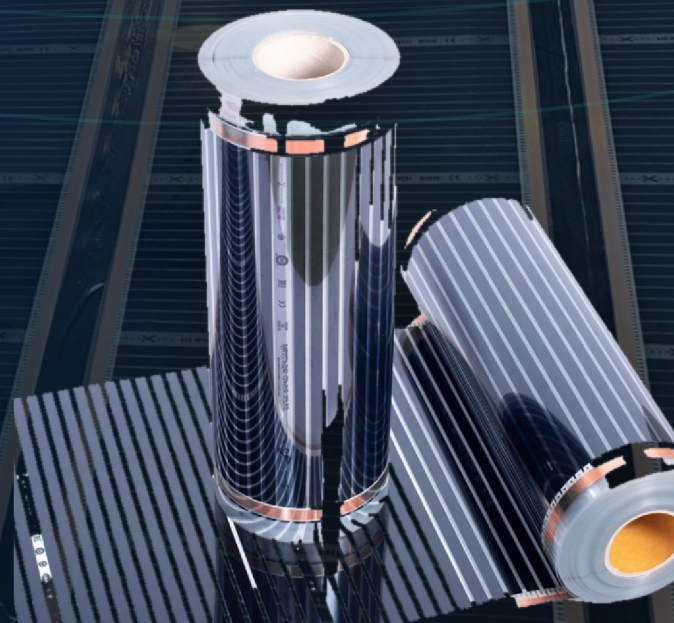


EN // HEATING FILM

Installation instructions for infrared heating film

A low-temperature electrical system for installation under the floor, on walls and ceilings and behind a mirror. Requires a thermostat with a floor sensor.

60 W/m²80 W/m²110 W/m²140 W/m²220 W/m²240 W/m²400 W/m²

DEAR CUSTOMER THANK YOU FOR YOUR PURCHASE

Scan the QR code to access video materials and the complete product documentation at www.ergowave.eu

Note: Read the instructions before starting the installation!

Comfort. Efficiency. Innovation

UK
CA

Thank you for choosing the underfloor heating system from **ergowave**. We are confident that the solutions applied will meet your expectations in terms of comfort, safety and energy efficiency.

If required, we provide full technical support – both during installation and later operation of the system.

Please read these instructions carefully and strictly follow all the guidelines contained in them. Any doubts regarding the installation method or any discrepancies between the design and the instructions should be reported to the technical department for clarification.

Installation of the heating film is permitted only after reading the instructions, whereas the electrical connection must be made by a qualified electrician holding current authorisations. Failure to observe the installation rules may result in incorrect operation of the system and loss of warranty.

We are a supplier of heating films with various parameters

Our range includes films with the following outputs:

- 60W/m²;
- 80W/m²
- 110W/m²
- 140W/m²
- 220W/m²
- 240W/m²
- 400W/m²

SAFETY

Before using the product, read the safety instructions carefully.

Before commencing operation, also read the heating film installation instructions and keep them for future reference.

After receiving the product, check:

- the contents of the packaging,
- the compatibility of the heating film output with the parameters of the planned installation,
- the technical condition of all components.

If an **ergowave** heating film installation kit is purchased, the packaging contains:

- heating film
- thermostat with floor temperature sensor
- protective conduit (flexible conduit)
- installation box
- BX type connection kit
- LgY 2.5MM² installation cables

Rules for safe installation and use

1. Every room equipped with **ergowave** underfloor heating must have a separate electrical circuit protected by a type B overcurrent circuit breaker and a residual current device. The appropriate selection of protection devices is made by the electrical installation designer or a qualified electrician.
2. The heating film must not be installed under floating-system panels in damp rooms such as bathrooms.
3. If any damage to the power cable or the heating film is found, the product is not suitable for installation or use and must be disposed of.
4. All metal elements within the installation must be earthed, such as: frames, gratings, furniture or doormats.
5. The heating film may be operated by children from the age of 8, provided that supervision and appropriate training in safe operation are ensured.
6. Children under 8 years of age should not operate the thermostat.
7. Children must not carry out cleaning or maintenance of the device without adult supervision.
8. All maintenance and cleaning activities must be carried out only with the power supply disconnected and in a safe manner.
9. The installation may be operated by persons with reduced physical or mental abilities, as well as without experience, provided they have received appropriate instruction on the safe use of the system.

