Novopan
Climate Floor
22 mm subfloor for underfloor heating

Installation manual

22 mm Climate Floor is used for renovation and new construction projects that require underfloor heating:

- Load-bearing subfloor on joists and beams
- Floating subfloor - see separate installation instructions

Read the instructions carefully before you start.

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Mounting 22 mm load-bearing Climate Floor

NOVOPAN CLIMATE FLOOR 22 MM - FOR NEW BUILDINGS AND RENOVATIO

Novopan Climate Floor EN 312 P6 comes with a cover size of 1800×600 mm. The floor board has cut grooves per 200 mm for aluminium heat emission plates and 16 mm heating pipes. The precise centre distance ensures fast and correct installation of heat emission plates and heating pipes for optimal heat distribution and heat utilisation over the entire floor surface. With a thickness of 22 mm, the floor board is a stable base for most floor coverings.

Load-bearing subfloor assembled on joists and beams

Climate Floor Boards are mounted on joists or beams with end supports and can be used for all floor applications in permanently heated rooms.

Load-bearing subfloor laid with floating joists

Climate Floor Boards are mounted on joists or beams with end joints between joists or beams (flying butt joints). Flying butt joints may ONLY be used in rooms with a maximum load of 2 kN, e.g. ordinary living spaces.

The constructions provide good opportunities to run pipes and electrical installations between joists or in the beam layer.

APPLICATION

Novopan Climate Floor EN 312 P6 is classified for use as a subfloor in permanently heated rooms with an annual relative humidity exceeding 65% for only a few weeks, i.e. in ordinary homes, offices and similar. Support and block spacing, see table 1.

MOISTURE BARRIER

A moisture barrier should always be installed on concrete ground and floor slabs to prevent moisture damage to joists and floors, e.g. at least 0.20 mm PE membrane. Moisture barriers must be CE labelled according to EN 13984.

The moisture barrier is laid with at least 50 mm overlap and must be taped over all joints. It should be carried along the walls and clamped/adhered behind the skirting boards.

Never place a moisture barrier on top of or between organic materials, e.g. never between the Climate Floor and wooden floors.

RADON SAFETY

Normally, a shrinkage-reinforced concrete slab is considered to be radon-proof. A sealed moisture barrier provides extra protection against radon ingress.

Before installing the moisture barrier, radon sealing must be carried out with a suitable radon foil at cold bridge breaks along the foundation, over expansion joints in the concrete slab and around pipe penetrations, adhered with butyl tape, see figures 1 and 2.

ALUMINIUM PANELS AND HEATING PIPES

Kronospan Climate Floors may only be installed with 5-layer PEX/PERT heating pipes with an internal oxygen barrier and heat emission plates with ohm-shaped grooves that match the grooves in the Climate Floors, e.g. Kronospan heating pipes and heat emission plates or equivalent from another recognised supplier.

Kronospan accepts no liability for defects and deficiencies, including creaking noises, where 3-layer PEX pipes, AluPex pipes or heat distribution plates with unsuitable profile and size have been used.

Novopan heat emission plates and 16 mm 5-layer PEX heating pipes are specially developed and adapted for 22 mm Climate Floors to provide the best heat distribution, see figure 3.

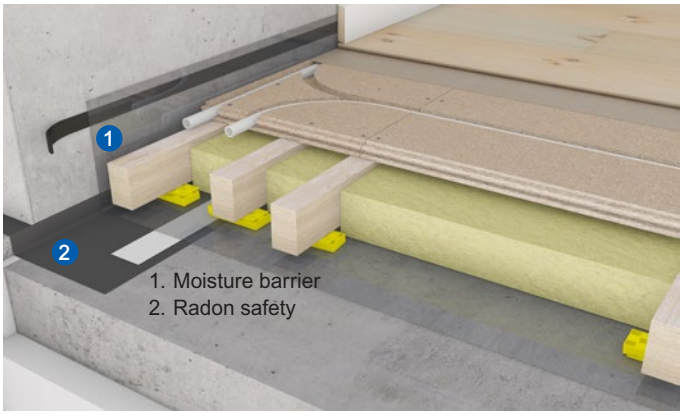

Figure 1 Climate Floor mounted on joists with turning panels, see also figure 4.

