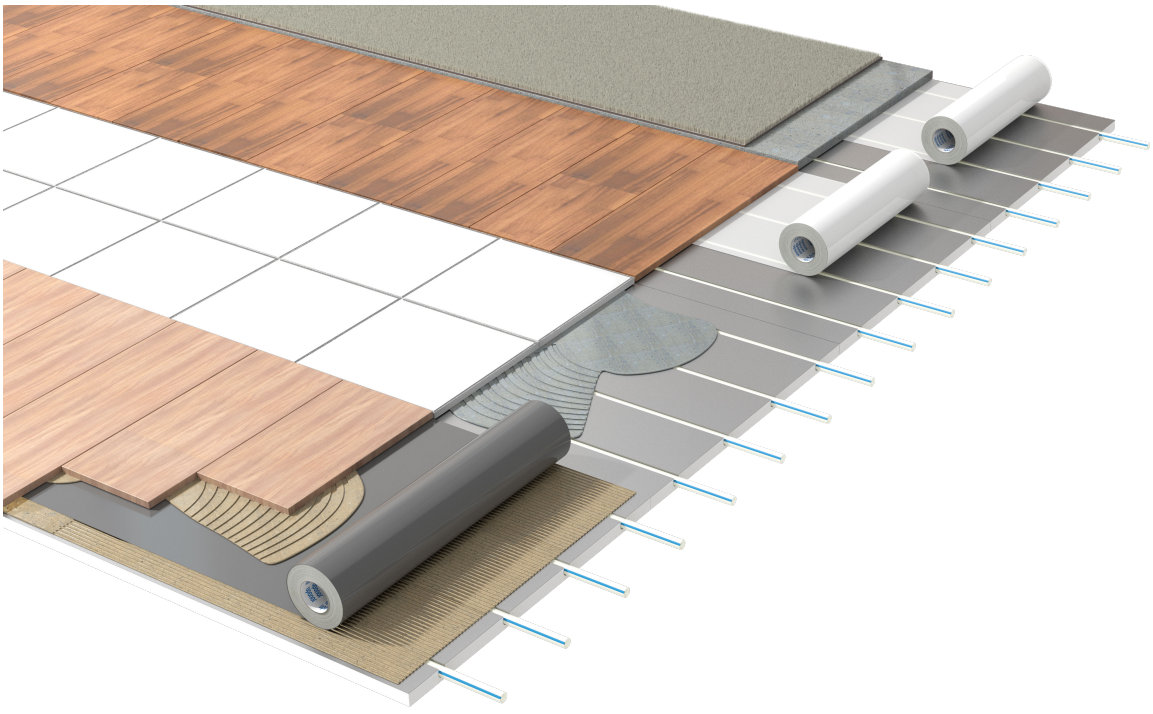
Uponor Siccus Mini

EN Technical information



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1 System description

The Uponor Siccus Mini is a dry underfloor heating and cooling system suitable for modernising residential buildings. The system offers low-height floor construction by providing complete underfloor heating with a minimum number of components and can be used on different subfloors.

Two sophisticated components: The Uponor Siccus Mini is a combination of low height underfloor heating and cooling panel with heat-conducting surface and Uponor Minitec Comfort Pipe. This system enables direct flooring without screed for parquet, laminate, tiles and soft floorings such as carpets and vinyl.

Flexible to use and easy to cut: The Siccus Mini installation panel is equipped with built-in pipe guide channels that securely hold the Uponor UFH pipes. This panel is highly adaptable and comes pre-fitted with channels in the "head area" to allow for any necessary pipe passage. This process is known as butt-joint installation.

This installation method allows the panels to effortlessly adapt to different floor constructions. If additional channels are needed for creating specific loop shapes, they can be easily cut out using an electric PS cutting tool. Furthermore, the Siccus Mini panel includes three extra channels on one side to facilitate additional loops for feeding pipes.

Install directly on a level floor: For floating laminate, parquet flooring, or carpet and vinyl over dry screed, install the Siccus Mini panels directly on the level subfloor, adding extra insulation if needed. Make sure the subfloor meets the dimensional tolerances specified in EN 18202, Table 3. Then, install the Uponor heating pipes with a spacing of 100 mm.

For ceramic tiles, natural stone or wooden flooring, glue the Siccus Mini panels to the subfloor, following the adhesive provider's technical specifications. Additionally, glue edging support around the perimeter of the rooms and doorways.

1.1 Benefits

- Optimised energy efficiency
- Direct flooring without additional screed option
- No waiting time for final flooring
- No coordination of multiple trades
- Ceramic tiles, natural stone and wooden flooring can be directly installed under specified conditions and technology
- Optimized hydraulic performance of UFH systems, ideal for both renovations and new constructions
- Fast installation on a compatible base floor with no waiting time for the final flooring

1.2 Components

Note

For more detailed information, product range and documentation, please visit the Uponor website: www.uponor.com.

Note

For detailed information about the product range, dimensions and availability, please refer to the Uponor price list.

Uponor Siccus Mini panel

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The Uponor Siccus Mini panel is an EPS400 panel grade 400kpa with dimensions 1200 x 600 x 15 mm and can be installed on top of the existing floor. The prefabricated panel is integrated with pipe grooves with a fixed pipe spacing of 100 mm.

The prefabricated aluminium foil of thickness 0,2 mm applied on top of the panel ensures a uniform heat distribution. The panel does not require an additional heat emission plate.

A live load up to 7,5 kN/m^2.

Uponor Siccus Mini edge support

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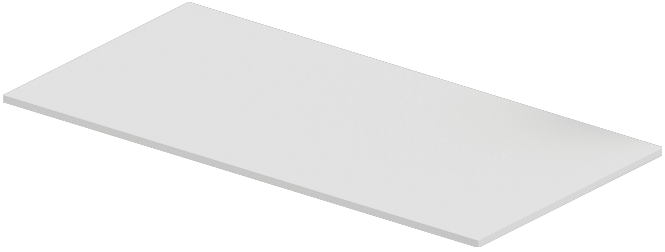
The Uponor Siccus Mini edge support is a MDF strip with dimensions 1000 x 45 x 15 mm and is ideal for installing on the wall sides and in doorways. The edge support is only used for tiles or natural stone and wooden flooring installations, not for direct parquet or laminate flooring installations.

Uponor Multi insulation panel



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The Uponor Multi insulation panel is an EPS 400 thermal insulation panel with dimensions 1250 x 600 x 15 mm. The panel is ideal for use in front of a manifold, allowing for easier installation of heating pipes.