GENERAL INFORMATION ON INSTALLATION

ergowave heating films are a low-temperature electrical system intended for installation:

- under the floor (laminated panels, vinyl, three-layer board ≤ 18 mm),
- on walls and ceilings (under plasterboard),
- behind a mirror.

The system requires the use of a thermostat with a floor sensor, and the electrical installation must be carried out by a qualified electrician.

Safety rules

It is not permitted to:

- install the film on a damp substrate,
- overlap strips of film,
- bend or fold the film,
- cut the film outside the marked cutting lines (every 25 cm),
- install the film at a temperature $< 5^{\circ}\text{C}$,
- install it under fixed fittings (cabinets, island, shower tray),
- use floors with a resistance $> 0.15 \text{ m}^2\text{K/W}$,
- route cables outside the conduit,
- install it outdoors.

Installation conditions:

- substrate humidity $\leq 2.5\%$ (cement), $\leq 1.5\%$ (anhydrite),
- installation temperature $5\text{--}25^{\circ}\text{C}$,
- distance of the film from walls: 10–15 cm,
- floor temperature during operation: max 29°C (rooms), 31°C (bathrooms).

Required materials and tools

Materials:

- **ergowave** heating film
- Insulating underlay
- Vapour barrier film
- Conduit and installation box
- AX/BX type connectors
- LGY 2.5 mm² cables
- Mounting tape
- Self-amalgamating tape
- Thermostat with floor sensor

Tools:

- Connector crimping pliers
- Voltage meter / ohmmeter
- Pyrometer
- Scissors, knife, tape measure, screwdriver
- Work gloves

Preparation for installation

1 Verification of the electrical installation

- the circuit must have a dedicated overcurrent circuit breaker,
- a 30 mA RCD is required,
- check the cross-section of the supply line,
- in wall/ceiling installations, a PE conductor must be connected to the structure.

2 Checking the floor

- it should be level, dry and clean,
- level out any unevenness,
- prepare a film layout map (recommended coverage 75–85%).

3 Determining the heating layout

- prepare a sketch of the room.
- draw a plan of the room with dimensions on the warranty card.

Mark:

- the arrangement of the film strips,
- the routes of the supply cables,
- the installation location of the electrical box,
- the run of the supply cables.

A precise sketch will considerably facilitate the subsequent installation.

- avoid areas with fixed fittings,
- plan the position of the thermostat and the NTC sensor,
- leave a gap of 2–5 cm between the film strips.

System installation

1 Thermostat installation

- Make a Ø 65–67 mm opening for the box.
- Route the supply and sensor cables in wall chases.
- Run the conduit from the floor to the box.

2 Floor sensor installation

- Place the sensor in a separate conduit.
- Place the end of the conduit between the film strips, beneath the heating surface.
- Horizontal chase in the floor: min. 30 cm from the wall chase.

3 Surface preparation

- Clean the substrate of dust and sharp elements.
- Lay out the insulating underlay, level it and tape it together.
- At the sensor location, make a cut-out in the underlay.

4 Laying the ergowave heating film

- Lay out the film on the underlay in accordance with the design.
- Cut it only at the designated points /every 25 cm/
- Do not lay the film overlapping or on top of itself.
- Secure the ends with self-amalgamating tape.
- Insulate the cable connections in accordance with the instructions.
- Place the sensor in the conduit, between the film strips.

Joining the film – AX/BX connections

1 Making the connection

- Strip the end of the LGY 2.5 mm² cable.
- Crimp the ring connector onto the cable.
- Slide the lower plate of the connector into the film pocket as far as the busbar.
- Crimp the connector with the crimping tool.
- The connection must have no play and must not protrude.

