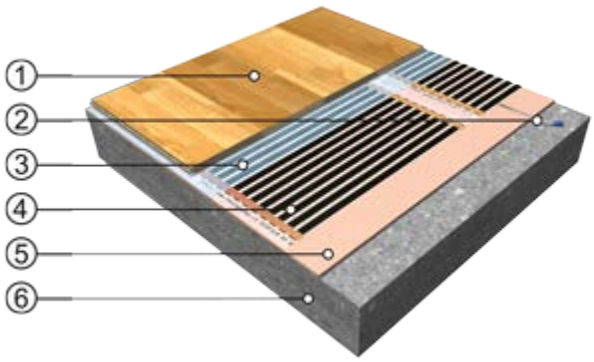
Installation of floor heating

Basic rules for the planning and installation of ECOFILM F heating foils

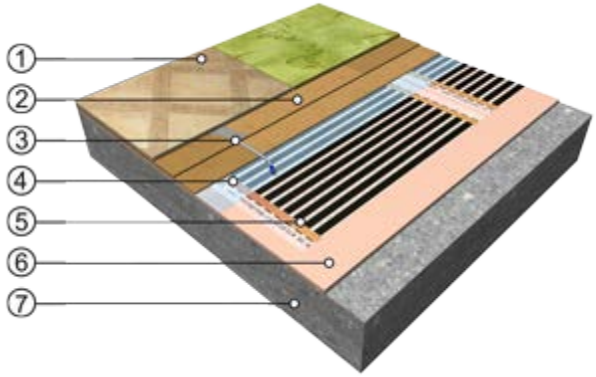
- ECOFILM foils are intended for use only in dry structures – they cannot be placed e.g. into concrete or cement under floor tiling
- heating foils are not to be installed under permanently fixed equipment
- furniture which is located on the heated floor should be on at least 60mm high supports
- floor heating foils cannot be installed in so-called damp areas (bathrooms, laundries) or outdoors
- the heating foil must be covered by 0.25mm thick PE (LDPE) foil – a requirement set by electrical installation standards
- the heating parts of the foil (including the buses) must not be broken, overlap or touch metal elements
- the non-heating edges of the foil may overlap
- in living areas, the heating foils must be connected via a circuit breaker with an interrupting capacity of O30mA (for heating foils, the so-called earth leakage currents have a value of 0.92 mA/m²)
- when metal (aluminium) foils are used in direct contact with the heating foil, the metal foil must be earthed; the earth leakage currents will simultaneously increase to 2.55 mA/m² – be careful not to exceed the value of the circuit breaker
- if metal foil is used, resonance might occur as well as noise (buzzing) - the network system contains 230V/50Hz
- the current value mustn't exceed 10 A when the foils are connected in series

Composition of a floor with ECOFILM F heating foil



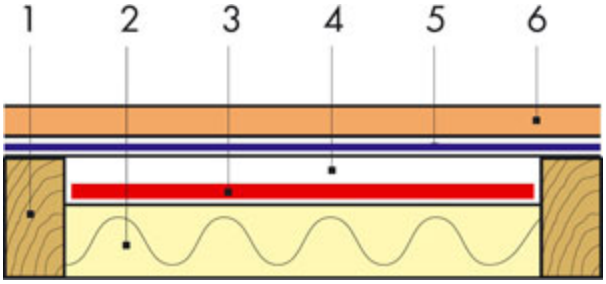
1. Three-layer wood or laminate floating floor
2. Floor (limiting) probe in a groove
3. 0.25mm thick PE covering foil
4. ECOFILM(R) floor heating foil
5. Insulating underlay made from extruded polystyrene
6. Base – concrete, anhydrite, original floor, etc.