Uponor Siccus PS Cutter

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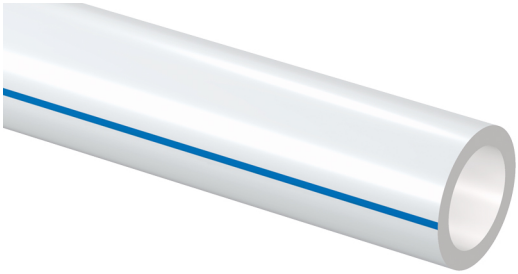
The Uponor Siccus PS Cutter is a thermal cutting tool for EPS/XPS, designed without a head and compatible with Siccus head in size 16 mm. The cutter operates at 230V and 50/60Hz.

Uponor Minitec Comfort Pipe



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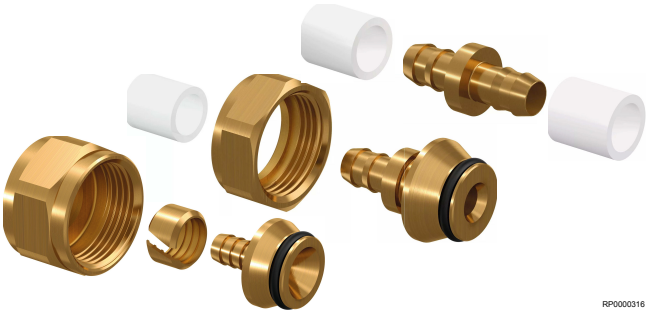
The Uponor Minitec Comfort Pipe is a highly flexible PE-Xa pipe in dimension 9,9 x 1,1 mm.

The pipe fulfils the requirements for oxygen diffusion tightness as per DIN 4726.

Uponor jointing technology

Note

Only use fittings recommended by Uponor or its representatives.



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Compression, Press, and Q&E joints are available to connect with respective pipes.

1.3 Copyright and disclaimer

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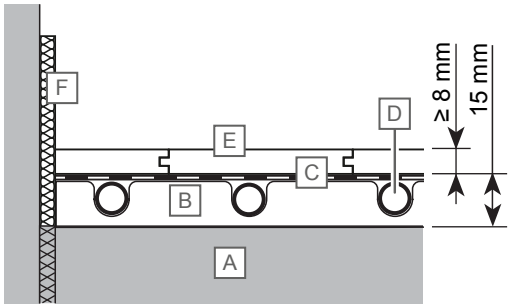
2 Planning/design

2.1 Floor constructions

Depending on the surface type, three installation methods are generally possible (for installing the Siccus Mini system refer to and follow the instructions given in the Uponor installation manual).

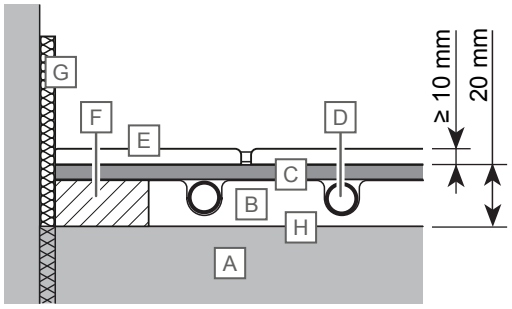
1. **Floating floor installation - parquet/laminate:** It is essential to make sure that a separation layer is installed between the floor and Siccus Mini panels.
2. **Install tiles/natural stone or wooden floor:** Glue the tiles/ natural stone or wooden floor directly to the Siccus Mini panels.
3. **Install carpet/vinyl or other floor:** A load-bearing subsurface, for example gypsum board, must be installed.

Parquet/laminate design



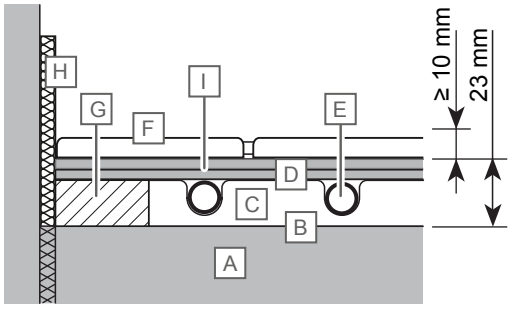
Item	Description
A	Existing floor
B	Uponor Siccus Mini panel
C	Uponor Multi PE foil
D	Uponor UFH Pipe (9,9 x 1,1 mm)
E	Parquet/laminate
F	Uponor Minitec edging strip

Tiles/natural stone design



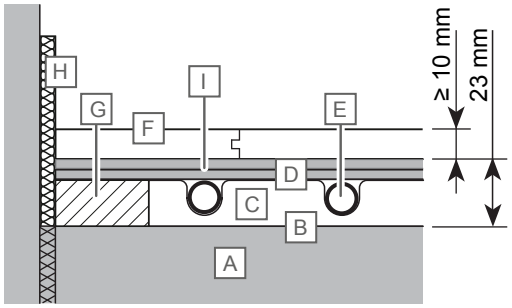
Item	Description
A	Existing floor
B	Uponor Siccus Mini panel
C	Primer + adhesive
D	Uponor UFH Pipe (9,9 x 1,1 mm)
E	Tiles/natural stone
F	Uponor Siccus Mini edge support
G	Uponor Minitec edging strip
H	Panel adhesive

Wet room design



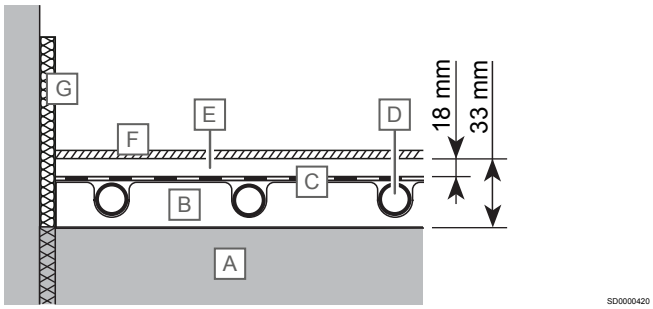
Item	Description
A	Existing floor
B	Panel adhesive
C	Uponor Siccus Mini panel
D	Primer + two-layer adhesive with a waterproof mat (I) in between
E	Uponor UFH Pipe (9,9 x 1,1 mm)
F	Tiles/natural stone
G	Uponor Siccus Mini edge support
H	Uponor Minitec edging strip
I	Waterproof mat

Wooden design



Item	Description
A	Existing floor
B	Panel adhesive
C	Uponor Siccus Mini panel
D	Primer + two-layer adhesive with a coupling mat (I) in between
E	Uponor UFH Pipe (9,9 x 1,1 mm)
F	Wooden floor
G	Uponor Siccus Mini edge support
H	Uponor Minitec edging strip
I	Coupling mat