2 Insulation of the joints

- Prepare two strips of self-amalgamating tape.
- Degrease the surface.
- Apply the tape symmetrically so that it extends at least 10 mm beyond the connection area.
- Remove air bubbles.

Cable routing

- Route the cables along the walls,
- Avoid crossing cables,
- Make cut-outs in the underlay and hide the cables below its surface.

The surface of the heating film laid on the insulating mat must be completely flat and free of any protruding elements. The film joints and supply cables must not be located above the level of the heating film. To maintain an even surface, all elements protruding above the film must be placed in previously prepared recesses in the insulating mat. Using a marker, mark the outline of the joints and the run of the electrical cables in order to make the appropriate openings in the mat.

Make the openings in the insulating mat using scissors or a wallpaper knife. All joints and cables supplying the heating film must be placed in the prepared recesses so that no element protrudes above the surface of the heating film.

Carefully check the arrangement of the cut-out openings in the insulating mat and make sure that all joints and electrical cables are below the level of the heating film.

CAUTION! When cutting the openings, take particular care not to damage the vapour barrier film located under the insulating mat.

Fixing the film to the underlay

- After laying and levelling the film – fix it with mounting tape,
- The tape should overlap the film by at least 10 mm.

Measurements and installation tests (mandatory)

The following are carried out:

- Measurement of the film resistance (ohmmeter) /according to the resistance table/
- Measurement of the NTC sensor resistance (20 kΩ)
- Heating test of the film strips
- Inspection with a thermal imaging camera

Mandatory documentation:

- photographs of the installation before covering,
- connection diagram,
- measurement card,
- warranty card.

Installation of the vapour barrier film

- Lay it overlapping, without creases,
- Tape it together with mounting tape,
- Cover the entire heating installation.

Floor installation

Final layers:

- Finishing layer (panel, board, LVT)
- Vapour barrier film
- **ergowave** heating film
- Insulating underlay
- Substrate (screed or other surface)

During installation, take care not to damage the film and the cables.

Installing the film on walls and ceilings

- Install the frame and insulation (mineral wool).
- Glue the films to the structure.
- Make the AX/BX connections and earth the frame.
- Place the NTC sensor directly next to the film.
- Cover with vapour barrier film.
- Install the plasterboard – take care not to pierce the film.

Installing the film behind a mirror

- Prepare a space for the cables and conduits.
- Make the film connections and insulation.
- Glue the film with double-sided tape to the rear surface of the mirror.
- Carry out measurements and a heating test.
- Glue the mirror with mounting adhesive (final start-up after full curing).

Final inspection and start-up

Mandatory:

- Measurement of the resistance of each film strip
- Measurement of current consumption
- Test inspection of heating
- Programming the thermostat according to the user's preferences
- Completion of the warranty card

Good practices:

1. Furniture arrangement

- Do not place appliances and furniture without legs on the floor, as they block the heat flow (e.g. refrigerator, washing machine, heavy chest of drawers).
- Furniture is safe if it has legs of min. 0 mm and a small base area.

2. Mattresses

- Do not use mattresses lying directly on the floor above the heating.
- Spring, pocket and air mattresses require a base of min. 3 cm so as not to block the heat.

3. Installation prohibitions

- Do not drill, screw into or pierce the floor where the heating film is located.
- Do not install additional insulation on the floor surface.

4. Operating temperature

- Panel manufacturers recommend a maximum floor temperature of 27°C.
- The safest operating temperature is 5–24°C.
- Use the thermostat in accordance with the instructions.

5. After flooding

- If the heating has been flooded with water — switch off the system.
- Switch it on again only after drying (to <2% RH) and inspection by an electrician.

