

Electric In-Floor Heating System Installations

Ontario's Electrical Safety Authority (ESA) warns the public that improperly installed electric floor heating systems may pose a fire, burn, or electric shock hazard. A recent fatality has been associated with floor heating cables/ pads that were not installed as per the manufacturer and were not in compliance with the Ontario Electrical Safety Code (OESC).

Caution for Home Owners:

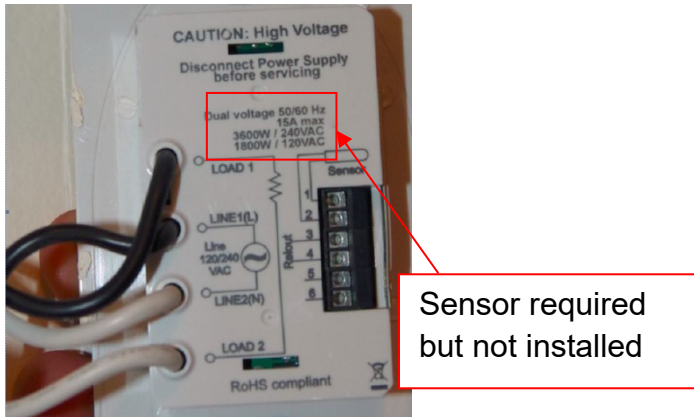
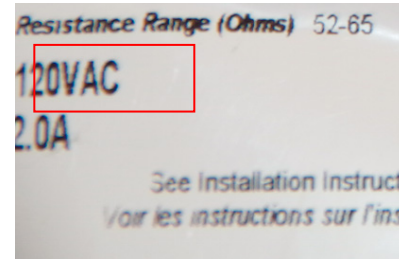
Homeowners are reminded to review and always follow the manufacturer's operating instructions. Objects that significantly restrict the normal flow of air over a floor should not be left unattended on floors heated with Electric In-Floor Heating Systems, unless specifically permitted by the manufacturer's instructions.

Caution for Installers:

Recently, an elderly gentleman fell on the floor in the bathroom of his home where a Licensed Electrical Contractor (LEC) had installed an in-floor heating system without taking out a notification of work. The man suffered second and third degree burns from the over-heated floor and succumbed to his injuries weeks later in hospital.

A joint investigation with the ESA revealed the sensor (heat) that needed to be installed to cut the electrical supply to the floor when a certain temperature is reached was not installed. Also, the In-Floor Heating mat was intended to be connected to 120 VAC power supply. It was hooked up to a 240 VAC power supply by mistake, allowing it to overheat. The floor was able to attain a temperature of 62.2 °C (144 ° F).

Installers should be aware most thermostats are rated for multiple voltages. The thermostat does not reduce the voltage so extreme caution should be taken to ensure the voltage supplied to the thermostat matches the voltage required by the in-floor heating mat or cable installed.

Picture 1: Dual Voltage Thermostat**Picture 2: 120 V Rated Floor Matt Label**

Installers should also refer to the manufacturer's instructions, as in-floor heating may not be intended to be utilized without the in-floor sensor installed and connected.

Who can install the heating portion of electric floor heating systems?

Basically any person can install the heating portion of electric floor heating system components, as long as there is no branch circuit wiring installation involved. So, the flooring contractor, for example, can install the electrical heating equipment (i.e. in-floor heat cables or radiant heating panels) up to the first termination junction box for the cold lead connections. **No branch circuit wiring installation.**



All equipment must bear a recognized Canadian Electrical approval mark (CSA or equivalent). See <https://esasafe.com/electrical-products/recognized-certification-marks/> for a complete list of acceptable approval marks for equipment.

Does the installation of the in-floor heating cables or radiant heating pads require notification of work to be filed and inspected?

YES, a notification of work must be filed with the ESA to inspect the “electrical heating system” components installed by the flooring installers or any other person. Inspection must be completed prior to the covering of the heating cables/pads.

To apply for or arrange an electrical inspection, please contact ESA’s customer service center at 1-877-ESA-Safe (1-877-372-7233). Failure to follow inspection requirements may result in charges under the Electricity Act for each offence identified.

Who will install the branch circuit wiring and do other electrical connections?

Branch circuit wiring from the electrical panel to the in-floor heating must be done by a LEC. The homeowner can also do the wiring, however, it is NOT recommended. Visit <https://findacontractor.esasafe.com/> for LEC list.



For installations involving several parties, e.g. the flooring contractor and the LEC, there is a need for proper co-ordination to ensure the complete system is interconnected to operate safely, specifically, the individual installing the thermostat and doing the connection needs to ensure that sensor is installed and connected.

Electrical wiring is complicated and can present safety hazards if not properly installed and maintained. Homeowners are encouraged to ensure their electrical installations meet the safety standards defined in the OESC by engaging a LEC for all new electrical work/installations as well as alterations to existing systems.