Carpet/vinyl or other coverings design



Item	Description
A	Existing floor
B	Uponor Siccus Mini panel
C	Uponor Multi PE foil
D	Uponor UFH Pipe (9,9 x 1,1 mm)
E	Load distribution layer[1)]
F	Carpet/vinyl or other coverings
G	Uponor Minitec edging strip

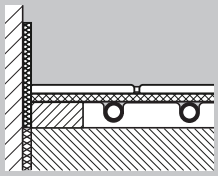
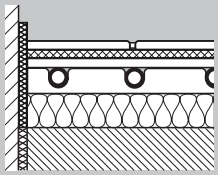
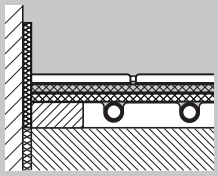
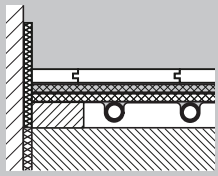
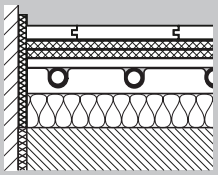
1) Refer to the Knauf Hugo 18 or Mapei Mapetex.

Floor construction tables

As a result of combining insulations, the following constructions comply with the European minimum insulation requirements (refer to EN 1264-4 or EN 15377) for residential and non-residential buildings.

Additional planning information for special insulation requirements and different ceiling types, it is necessary to make sure that the construction adheres to DIN 4109 standards.

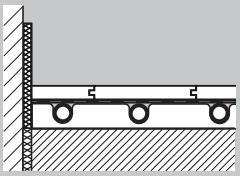
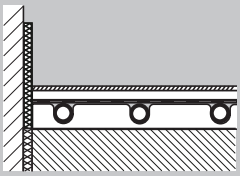
Direct gluing of the floor covering

	Tiles/natural stone		Tiles/natural stone in wet rooms	Wooden floor	
	Without load distribution layer	With load distribution layer	Without load distribution layer	Without load distribution layer	With load distribution layer
					
Direct flooring without insulation	- Tiles/natural stone - Adhesive[2)] - Uponor Siccus Mini panel - Adhesive[2)]	-	- Tiles/natural stone - Adhesive[2)] - Coupling mat[2)] - Adhesive[2)] - Uponor Siccus Mini panel - Adhesive[2)]	- Wooden floor - Adhesive[2)] - Coupling mat[2)] - Adhesive[2)] - Uponor Siccus Mini panel - Adhesive[2)]	-
Thermal insulation	-	- Tiles/natural stone - Load distribution layer[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel - Insulation EPS-DEO/XPS/PUR	Insulation is possible, but only when combined with the load distribution layer[1)]	-	- Wooden floor - Load distribution layer[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel - Insulation EPS-DEO/XPS/PUR
Sound insulation	-	- Tiles/natural stone - Load distribution layer[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel - Insulation Knauf WF (wood fiber)[1)]	Insulation is possible, but only when combined with the load distribution layer[1)]	-	- Wooden floor - Load distribution layer[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel - Insulation Knauf WF (wood fiber)[1)]
Additional insulation CS (10) (KPa)/ height (mm)	-	EPS-DEO: ≥ 100 / ≤ 50 XPS: ≥ 400 / ≤ 50 PUR: ≥ 150 / ≤ 50 Wood fiber: ≥ 150 / ≤ 10	-	-	EPS-DEO: ≥ 100 / ≤ 50 XPS: ≥ 400 / ≤ 50 PUR: ≥ 150 / ≤ 50 Wood fiber: ≥ 150 / ≤ 10
Height of covering	Tiles ≥ 10 mm Natural stone ≥ 10 mm	[1)]	Tiles ≥ 10 mm Natural stone ≥ 10 mm	Wooden floor ≥ 10 mm	[1)]
Tiles/natural stone format	Tiles 100 - 600 mm Natural stone 100 - 600 mm	[1)]	Tiles 100 - 600 mm Natural stone 100 - 600 mm	-	[1)]
Live load/point load	2,0 kN/m² or 2,0 kN	2,0 kN/m² or 1,0 kN[1)]	2,0 kN/m² or 2,0 kN	2,0 kN/m² or 2,0 kN	2,0 kN/m² or 1,0 kN[1)]

1) Refer to the Knauf Hugo 18 or Mapei Mapetex.
2) For Mapei adhesive system, see Chapter: Direct flooring with tiles.

- Use a maximum of one additional layer of insulation under Uponor Siccus to prevent "stacking" of insulation tolerances.
- Do not use soft insulation materials, such as mineral fiber.
- Observe the maximum allowable temperature for the heating layer, particularly for load distribution layer such as gypsum.
- For live loads over 2 kN/m² and/or high point loads, contact the load distribution layer manufacturer and obtain their approval.
- Refer to the Knauf technical installation guide for tile size specifications.

Floating floor covering

	Click parquet/laminate	**All coverings**
	Without load distribution layer	**With load distribution layer**
		
Direct flooring without insulation	- Click parquet/laminate - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel	- All coverings - Load distribution layer[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel
Thermal insulation	- Click parquet/laminate - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel - Insulation XPS	- All coverings - Load distribution layer[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel - Insulation EPS-DEO/XPS/PUR
Sound insulation	- Click parquet/laminate - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel - Insulation Knauf WF (wood fiber)[1)]	- All coverings - Load distribution layer[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus Mini panel - Insulation Knauf WF (wood fiber)[1)]
Additional insulation CS (10) (KPa)/ height (mm)	XPS: ≥ 400 / ≤ 50	EPS-DEO: ≥ 100 / ≤ 50 XPS: ≥ 400 / ≤ 50 PUR: ≥ 150 / ≤ 50 Wood fiber: ≥ 150 / ≤ 10
Height of covering	Parquet ≥ 12 mm Laminate ≥ 8 mm	[1)]
Tiles/natural stone format	-	[1)]
Live load/point load	2,0 kN/m² or 2,0 kN	2,0 kN/m² or 1,0 kN[1)]

1) Refer to the Knauf Hugo 18 or Mapei Mapetex.
2) For Mapei adhesive system, see Chapter: Direct flooring with tiles.

- Use a maximum of one additional layer of insulation under Uponor Siccus to prevent "stacking" of insulation tolerances.
- Do not use soft insulation materials, such as mineral fiber.
- Observe the maximum allowable temperature for the heating layer, particularly for load distribution layer such as gypsum.
- For live loads over 2 kN/m² and/or high point loads, contact the load distribution layer manufacturer and obtain their approval.
- Refer to the Knauf technical installation guide for tile size specifications.