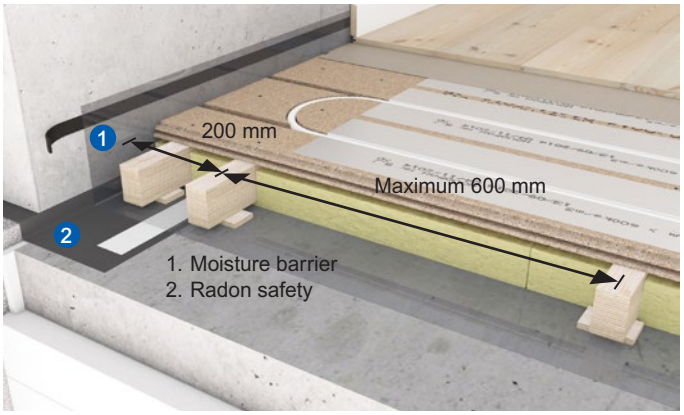

Figure 2 Climate Floor installed on joists with turning grooves cut at the construction site.

Figure 3 Heat emission plates for 16 mm heating pipes, groove spacing 200 mm cc.

MOUNTING CLIMATE FLOORS ON JOISTS AND BEAMS

Novopan Climate Floor installed on joists or beams with the right side up (the labelled side). The free edges of the particleboards against walls and openings must be supported on edge joists or beams.

Mounting with end supports on joists or beams

Where the floorboards are mounted with the end joints assembled in the middle of joists or beams, the centre distance between joists or beams can be up to 600 mm. The floor boards are placed in rows with an offset of one bay.

Mounting with flying joists

Where floorboards are assembled between joists or beams (flying butt joints), the centre distance between joists or beams can be up to 600 mm. The boards are laid with an offset of min. 300 mm. Flying joist installation may only be used in ordinary living spaces - maximum load 2 kN.

MOUNTING ON JOISTS AND BEAMS

All panel edges along walls must be supported by edge joists and turning grooves must be supported, see figures 1, 2 and 4.

Use and mounting of turning panels, see Kronospan turning panels mounting instructions.

Distribute the remaining joists with a centre distance as specified in table 1. Attach the joists to the chocks with screws or nails.

When mounting on beams where it is not possible to place an additional beam under the turning groove, the reinforcement can be a minimum 22×95 mm board screwed and glued to the underside of the Climate Floor.

Joists and beams must be dimensioned and supported correctly. It is recommended to use laminated joists (LVL joists) and glulam beams that are straight and with low moisture content. For maximum moisture content of joists and beams during installation, see page 6.

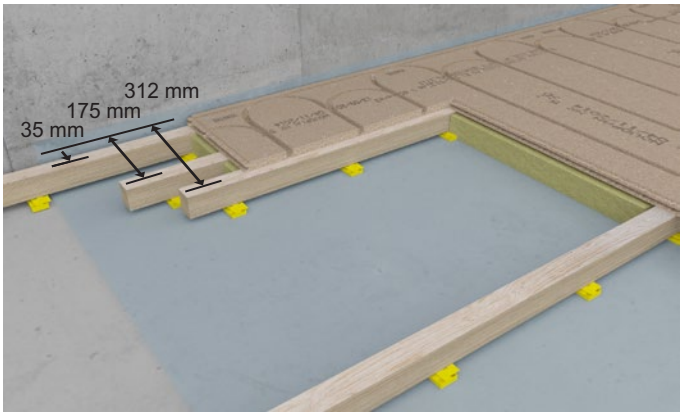

Figure 4 Climate Floor with edge joists 35 mm c-c from the wall and with extra joists under the turning grooves and under the joint between turning panels and floor boards, see installation instructions for Kronospan turning panels.
Where turning panels are not used, turning grooves must be cut in the Climate Floor after installation of the boards and the end grooves must be supported 200 mm from the wall, see figure 2.