Composition of a floor with ECOFILM F heating foil – carpet / PVC



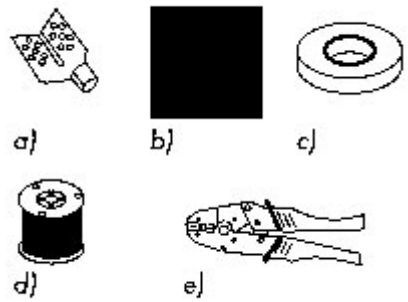
1. Wear layer (PVC, carpet)
2. Two-layer glued 7mm HEAT-PAK underlay
3. Floor (limiting) probe in a groove (cemented)
4. 0.25mm thick PE covering foil
5. ECOFILM(R) floor heating foil
6. Insulating underlay made from extruded polystyrene
7. Base – original floor, concrete, anhydrite, etc.

Composition of a floor with ECOFILM F heating foil – massive wood floor



1. Load-bearing wooden structure
2. Thermal insulation
3. ECOFILM F heating foil
4. Air gap (min. 20mm for 40 and 60 W/m², 40mm for 80 W/m², 80mm for 140 W/m²)
5. 0.25mm PE foil
6. Load-bearing wood covering

Installation materials and tools



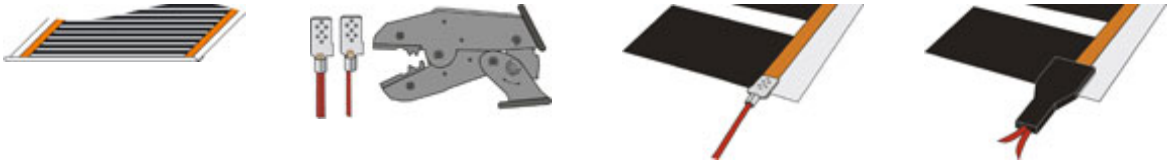
a. connector for ECOFILM
b. MASTIC vulcanizing tape
c. electrical insulation tape
d. connecting leads – double insulation, cross-sectional area 1.5 mm², colours: blue and black
e. crimping pliers

Checking the base before carrying out the installation

The room where the installation of floor heating using ECOFILM foil will take place needs to be cleaned out, and mechanical dirt needs to be swept up. The surface of the base must be adequately flat without any protrusions, bumps or depressions. It can be made of concrete or other construction materials with a sufficient carrying capacity. The dampness of the base mustn't exceed 2% (approx 60% relative humidity).

Insulating the foil edge, installation of conductors with connectors

1. 2. 3. 4.

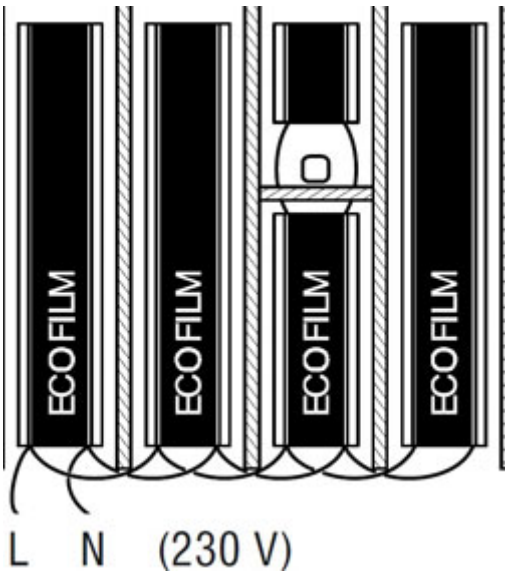


The whole cut edge of the heating foil should be insulated by folding electric insulation tape around the cut edge (1). First, the supply leads are crimped to the connector (2). The cross-sectional area of the connecting lead must be at least 3mm² because the cavity of the connector is dimensioned for the feeding in and connecting of two conductors – if only one is connected, it is necessary to fold the conductor to fit the required diameter. The fastener of the connector is placed in the centre of the conductor bus and subsequently, the slanting part of the fastener is closed using finger pressure (3). Firm crimping of the connector will take place in two steps with the help of crimping pliers – first from the side of the hinge (spine) of the open part of the conductor, and afterwards from the outer part in order to ensure the sufficient compression of the fastener. The ratchet of the crimping pliers will prevent the opening of the pliers' jaws before the desired pressure is achieved. Subsequently, the joint is insulated with MASTIC insulation tape with a minimum overlap of 11mm from the live parts (4).

