Wall Heating System

Raychem

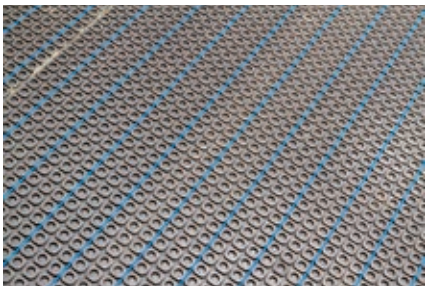
Wall Heating System Application Guide

This document provides installation and product information for wall heating applications using the Raychem Membrane and T2Blue+ heating cable.

SYSTEM COMPONENTS

1. Raychem Membrane

Raychem Membrane is comprised of a polyethylene sheet, with square-shaped pillars, that is heat-welded to a layer of non-woven polypropylene fabric. The fabric absorbs tile adhesive in order to bond the Membrane to the wall. The square-shaped pillars provide vapor management, allowing moisture to escape from the substrate during the curing process. Raychem Membrane is providing a watertight layer when installed with waterproofing seam tape (PROBAND 150 and PROBAND KOLL AB). Once the tile adhesive under the Membrane is cured, the T2Blue+ cable can be installed. Tiling can be done using a suitable tile adhesive (C2 TE/S1 or C2 TE/S2).



2. T2Blue+ Heating Cable

The T2Blue+ heating cable is an electric heating cable designed for installation in the Raychem Membrane. T2Blue+ is approved for embedded installations including installation in vertical walls. T2Blue+ must be installed according to the manufacturers' installation instructions and considering local electrical standards. A Raychem thermostat using a sensor in the wall shall be used to prevent excessive temperatures. Approved thermostats are NRG-DM, SENZ WIFI and GREEN LEAF from Raychem. The heating cable can be installed in walls of dry as well as wet rooms. As the cable has an IP protection of IPX7 and is embedded in the tile adhesive, it can be installed in the zones 1 or 2 of wet rooms (like defined in the IEC 60364-7-701 or in local standards).



RESTRICTIONS FOR THE APPLICATION

The wall heating application with Raychem Membrane and T2Blue+ cable is restricted to walls that will be covered with ceramic tiles, natural stone or large format stone slabs.

Tile size restriction:

- Minimum tile size 50mm x 50mm
- For oversized tiles (bigger than 600mm x 600mm) or one piece wall panels, installers must follow the tile manufacturer's guidance regarding adhesive selection, substrate load capacity, and movement joints.

There should be 1 heating circuit per heated wall. One T2Blue+ circuit should not be installed over expansion joints or in multiple walls or going from floor to wall. In order to cross expansion joints, heat multiple walls or heat wall and floors, multiple heating circuits should be installed.

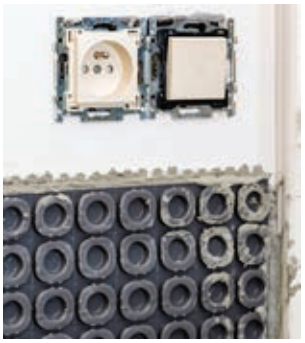
REQUIREMENTS FOR THE WALL

The wall must be even, clean and free of dust and cracks. Unevenness must be levelled prior to installing the Raychem Membrane. Suitable wall construction include gypsum boards, plaster, cement boards or solid masonry. For coverage of the wall with oversized tiles (bigger than 600mm x 600mm) or one piece wall stone slabs, installers must consult the tile manufacturer to agree on the suitable wall construction.

INSTALLATION PROCEDURE

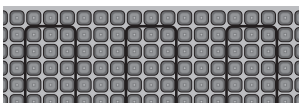
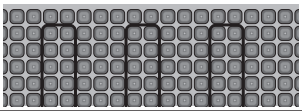
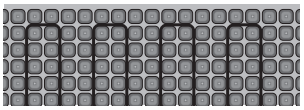
1. Bonding the Raychem Membrane

Apply a suitable C2 TE/S1 (or alternatively C2 TE/S2) tile adhesive using a 6×6 mm notched trowel. Embed the membrane fleece-side to the wall, pressing it firmly into the adhesive. Once in place use a roller to press the membrane firmly on the wall, this step will ensure full contact and avoids air pockets (the dot and dab method is not approved for bonding the Raychem membrane to the wall). Position subsequent sections of Membrane to ensure the edges do not overlap and the pillars and channels are aligned to facilitate the installation of T2Blue+.