CHOCKS

Support under joists can be done with plastic wedges, plywood pieces, hard wood fibre boards or similar. Plastic wedges and plastic towers must have proven durability and be dimensioned for the load.

Chocks are laid with a centre distance as specified in table 1. Wood-based chocks with soft chocks at the bottom must be at least 100×100 mm and secured against moisture with a base of e.g. asphalt cardboard.

Joists are fastened to the chocks with screws or nails.

EXPANSION JOINTS

To allow for expansion of the floor surface when exposed to moisture, keep a minimum distance of 12 mm from walls, columns and pipe penetrations. When installing floors over 15 metres, expansion joints of at least 15 mm are required. The expansion joint can be made in several ways, e.g. with aluminium profiles from MIGUA or similar.

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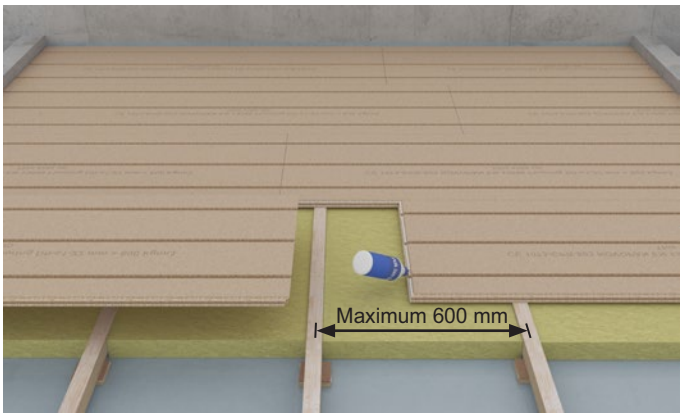

Figure 5 Climate Floor mounted with flying joists and an offset of end joints by at least 300 mm.

Table 1 Maximum support and blocking distances for subfloors on joists.

Application based on point load given for load categories A-D see National Annex to Eurocode 1, part 1-1.	Point load Q_k
	A: 2.0 kN Housing and internal access roads
Maximum joist spacing, c-c in mm	
Particleboard assembled with or without flying joists	600 mm
Maximum blocking distance - LVL floor joists with stiffness at least 10.000 MPa. *Joists, width × height in mm*	
40×39 mm LVL floor screed	500 mm
40×63 mm LVL floor joists	800 mm
45×95 mm Rafter timber	1270 mm

ADHESION

Glue is applied to the Climate Floor Boards when they are placed in position. For bonding in application class 1, a 1-component D3 PVAc adhesive is recommended. Approximately ¾ litres of adhesive should be used per 25 running metres. Gluing for damp joists/beams, see page 6.

Apply adhesive to both top sides of the tongue with a double glue spout, see figure 6. Apply enough glue so that it is visible in the joints. Remove excess glue. Follow the adhesive supplier's instructions carefully.

The glued Climate Floor Boards must cure for approximately 24 hours. During this period, the floor must not be loaded or trafficked.

ASSEMBLY AND FASTENING

Climate Floor Boards must be fixed to joists or beams with self-tapping screws with partial thread, see table 2. Number of screws per m^2: approx. 12 pcs.

The boards are screwed with a maximum spacing of 150 mm at all supported board edges and with 4 screws evenly spaced at all intermediate supports. Screws are countersunk 1-2 mm.

Table 2 Recommended fastening of 22 mm Climate Floor.

Sheet pile screw	4.5/5.0 × 60 mm
Plata-flex	4.2 × 55 mm

EXECUTION OF TURNING GROOVE

Turning grooves are made with a router, e.g. equipped with a land and pencil screw or profile guide, and 18 or 20 mm drill bit (or profile drill bit).