2.2 Load-bearing subsurface

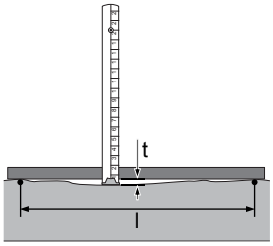
When installing on wooden beam ceilings or existing floor coverings, it's essential to make sure the level subsurface, especially for dry screed panels. If the subsurface is not level, a leveling layer will be necessary. If there are any uncertainties, it is advisable to consult the manufacturer of the dry screed panels. Additionally, consider the requirements for thermal and impact sound insulation during the floor construction process.

Three methods of leveling layers on the subsurface:
If the load-bearing subsurface does not meet the necessary levelness tolerances, a leveling layer is necessary to level the surface. This applies to both wooden and concrete ceilings in both new and existing buildings. For instance, damaged floorboards in older buildings may need repair, depending on their condition.

Before taking any action, make sure that the floorboards are "healthy," securely fastened, and capable of bearing load. Uneven areas can sometimes be addressed by re-screwing the floorboards, and any cracks or knotholes should be repaired.

Only after these conditions are met you can proceed with installing the Siccus Mini panels. Depending on the required leveling height, the following subsurface leveling methods can be used:

Supporting subsurface:
The supporting subsurface provides the foundational base for the Siccus Mini system. The installer is responsible to examine the subsurface's suitability and evenness, and make sure it is free from hollows and weak points. The subsurface must be dry, with any uneven areas, pipes, cables, etc., removed, and all cracks properly filled. The evenness tolerances of the supporting subsurface must obey DIN EN 18202.



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Item	Value				
l (m)	0,1	1	4	10	15
t max. (mm)	1	3	9	12	15

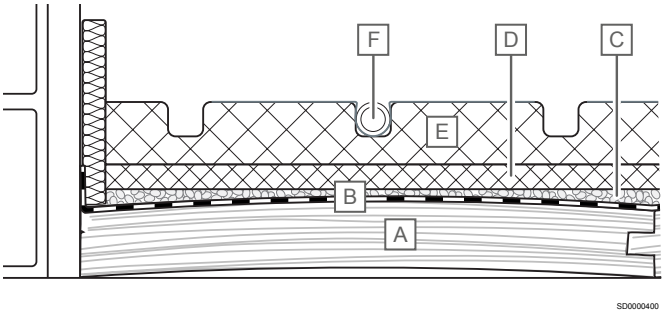
For parquet/ laminate flooring, wooden beam construction with a max. deflection of 1/500 is permitted.

Make sure that the wooden beam construction is in proper condition. Consult and involve professional expertise when necessary.

Sealed dry fill with a cover panel

Caution!

Subsurface conditions: cover panel usage and the self-levelling compound must be thoroughly validated by expert examination to make sure the quality, stability, and safety before installing the Siccus Mini system.



SD0000400

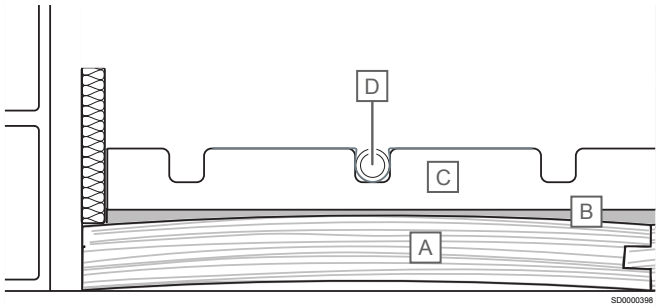
Item	Description
A	Timber joist floor
B	Moisture barrier
C	Self levelling compound
D	Cover panel (refer to manufacturer specifications)
E	Uponor Siccus Mini panel
F	Uponor UFH Pipe (9,9 x 1,1 mm)

Based on the requirements, install a protective layer, for example bitumen paper, over the renovated floorboards and extend it up the walls. If the basement floor has not sufficient insulation or the concrete ceilings are not fully dry, a moisture barrier film must be installed to prevent moisture from rising. The thickness of the leveling layer must be decided in consultation with the manufacturer. Afterward, the floor must be covered with panels for safe walking during the installation of surface heating and the load distribution layer.

Leveling filler

Caution!

Subsurface conditions: the levelling filler specifications must be thoroughly validated by expert examination to make sure the quality, stability, and safety before installing the Siccus Mini system.



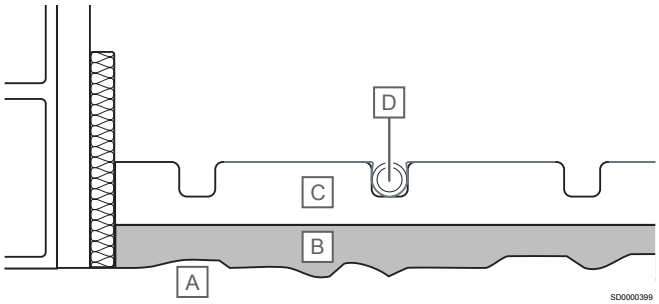
SD0000398

Item	Description
A	Timber joist floor
B	Levelling filler
C	Uponor Siccus Mini panel
D	Uponor UFH Pipe (9,9 x 1,1 mm)

Uneven concrete ceiling with a leveling screed

Caution!

Subsurface conditions must be thoroughly validated by expert examination to guarantee quality, stability, and safety before installing the Siccus Mini system.



SD0000399

Item	Description
A	Concrete floor
B	Levelling screed
C	Uponor Siccus Mini panel
D	Uponor UFH Pipe (9,9 x 1,1 mm)

Anhydrite flow screed or synthetic quick-setting screeds are suitable for this application. Obey and follow the manufacturer’s guidelines regarding readiness for installation, including remaining moisture levels in the leveling layer and any requirements for primers or bonding agents on the rough ceiling. Additionally, consider the extra weight load on lightweight ceiling structures.

2.3 Direct installation method for tiles/natural stone/wooden floor

The direct floor installation method with tiles, natural stone or wooden floor on Uponor Siccus Mini has been thoroughly tested through type testing in collaboration with Mapei.