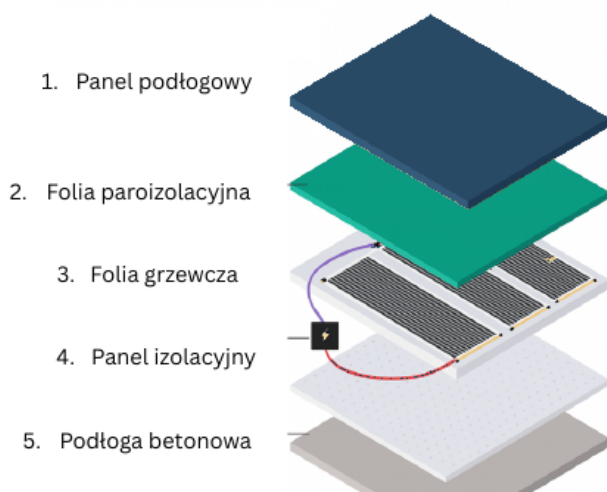
6. Humidity in the room

- Maintain humidity at a level of 50–60% RH — these are optimal operating conditions and a healthy climate.
- Avoid the room temperature dropping below 15°C so as not to increase humidity and cause mould growth.

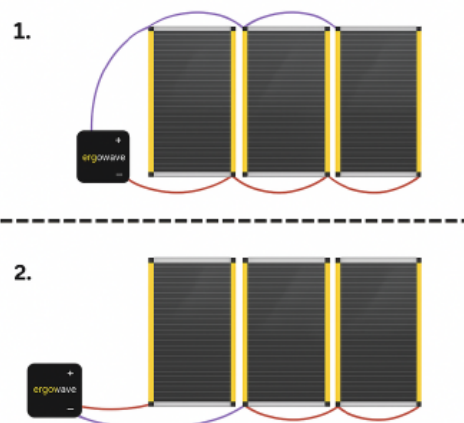
7. Documents

- Keep the instructions, the warranty card and the installation design — they will be useful for subsequent users.

Schemat warst w systemie grzewczym



Dwa schematy połączenia



INSTALLATION CHECKLIST – ergowave HEATING FILM

A. Preparation of the work area

- ☐ Power supply disconnected (fuses switched off).
- ☐ Substrate clean, level, stable and dry ($\leq 2\%$ humidity).
- ☐ No sharp elements on the installation surface.
- ☐ Installation temperature $\geq 5^{\circ}\text{C}$.
- ☐ Appropriate thermal insulation under the film planned.

B. Verification of the electrical installation

- ☐ Film output in accordance with the design.
- ☐ Total power of the film installation calculated.
- ☐ The electrical connection has adequate power (increased if necessary).
- ☐ Cross-sections of the supply cables selected according to the load.
- ☐ The installation has a dedicated electrical circuit.
- ☐ Overcurrent circuit breaker + RCD selected by a qualified electrician.

C. Installation plan

- ☐ Sketch of the room with dimensions prepared.
- ☐ Layout of the film strips planned.
- ☐ Film cutting points marked (factory cutting lines only).
- ☐ Routes of the supply cables planned.
- ☐ Installation location of the installation box determined.
- ☐ Location of the floor temperature sensor determined (without sunlight and the possibility of being covered).
- ☐ Installation location of the thermostat determined.

D. Underlay and installation conditions

- ☐ No underlays damaging the film were used (steel, aluminium).
- ☐ No absorbent underlays were used (paper, wood, cellulose).
- ☐ No metallised underlays were used.
- ☐ Underlay for panels approved for underfloor heating.
- ☐ No fixed fittings without clearance (min. 30 mm).

E. Installation of the heating film

- ☐ Cuts made only at the points designated by the manufacturer.
- ☐ No overlaps — the film strips do not overlap each other.
- ☐ Joints and cables placed in the prepared recesses of the insulating mat.
- ☐ All connection points insulated with self-amalgamating tape.
- ☐ Supply cables are NOT located on the film or under it.
- ☐ The film is not pierced, drilled through or damaged.
- ☐ No foreign objects left on the film (plaster, nails, rubble).

F. Floor installation

- ☐ Floor panels intended for underfloor heating.
- ☐ The floor finish is not susceptible to thermal deformation.
- ☐ No SPC panels with an unsuitable underlay were used.
- ☐ No panels with an integrated thermo-acoustic underlay were used.
- ☐ Panels laid carefully — film and vapour barrier undamaged.

