requirements.

NEC/CEC rules state that the cold lead tag must remain on the cold lead. The tag contains critical information necessary for testing, warranty and troubleshooting purposes. Do not remove the tag for any reason.

Section 3: Electrical connections and guidelines

Wiring diagram for *Mapeheat Thermo Connect, Touch and Basic* thermostats



Terminals for the floor sensor are located on the FRONT side of the thermostat base (not illustrated).

Wires of the floor sensor go into terminals C and D only (no polarity).

MAPEI assumes no responsibility for field wiring. Please consult a licensed electrician for further instruction if needed. Wiring must be in accordance with national and local electrical codes. Wiring methods may differ for each control. Please consult the manufacturer's instructions for actual specifications.

Section 3: Electrical connections and guidelines

3.2 Electrical guidelines

- The installation of this heating product shall be in accordance with the manufacturer's instructions and in accordance with the Canadian Electrical Code Part 1 or the National Electrical Code (USA), whichever is applicable.
- This equipment shall be installed only by qualified personnel who are familiar with the construction and operation of the apparatus and risks involved.
- Caution should be taken to guard against electric shock, fire and bodily injury during the installation of this equipment.
- De-energize power circuits before installation or servicing.
- *Mapeheat Mat* should not be connected to power until *Mapeheat Mat* is fully installed and covered by flooring material.
- Subfloor must be prepared in accordance with ANSI specifications.
- The heating portion of *Mapeheat Mat* shall not touch, cross over or overlap itself.
- Do not install *Mapeheat Mat* in direct contact with or within 1/4" (6 mm) of any combustible surfaces or materials (excluding wood-based substrates).
- The minimum bending radius of the cold lead is 2" (5 cm) and heating wire is 5/8" (16 mm).
- The ambient temperature must be above 50°F (10°C) when *Mapeheat Mat* is installed.
- Per National Electrical Code (USA) and Canadian Electrical Code, *Mapeheat Mat* must be installed on a dedicated circuit for heating appliances/devices (additional *Mapeheat Mat* fabric, baseboard heaters, electric fireplaces, etc.).
- *Mapeheat Mat* is designed for indoor floor-heating applications in general use (-X) in the USA and Canada, and in wet areas (-W) in Canada.
- Minimum distance of 1.5" (3.8 cm) between adjacent heating devices.
- Total combined R-values of all floor coverings must not exceed R-2.5.
- *Mapeheat Mat* should not be altered.
- *Mapeheat Mat* is not for installation in pool and spa areas, nor outdoor use.
- Do not place objects directly on top of the floor that could impede/trap heat emanating from the floor-heating system including but not limited to flush-to-floor furniture, rubber or memory foam mats, and mattresses. These objects could cause unsafe temperatures to be reached underneath these objects, which may cause damage to the object and/or the flooring material.