The table below present the subsurface constructions and the corresponding Mapei primer and adhesive components:

Dry rooms

Floor construction		Primer	Adhesive Mortar/ several suggestions for standard bonding	Adhesive Mortar/ several suggestions for quick bonding	Additional components
1) Adhesive to install Uponor Siccus Mini panel and Uponor Siccus Mini edge support on subsurface					
Absorptive Subsurface	Cement	Primer G Primer G Pro Eco Prim T Plus	Ultralite S1 Flex ZERO Ultralite S2 Flex Keraflex Maxi S1 ZERO	Ultralite S1 Flex Quick Ultralite S2 Quick Keraflex Quick S1 Keraquick Maxi S1 Ultrabond Eco P16 (for ideal levelled cement floors)	-
	Anydrate	Eco Prim T Plus	Ultralite S1 Flex ZERO Ultralite S2 Flex	Keraflex Quick S1 Keraquick Maxi S1 Ultralite S1 Flex Quick Ultralite S2 Flex Quick	-
Non-absorptive Subsurface	-	Ultracare HD Cleaner	Ultrabond Eco PU 2K Ultrabond Eco S955 1K	-	-
2.1) Direct flooring of ceramic/natural stone on Uponor Siccus Mini panel and Uponor Siccus Mini edge support Tiles size: 250 x 250 mm till 600 x 600 mm					
	-	Eco Prim Grip Plus	Ultralite S2 Flex Ultrabond Eco PU 2K	Ultralite S2 Flex Quick	-
For applications with thinner layer requirements	-	-	Kerabond T with Isolastic	-	-
2.2) Joints between tiles					
	-	Minimum joint width of 3 - 4 mm, depending on tile size with MAPEI Ultracolor Plus or Kerapoxy Easy Design. Mapesil LM, Mapesil Tile Matt or Mapesil Stone Matt.			-
3) Direct flooring of wooden floor on Uponor Siccus Mini panel and Uponor Siccus Mini edge support 2 layers of adhesive must be applied					
1st layer of adhesive	Primer not recommended	Ultrabond P902 2K Ultrabond P 913 1K Plus Ultrabond Eco P909 2K			-
Coupling mat	-	-			Mapesonic CR applied using a 1 mm toothed trowel with Ultrabond ECO P90 9 2K or any of Mapei's two-component parquet adhesives
2nd layer of adhesive	Primer not recommended	Ultrabond P902 2K Ultrabond P 913 1K Plus Ultrabond Eco P909 2K			-

Wet rooms

Floor construction		Primer	Adhesive Mortar/ several suggestions for standard bonding	Adhesive Mortar/ several suggestions for quick bonding	Additional components
1) Adhesive to install Uponor Siccus Mini panel and Uponor Siccus Mini edge support on subsurface					
Absorptive Subsurface	Cement	Primer G Primer G Pro Eco Prim T Plus	Ultralite S1 Flex ZERO Ultralite S2 Flex Keraflex Maxi S1 ZERO	Ultralite S1 Flex Quick Ultralite S2 Quick Keraflex Quick S1 Keraquick Maxi S1 Ultrabond Eco P16 (for ideal levelled cement floors)	-
	Anydrate	Eco Prim T Plus	Ultralite S1 Flex ZERO Ultralite S2 Flex	Keraflex Quick S1 Keraquick Maxi S1 Ultralite S1 Flex Quick Ultralite S2 Flex Quick	-
Non-absorptive Subsurface	-	Ultracare HD Cleaner	Ultrabond Eco PU 2K	Ultrabond Eco P16	-
2) Direct flooring of ceramic/natural stone on Uponor Siccus Mini panel and Uponor Siccus Mini edge support Tiles size: 250 x 250 mm till 600 x 600 mm					
1st layer of adhesive	-	Ultrabond Eco PU 2K or Adesilex G19			-
Waterproof membrane					Mapeguard UM 35 or Mapeguard WP 200 Bonding of waterproof membrane: Mapeband W or Mapeband EASY Mapeguard WP For seal expansion joints: Mapesil LM or Mapesil Tile Matt
2nd layer of adhesive	-	Keraflex Maxi S1 ZERO or Keraflex Quick S1 (happy version)			-
3) Joints between tiles					
Fill the joints minimum 4 mm	-	Ultracolor Plus (color is your choice) or Kerapoxy Easy Design			-

Observe and read Mapei technical documentation.

2.4 Dimensioning diagrams

Bathrooms, showers, toilets and the like are excluded when determining the design flow temperature.

The limit curves must not be exceeded.

$\triangle\vartheta_{H,G}$ is found through the limit curve for the occupied zone with the smallest pipe spacing.

The design supply water temperature maximum must be:
$\triangle\vartheta_{V,des} = \triangle\vartheta_{H,G} + \triangle\vartheta_i + 2.5$ K.

In cooling mode the supply water temperature depends on the dew point temperature, therefore a humidity sensor has to be installed.