To hold the router, drill a hole Ø 6 mm, min. 250 mm from the wall and centre between 2 heat grooves. Cutting depth 18.2 mm.

Cutting turning grooves in every 2nd row, see figure 7 and *Fact sheet #5 Cutting turning grooves,* see www.kronospan.dk-dk. Turning grooves must be supported by an extra joist, see figure 2.

TURNING PANELS WITH TURNING GROOVES

Using turning panels instead of cutting turning grooves is faster, dust-free and reduces the risk of squeaking noises, see figures 1 and 4.

The use and mounting of turning panels is described in the *Kronospan Turning panels for 22 mm Climate Floor installation* instructions, see www.kronospan.dk-dk.

INSTALLING HEAT EMISSION PLATES

Thoroughly vacuum the floor boards and grooves before installing the heat distribution plates, see figure 8.

The heat emission plates can be installed standing up. Place the plate rebate in the groove and release the plate - it falls easily and freely into place. A light pressure with your foot fixes the heat emission plate in the floor board groove without using nails for fastening, see figure 9.

The nail-free retention reduces the risk of tension and dents in the aluminium plates. Mounting is easy and ergonomically correct, with no awkward, stressful working positions.

The heat emission plates are installed with a minimum distance of 10 mm between plate ends. The distance from the plate to the start of the turning groove must be at least 20 mm.

The installation of heating pipes and connections should be carried out by an authorised plumber, see page 5.

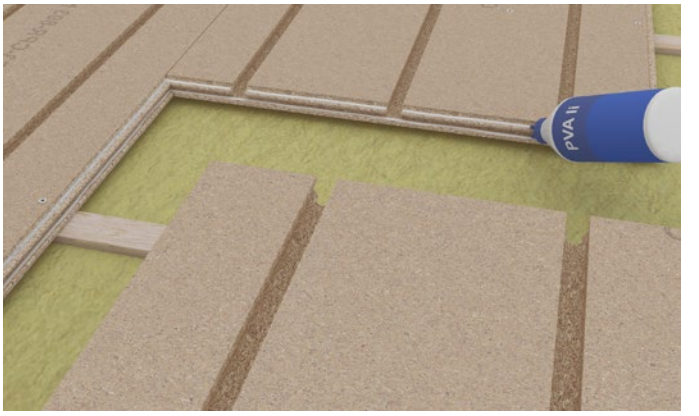

Figure 6 Glue generously on both upper sides of the tongue.

Figure 7 Cutting turning grooves in every 2nd row.

Figure 8 Careful cleaning prevents squeaking noises.

Figure 9 Heat emission plates can be laid standing up.

UNDERFLOOR HEATING

22 mm Climate Floors allow a zone size of up to 15-16 m^2. The heating pipes should be installed straight in the grooves to avoid tensions that can cause the pipes to rise in the turning grooves. The pipes are stepped into the aluminium plate grooves as the pipes are laid, see figures 10 and 11.

HEAT EMISSION PLATES

Kronospan heat emission plates are developed and customised specifically for 22 mm Climate Floors with grooves for 16 mm heating pipes.

Dimensions: 1150 × 180 × 0.45 mm with ohm-shaped groove. Consumption: 3.7 pieces per m^2 at approx. 70-80% coverage of the floor area.

Remember: Heat emission plates must be installed at least 10 mm apart and at least 20 mm from the turning groove track to avoid squeaking noises.

HEAT PIPES AND HEAT MANAGEMENT

Always use 5-layer PERT/PEX heating pipes with internal oxygen barrier, see page 2. Consumption of heating pipes: 5.4 metres per m^2.

Install insulated ø 25 mm CONDUIT tubes under the floor between the 1st and 2nd joist for the inlet and outlet of the heating pipes for the underfloor heating, see figure 11.

The shunt control of the flow must be established during the construction period and when using underfloor heating to dry out any construction moisture, and set to a moderate flow temperature to avoid drying damage to wooden floors and other building components. Max 27 °C on the floor surface.