G. Electrical work and start-up

- ☐ All connections made by an electrician with current authorisations.
- ☐ Resistance and cable continuity measurements carried out.
- ☐ Temperature sensor installed in the conduit, in the appropriate place.
- ☐ Thermostat programmed in accordance with the floor manufacturer's recommendations.
- ☐ Maximum floor temperature set (recommendation: $\leq 27^{\circ}\text{C}$).
- ☐ Safe operating temperature set ($5\text{--}24^{\circ}\text{C}$).

H. After installation

- ☐ The installation has not been flooded with water — in the event of flooding the system is switched off.
- ☐ Documentation (instructions + warranty card + sketch) has been handed over to the user.
- ☐ System ready for acceptance and use.

Plan of the heating film layout in the room



DECLARATION OF PERFORMANCE

The declaration of performance is issued by: **ergowave Sp. z o.o.**, 43-100 Tychy, Malinowa 14h, VAT ID (NIP):6463025040 | REGON:543175153, as the importer of the product:

Heating film -Type: 60W, 80W, 110W, 140W, 220W, 240W, 400W, Country of origin: CHINA

The importer declares that the above products are safe when used in the specified manner and that measures have been taken to ensure the conformity of all products placed on the market with the technical documentation, the essential requirements of the EU regulation applicable to them and the technical conditions required by the manufacturer.

1. The performance characteristics of this product comply with the technical requirements that apply to this product and that are set out in the relevant EU provisions or in other provisions.

2. The conformity test was carried out in accordance with: EMC Directive 2014/30/EU; LVD Directive 2014/35/EU; RoHS Directive 2011/65/EU

The following harmonised technical standards were applied when testing the electrical equipment:

EN60335-1:A14:2019 + A2:2019

EN 62233 :2008 + AC:2008

EN 55014-1-2017

EN 55014-2-2015 (Category II)

EN 61000-3-2:2019,

EN 61000-3-3-2013/A1:2019

EN62321-8:2017, EN 50581:2012

ergowave Sp. z o.o., Malinowa 14H, 43-100 TYCHY, POLAND

Place and date of issue of the declaration: Tychy. 01.02.2023

WARRANTY CARD

Warranty granted to

Warranty granted on

Invoice number / acceptance protocol

Project carried out by:

Installation carried out by:

Warranty conditions

1. The guarantor of the product quality is **ergowave Sp. z o.o.**
2. Faults should be reported directly to the installer who carried out the installation of the system.
3. The warranty covers defects arising through the fault of the manufacturer, revealed within the periods of:
 - 2 years – for heating films, provided that the installation complies with the instructions supplied with the product,
 - 25 years – for heating films installed by an installer certified by **ergowave**,
 - 2 years – for the remaining system components, including the thermostat,
 - the warranty for the installation service is granted by the installer carrying it out.
4. Unless the parties agree otherwise, the warranty is valid from the day the installation is commissioned, confirmed by an acceptance protocol.
5. Submission of a correctly prepared acceptance protocol is a condition for the warranty to be honoured.
6. A warranty claim will be handled within 30 working days from the date the complaint is submitted.
7. Unless the parties agree otherwise, inspection and examination of the complaint take place at the customer's premises if the product has already been permanently installed.
8. If it is found that **ergowave Sp. z o.o.** is not the distributor of the product complained about, or that the complaint is unfounded, the claimant shall bear the costs associated with the complaint verification process.
9. If the complaint is accepted, **ergowave Sp. z o.o.** undertakes to repair or replace the defective product.
10. The costs of repair or replacement constitute the sole scope of compensation under the warranty and do not include additional costs not directly related to remedying the defect.
11. The warranty becomes void in the following cases:
 - servicing carried out by persons not authorised by the distributor,
 - mechanical damage to the product,
 - incorrect power supply or one not in accordance with the recommendations,
 - damage resulting from flooding, fire, lightning strike or other fortuitous events (force majeure),
 - electrical installation carried out contrary to the applicable regulations and standards.

ergowave sp. z o.o. ul. Malinowa 14H, 43-100 Tychy, Poland, VAT ID (NIP):6463025040 | REGON:543175153

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