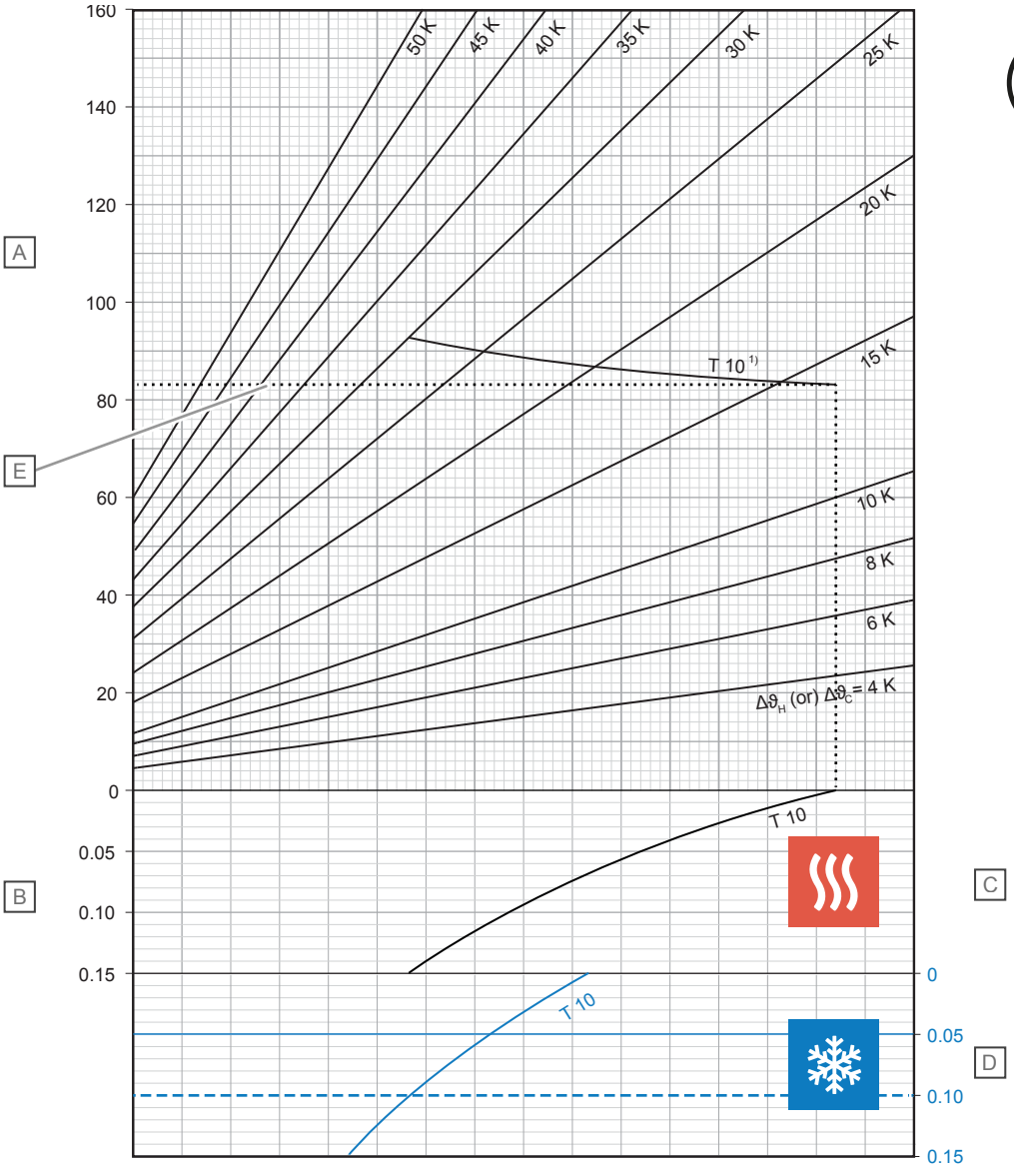
The following diagrams results are accurate and in accordance with EN 1264.

Abbreviations

These abbreviations are used in the following diagrams:

Abbreviations	Unit	Description
$A_{F,max}$	m^2	Maximum surface area of the heating/ cooling area
q_c	W/m^2	Specific thermal output of embedded cooling systems
q_{des}	W/m^2	Design specific thermal output of floor heating systems
$q_{G,max}$	W/m^2	Maximum limit of specific thermal output of floor heating systems
q_H	W/m^2	Specific thermal output of embedded heating systems, excluding floor heating
q_N	W/m^2	Standard thermal output of floor heating systems
$R_{\lambda,B}$	m^2 K/W	Thermal resistance of floor covering effective thermal resistance of carped covering
$R_{\lambda,ins}$	m^2 K/W	Thermal resistance of thermal insulation
s_u	mm	Thickness of the layer above the pipe
T	cm	Pipe spacing
$\vartheta_{F,max}$	°C	Maximum floor surface temperature
ϑ_H	°C	Average temperature of the heating medium
ϑ_i	°C	Standard indoor room temperature
$\Delta\vartheta_c$	K	Temperature difference between room and cooling medium for cooling systems
$\Delta\vartheta_{C,N}$	K	Standard temperature difference between room and cooling medium for cooling systems
$\Delta\vartheta_H$	K	Temperature difference between heating medium and room
$\Delta\vartheta_{H,G}$	K	Limit temperature difference between heating medium and room for floor heating systems
$\Delta\vartheta_{H,N}$	K	Standard temperature difference between heating medium and room for heating systems, with the exception of floor heating
$\Delta\vartheta_{V,des}$	K	Design temperature difference between flow of heating medium and room of floor heating systems, determined by room with q_{max}
λ_u	W/mK	Thermal conductivity

Uponor Siccus Mini application: Tile/natural stone direct flooring (su = 10 mm with λu = 1 W/mK) with embeded Uponor Minitec Comfort Pipe 9,9 x 1,1 mm



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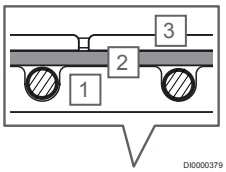


Item	Unit	Description
A	W/m²	Specific thermal heating or cooling output [q_H or q_C]
B	m²K/W	Thermal resistance [$R_{\lambda,B}$]