Installation

Check the identification labels to find out whether they conform to the values required by the installation plan. Measure the floor surface, and based on this measurement, draw the placement of the foil directly on the floor surface or possibly on paper. Unwind the foil on a dry and flat work surface and measure and mark the foil for the division of the individual strips. The division of the foil is carried out according to the measurements, using scissors or by cutting along straight edges with a sharp knife. In principle, the cut is carried out at a right angle to the longitudinal axis of the foil (i.e. perpendicularly to the inner conductor bus). Unwind the foil on the floor to check that the dimensions of the foils can be laid according to the conditions detailed in these instructions and the dimensions of the room.

The heating foils are partially coiled (they can be secured with sticky tape to prevent unwinding), and places where grooves will be cut for supply cables and connectors should be marked on the floor. There's no need to make grooves for the AV1.5 heating cables if they are embedded in leveling base boards with a thickness of 3 mm and more (STARLON, DEPRON, CLIMAPOR). The cutting of the grooves in the insulation is carried out using a knife. There's no need to make grooves for the connector covers if leveling base boards with a thickness of 6 mm or more (STARLON, DEPRON, EXTRUPOR) are used, as the connectors can be embedded within them. The cutting of grooves in the insulation is again carried out using a knife. Now, the foils are fully coiled up and placed in a clean environment (it is advisable to mark the strips in such a way that it is possible to return them to the same place), and the marked grooves for the supply cables and connector covers are cut. Leveling base boards are laid, and the needed grooves are also cut into them.



The heating foils are placed (uncoiled) back and attached to prevent sliding and folding (e.g. using sticky tape). The connectors are connected and insulated with MASTIC insulation – the linking supply cables between the foils are measured exactly so that they are only of the lengths needed. The individual strips are connected in parallel, starting from the most distant strip and proceeding towards the place of connection (wiring box). If it is necessary to connect some of the foils in series, the current value mustn't exceed 10 A. When strips of foil are connected into one heating unit, the output of one unit (circuit) mustn't exceed the current value of 10 A. At the end, the heating foils are covered by PE (LDPE) foil with a minimum thickness of 0.25mm. Now, the floor is ready for the laying of the final covering.

Testing floor heating

Testing should be done in each room individually – after finishing the installation and connecting the ECOFILM heating foils, but before laying the floor covering. The resistance of the heating unit should be measured when the unit is cold, and a precise ohmmeter should be used. The measured resistance is recorded in a warranty certificate, one of which needs to be issued for each of the rooms (independent heating unit). The measured resistance value must correspond to the table value with a tolerance of -5% / +10%. If the measurement is in order, it is possible to lay the floor covering. After completing the laying of the floor, the measurement of resistance is repeated and compared with the previous measurement. If the values differ, it is very likely that the heating foil or one of the supply leads was damaged during the laying of the floor. It is necessary to find and remove the fault.

Start-up operation of the floor

As floating as well as wood floors are sensitive to changes in temperature and mainly moisture, it is necessary to carry out a gradual and slow start-up (warming) of the floor according to the following procedure:

1. Set the floor temperature at the current room temperature (at a maximum of 18 °C, though)
2. Increase the floor temperature gradually by 2 °C/day in the following days until it reaches 28 °C
3. Maintain the floor temperature at 28 °C for a period of three days

4. Subsequently, decrease the floor temperature by 5 °C/day until the initial temperature has been achieved

Now it is possible to programme the floor heating to the required temperatures and bring it into everyday operation. A detailed description of the installation, including the required conditions, is written in the Instructions for installation. An instructional video for the installation of floor heating can be found in the chapter Support.