2. Installing the T2Blue+ Heating Cable

After the membrane has been fully bonded to the wall (cfr. to the tile adhesive technical data), install the T2Blue+ heating cable into the pillars of the Membrane. Depending on the required power output, the T2Blue+ 7 or the T2Blue+ 12 cable can be used and the cable spacing will provide different heat output:

T2Blue+	**3 pillars spacing** 	**2-3-2 pillars spacing** 	**2 pillars spacing** 
7W/m	75W/m^2	90W/m^2	110W/m^2
12W/m	125W/m^2	150W/m^2	190W/m^2

Heating cables must not touch or cross each other. The interconnection from heating cable to cold lead must also be fully embedded in the tile adhesive. The heating cable should not be installed closer than 3 cm from any obstacles (for example: drains, cables, fixed furniture).

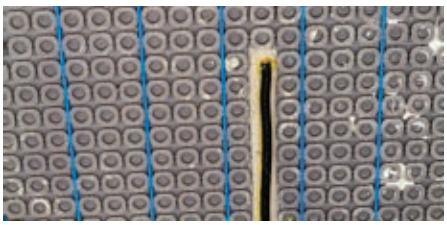
3. Sensor Installation

The temperature sensor provided with the Raychem thermostat must be installed between two heating cable runs directly in the membrane or in the conduit provided with the T2Blue+ cable.

If the sensor is installed directly into the Membrane, it is recommended to install 2 sensors in the Membrane and only connect one to the thermostat. The second sensor serves as a backup sensor. The Raychem spare sensor can be used for that purpose (1244-002952).



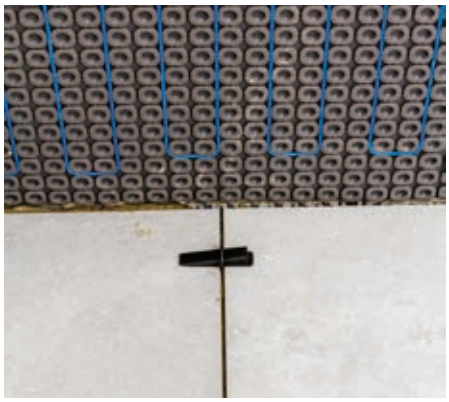
If the sensor is installed in the conduit provided with the T2Blue+ cable, a channel will need to be created under the Membrane to fit the sensor conduit below the Membrane. It is important to clearly mark the position of the conduit on the Membrane prior to gluing the Membrane, this way it is possible to channel the T2Blue+ cable so that the sensor is exactly in between 2 cable runs. Alternatively, a channel can also be created in and under the Membrane, this way the sensor tube is visible during the installation of the cable.



4. Thermostat placement

The Raychem thermostats have an IP21 rating and should not be positioned in the zones 0, 1 or 2 of the wet rooms (like defined in the IEC 60364-7-701 or in local standards). It is recommended to position the thermostats outside of the zones (or in zone 3).

5. Wall finishing



The tiling can only start when the adhesive used to glue the membrane on the wall is fully cured according to the tile manufacturer's instructions. The tile covering is installed directly on the membrane using the thin-bed method in accordance with the applicable installation regulations and tile glue manufacturing instructions (using a C2 TE/S1 or C2 TE/S2 tile adhesive). The thin-bed mortar will anchor itself on the membrane's pillars (the dot and dab method is not approved for tiling on top of the Raychem membranes). Expansion joints must be respected according to the local requirements and the tile size with a minimum of expansion joints every 3m. It is recommended to use expansion joints around the entire heated surface for visual notification of the heating under the wall.

Before applying the grouts between the tiles and after the curing of the tile adhesive, it is recommended to perform a heating cycle and then to leave the tiles to cool down for 48 hours. When selecting the grout type, it is important to select a grout type that is compatible with heated tiles (the recommended grout type is CG2WA).

ELECTRICAL REQUIREMENTS



All electrical connections must be completed by a qualified electrician and in accordance with the T2Blue+ installation instructions (EU2540). Each heating circuit should be protected by a RCD (≤ 30 mA). All power circuits should be deenergized before installation or servicing of the heating system. The braid of the T2Blue+ cable should be connected to the grounding/earthing system. Persons involved in the installation and testing of the electrical cable heating system shall be suitably trained in all special techniques required. The circuit resistance of the heating cable and the insulation resistance should be measured prior to installation, after installation of the cable and after installation of the wall finish. All values need to be recorded in the commissioning sheet (EU2550) provided with the T2Blue+ cable or on the InstallPRO360 app. The second cable ID tag, that is delivered with the T2Blue+ cable should be inserted in the commissioning sheet or a picture should be added to the InstallPRO360 app.

WARRANTY

The wall heating installations do not fall under the total care warranty of Raychem, the warranty for this type of installation is a 2 year limited product warranty.

LOCAL REGULATIONS

This datasheet is intended to explain the boundaries of the Wall heating application in combination with the T2Blue+ heating cable and the Raychem membrane system. Local rules, regulations and best practices shall in no case be overruled by this datasheet. In case of doubt, contact our technical department for additional help.

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excellence is everything

Raychem Tracer Pyrotenax Nuheat

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