C - Heating

T (cm)	q_H (W/m²)	$\Delta\vartheta_{H,N}$ (K)
10	82,8	14,32

D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
10	34,2	8

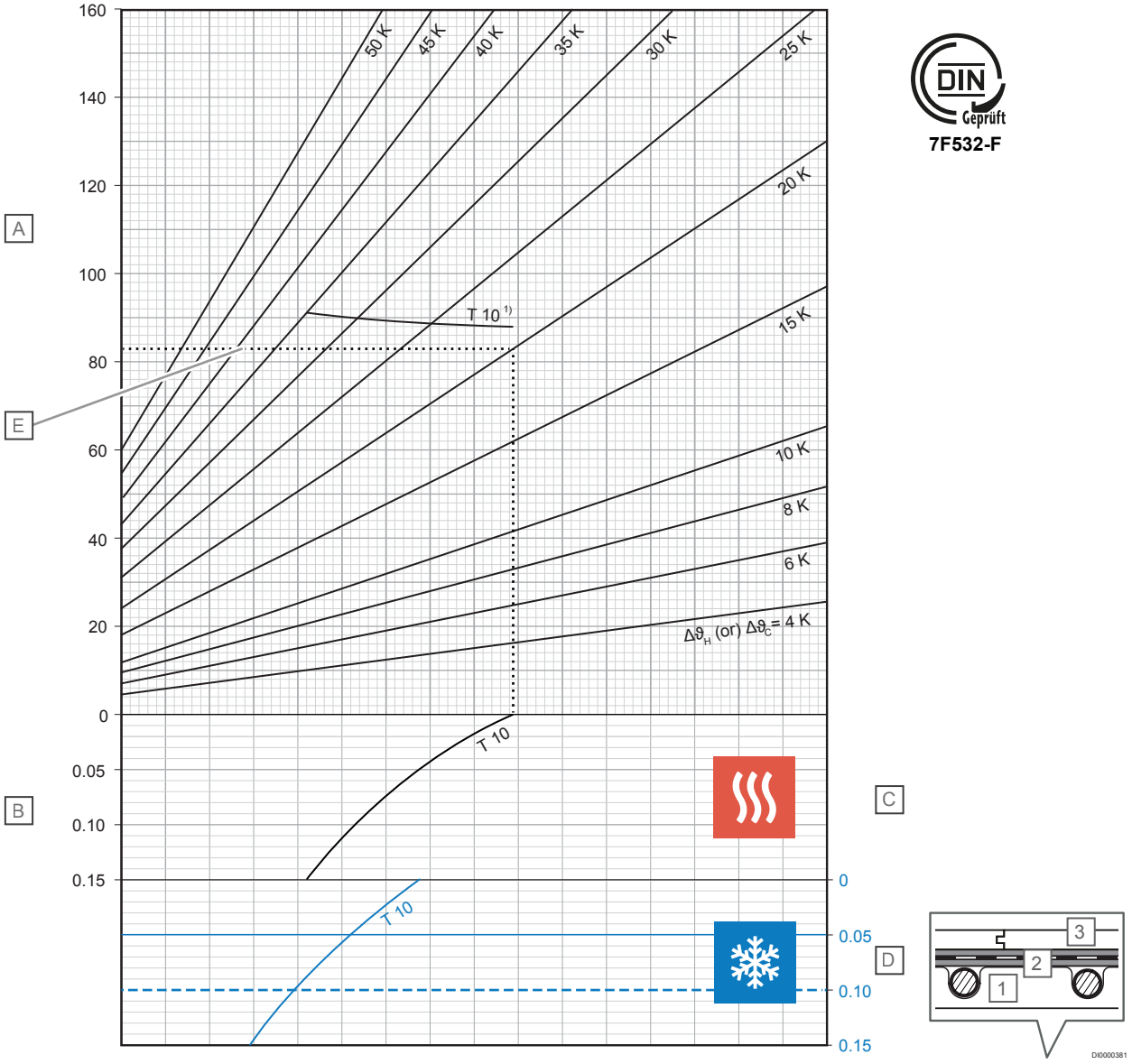
E - Example

Tiles (3: s_u=10 mm, λu = 1 W/mK) direct glued (2) on Uponor Siccus Mini panel with embedded Uponor Minitec Comfort pipes 9,9 x 1,1 mm (1).

- q_H = 83 W/m² (by $\Delta\vartheta_H$ = 14 K, limitation by T_{max})

[1] Limit curve valid for ϑ_i 20 °C and $\vartheta_{F,max}$ 29 °C or ϑ_i 24 °C and $\vartheta_{F,max}$ 33 °C

Uponor Siccus Mini application: Wooden panel direct flooring (su = 10 mm with λu = 0,1 W/mK) with embeded Uponor Minitec Comfort Pipe 9,9 x 1,1 mm



Item	Unit	Description
A	W/m²	Specific thermal heating or cooling output [q_H or q_C]
B	m²K/W	Thermal resistance [$R_{\lambda,B}$]

C - Heating

T (cm)	q_H (W/m²)	$\Delta\vartheta_{H,N}$ (K)
10	88,1	21,42

D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
10	26,5	8

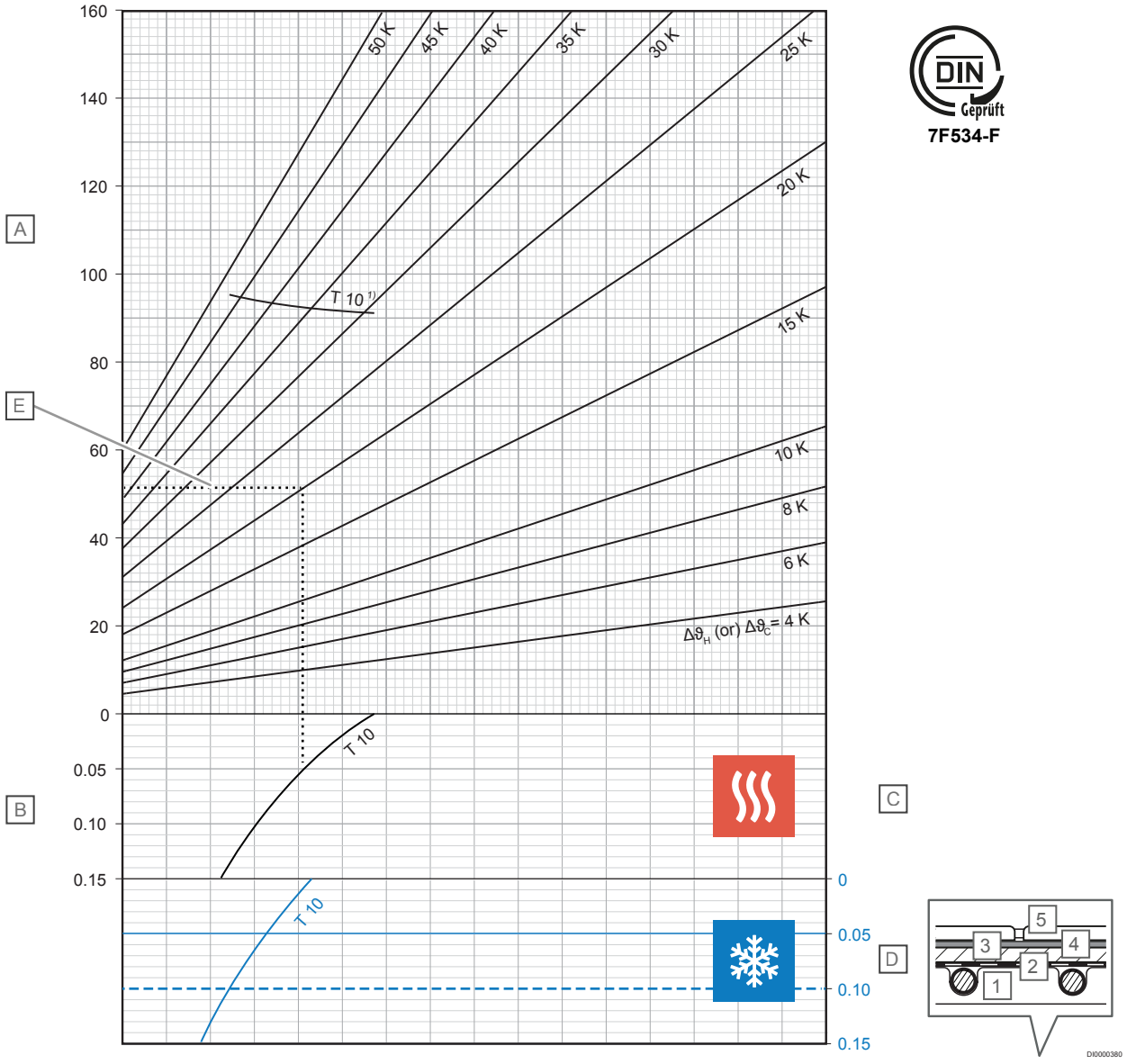
E - Example

Wooden panels (3: s_u=10 mm, λ_u=0,1 W/mK) direct glued (2: two-layers of glue with a coupling mat in between) on Uponor Siccus Mini panel with embedded Uponor Minitec Comfort pipes 9,9 x 1,1 mm (1).