Figure 10 Mounting the heating pipe.

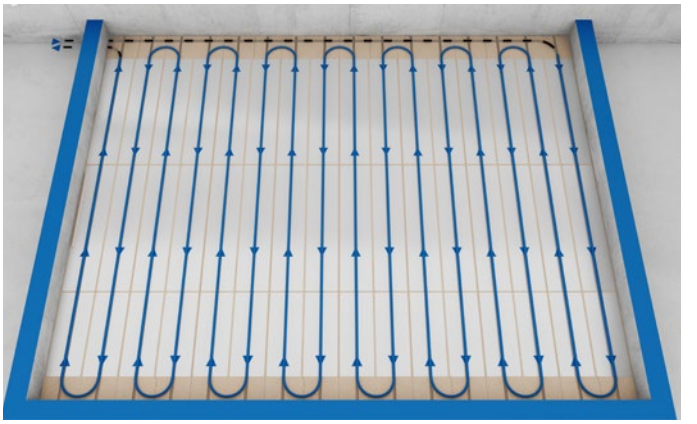

Figure 11 Inlet and outlet for underfloor heating pipes (dotted).

MOUNTING A WOODEN FLOOR OR UNDERLAY FOR CARPETS ETC.

After mounting the heat emission plates and heating pipes, lay cardboard, at least 500 g/m^2, over the entire floor surface as an underlay for wooden floors or pressure-distributing subfloor plates to prevent rattling and squeaking noises between the Climate Floor and the floor covering, see figure 12.

ENGINEERED WOOD FLOORING - MINIMUM 12 MM

The engineered wood flooring is laid floating on top of the Climate Floor, parallel or perpendicular to the heating coils, see figure 12.

Note: Some wood flooring suppliers require an interlayer board as a flat base - please contact your flooring supplier.

FLOORS BELOW 12 MM, CARPETS, VINYL, ETC.

Floating wood and laminate floors thinner than 12 mm, as well as thin wood and laminate floors, vinyl and similar carpets that are fully adhered, must always be installed on an underlay of 12 or 16 mm particleboard, glued in tongue and groove, and screwed to the Climate Floor.

The boards are laid in rows - either parallel to the pipes or perpendicular to them - so that the joints are staggered at least 300 mm in relation to the joints in the Climate Floor.

The Particleboards are fixed to the Climate Floor with 3.5 × 35 mm screws placed in the centre of the space between the grooves in the Climate Floor, see *Fact Sheet #17.* After fixing, the floor boards are sanded flat as needed.

Alternatively, 2.8 mm or 6 mm wood fibre boards can be used as a pressure-distributing underlay under carpets and thin floating click floors if the joist spacing is also reduced to 450 mm, see *Fact Sheet #17.* Wood fibre boards must not be used as an underlay under fully adhered coverings.

For more information on installation, see the section Advice on 22 mm Climate Flooring, page 6

Figure 12 Cardboard should always be laid between heat emission plates and subfloor plates and between subfloor plates and wooden floors to prevent rattling and creaking noises.
Where subfloor boards are screwed to the climate floor, the screws must be placed as shown in Fact Sheet #17 Spacers for Climate Floors.

FULLY ADHERED PARQUET STRIPS

See *Fact Sheet #13* at www.kronospan-dk.dk

CERAMIC FLOOR COVERINGS IN DRY ROOMS

See *Factsheets #2* and *#18 at* www.kronospan-dk.dk

PRODUCT DATA

Novopan Climate Floor 22 mm has a double profile on 4 sides. This ensures strong and durable joints. The floor boards fulfil the strength and stiffness requirements according to EN 312 P6. The classification can be seen on the labelling on the top of the chipboard.