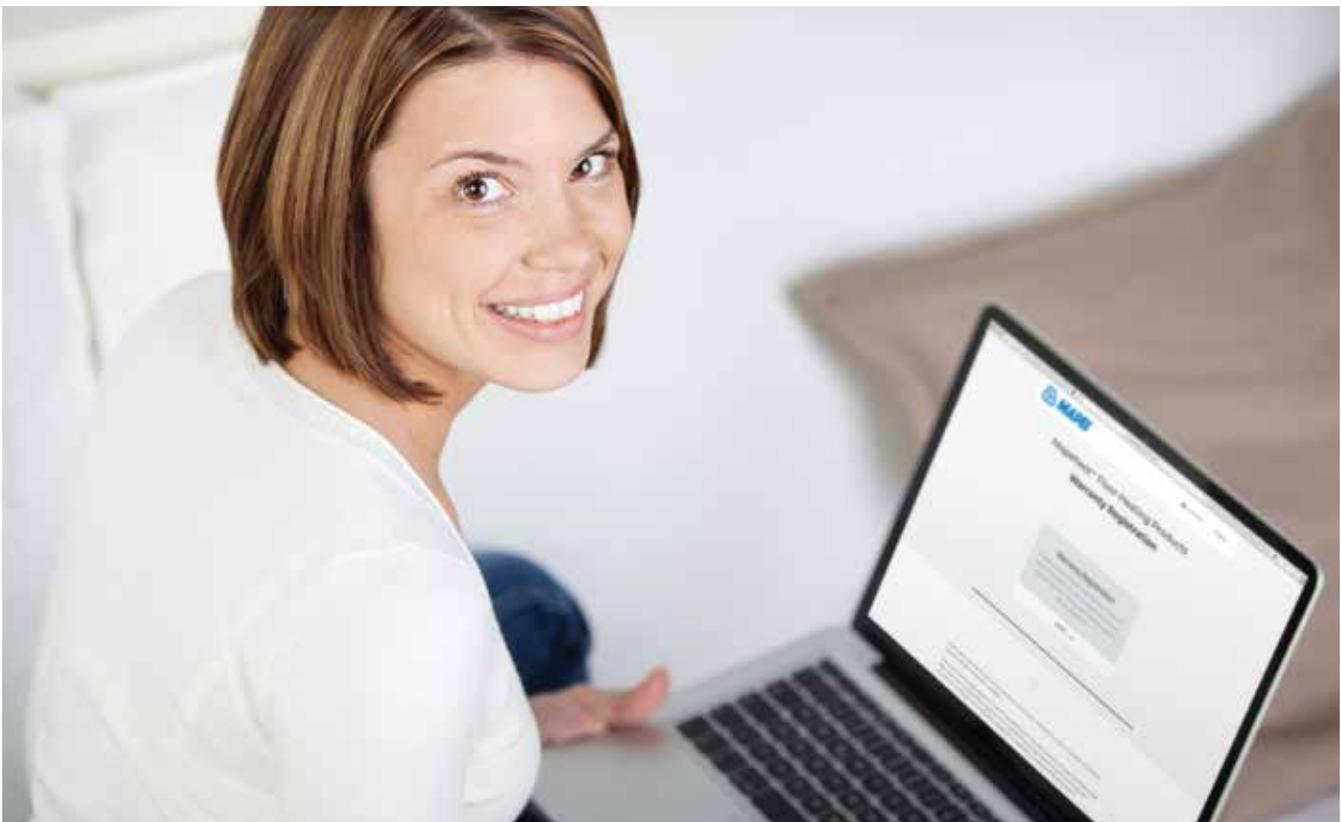
3.3 Troubleshooting

Should you have any questions or difficulties installing or controlling your *Mapeheat Mat*, consult with MAPEI Technical Services at 1-800-992-6273 (U.S. and Puerto Rico) or 1-800-361-9309 (Canada).

Section 4: Warranty information

The online warranty registration form must be completed at www.mapeheatwarranties.com within thirty (30) days from the date of installation and kept by the homeowner, together with a copy of the testing logs, relevant invoice and photographs, showing the product(s) in its entirety after installation but before the installation of the flooring material.

Note: When *Mapeheat Mat* is installed by a MAPEI or nVent NUHEAT Certified Pro Installer, its product warranty will be upgraded to additionally cover repair or replacement of the product and restoring the floor in its original state or, if not possible, to an equivalent standard, at no cost to the buyer. In order to remedy the defect, MAPEI must have access to 10 sq. ft. (0.93 m²) of the floor-covering material.



Section 5: Thermostats and controls

Mapeheat Thermo Connect

Programmable, WiFi Floor-Heating Thermostat

- WiFi-enabled
- Works with Amazon Alexa, Google Assist, IFTTT and Nest.
- 3.5" (9 cm) color touchscreen
- Energy use monitor
- 7-day programmability
- Dual-voltage compatibility (120 V and 240 V)



Mapeheat Thermo Touch

Programmable Floor-Heating Thermostat

- 3.5" (9 cm) color touchscreen
- Energy use monitor
- 7-day programmability
- Dual-voltage compatibility (120 V and 240 V)



Mapeheat Thermo Basic

Non-Programmable Floor-Heating Thermostat

- Manual temperature control
- Dual-voltage compatibility (120 V and 240 V)



Mapeheat Fault Sensor

Mapeheat Fault Sensor simultaneously monitors the hot, neutral and ground wires during installation of Mapeheat radiant-floor-heating products, to help ensure a correct installation.



Treat your feet to **Mapeheat**TM



Technology from



MAPEI's floor-heating products

With four system solutions and more than 150 SKUs, MAPEI now offers the most comprehensive array of electric floor-heating solutions on the market. Our easy-to-install, versatile and advanced new-technology products are suitable for tile, stone, laminate, engineered wood and luxury vinyl tile/plank floors.

- **Mapeheat Membrane**
- **Mapeheat Cable** (available in 120 V and 240 V)
- **Mapeheat thermostats** (available in three formats)
- **Mapeheat Mat** (in standard and custom sizes)
- **Mapeheat Mesh**
- **Mapeheat accessories**

No matter the shape or size of your room, there is a *Mapeheat* solution to heat your space from the floor up. For more information, www.mapei.us and @MAPEIUSA on social media.



WiFi-enabled

Programmable

Non-programmable





MAPEI USA
MAPEI Canada

MAPEI Headquarters of North America

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Deerfield Beach, Florida 33442
1-888-US-MAPEI (1-888-876-2734) /
(954) 246-8888

Technical Services

1-800-992-6273 (U.S. and Puerto Rico)
1-800-361-9309 (Canada)

Customer Service

1-800-42-MAPEI (1-800-426-2734)

Services in Mexico

0-1-800-MX-MAPEI (0-1-800-696-2734)

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