Room type/ application class	Construction type	Product type	Board thickness mm	Cover dimensions	Classification	
					EN	FIRE
Heated rooms Application class 1	Load-bearing on joists or beams	Novopan Climate Floor	22	1800 × 600	312 P6	D_{fl}-s1

Application class 1

EN 312 P6 is the classification for particleboard for use in permanently heated rooms with an annual relative humidity that only exceeds 65% for a few weeks - e.g. general residential use.

Heat emission plates

The aluminium heat emission plates are specially developed and adapted for 22 mm Climate Floor with ohm-shaped groove for 16 mm heating pipes. Dimensions: 1150 × 180 × 0.45 mm. The heat emission plates are delivered in packs of 42 pieces.

ADVICE ON 22 MM CLIMATE FLOORS

During the construction period

- Before mounting Climate Floor, all masonry and plastering work must be completed and the building must be dried out of construction moisture, heated and ventilated.
- Chipboard must always be acclimatised, unpackaged, for approximately 1 week before installation in the room where it will be laid.
- Avoid traffic on the floor during installation and do not use the Climate Floor as a work floor.

Insulation and moisture barrier

- Check that the structure is protected against rising damp. If there is a risk of moisture and when renovating moisture-laden ground and floor slabs, solutions should be carried out in consultation with a moisture specialist.
- If there is a risk of construction moisture affecting joists, blocking and floors, an effective moisture barrier must be installed, e.g. 0.20 mm PE membrane, CE labelled according to EN 13984, with at least 50 mm overlay and taped joints.
- To ensure the correct placement of insulation and moisture barrier, e.g. at pipework, see supplier instructions.

Before mounting floor coverings

- The floor structure must be in moisture balance with the indoor climate - i.e. the moisture in the particleboard must not exceed approx. 8% - when the floor covering is fully bonded to it.
- Moisture content in joists: maximum 10 ± 2%.
- Moisture content in solid beams: maximum 13 ± 2%.
- The underfloor heating must be connected and in operation 1-2 weeks before mounting the finished floor so that construction moisture in the floor structure has dried out.

Subfloors for heavy loads

For subfloors in e.g. kindergartens, nursing homes, offices etc. the screed structure must be installed according to the Novopan Spaandex K floor installation instructions.

Fastening and mounting of top flooring

- Wood floors should be placed on e.g. 500 g/m² cardboard to avoid rattling noises.
- Plank floors, engineered parquet and parquet floors should be fastened to the Climate Floor with screws.
- Where interlayer boards are screwed to Climate Floor, see figure 12, as an underlay for thin floor coverings such as vinyl, there is a risk of marking joints and screw holes in the covering. Therefore, all board joints should be sanded. Screw holes should never be filled.

Bonding to wet joists/beams

- Where the moisture content of joists and beams exceeds 13-15%, it is always recommended to glue the Climate Floor to the joists/beams.

Moisture protection

The finished subfloor must be protected from drying out and moistening with e.g. PE membrane until the floor covering is installed.

Handling, transport and storage

Climate Floor Boards should be handled so that edges and surfaces are not damaged. The boards should be stored in a dry place on a flat surface. Particleboards must always be protected from moisture. Manual transport and panel lifting must be carried out by 2 people in accordance with current lifting guidelines.

- When transporting and lifting floor boards: Wear work gloves for handling, category 2 according to EN 388.
- When machining floor boards: Wear protective goggles and respiratory protection.

Climate Floor 620 × 1820 × 22 mm weighs 17 kg.

Quality assurance

All kronospan particleboards are manufactured under the supervision of Dancert, see www.kronospan-dk.dk

DISCLAIMER OF LIABILITY

Novopan Climate Floor is intended for use in rooms where underfloor heating is installed. The instructions do not include any decision on the choice of underfloor heating, design or installation of the underfloor heating system, and Kronospan accepts no responsibility for this. Novopan Climate Floor is manufactured under careful quality control. Kronospan products are under continuous development and the technical specifications are subject to change. Please also refer to the applicable terms of sale and delivery. The latest version is always available at kronospan-dk.dk

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