- q_H = 83 W/m² (by $\Delta\vartheta_H$ = 20 K)

[1] Limit curve valid for ϑ_i 20 °C and $\vartheta_{F,max}$ 29 °C or ϑ_i 24 °C and $\vartheta_{F,max}$ 33 °C

Uponor Siccus Mini application: all other coverings with gypsum board (su = 18 mm with λu = 0,38 W/mK) with embeded Uponor Minitec Comfort Pipe 9,9 x 1,1 mm



Item	Unit	Description
A	W/m²	Specific thermal heating or cooling output [q_H or q_C]
B	m²K/W	Thermal resistance [$R_{\lambda,B}$]

C - Heating

T (cm)	q_H (W/m²)	$\Delta\vartheta_{H,N}$ (K)
10	91,1	29,16

D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
10	20,5	8

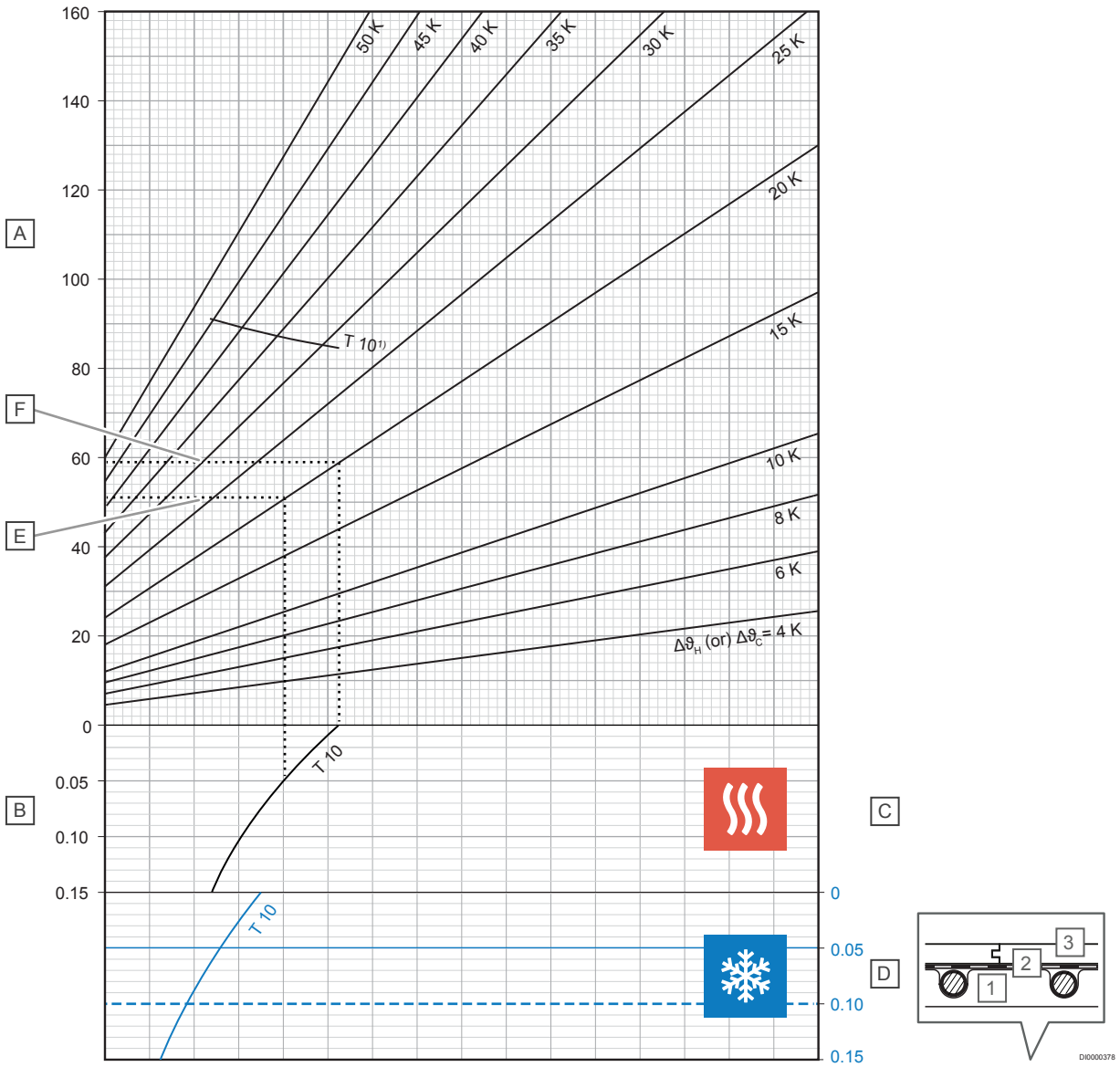
E - Example

Tiles (5: s_u=10 mm) glued (4) on gypsum Knauf Hugo (3: s_u=18 mm, λ_u= 0,38 W/mK) on PE-foil (5: s=0,2 mm) on Uponor Siccus Mini panel with embedded Uponor Minitec Comfort pipes 9,9 x 1,1 mm (1).

- q_H = 52 W/m² (by $\Delta\vartheta_H$ = 20 K)

[1)] Limit curve valid for ϑ_i 20 °C and $\vartheta_{F,max}$ 29 °C or ϑ_i 24 °C and $\vartheta_{F,max}$ 33 °C

Uponor Siccus Mini application: Laminate/parquet floating floor (su = 8 mm with λu = 0,08 W/mK) with embeded Uponor Minitec Comfort Pipe 9,9 x 1,1 mm



Item	Unit	Description
A	W/m²	Specific thermal heating or cooling output [q_H or q_C]
B	m²K/W	Thermal resistance [$R_{\lambda,B}$]

C - Heating

T (cm)	q_H (W/m²)	$\Delta\vartheta_{H,N}$ (K)
10	86,3	34,44

D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
10	17,2	8

E - Example

laminate (3: s_u=8 mm, λ_u=0,08 W/mK) floating on PE-foil + sound reduction foam (2: s=0,2 mm + s=1,6 mm) on Uponor Siccus Mini panel with embedded Uponor Minitec Comfort pipes 9,9 x 1,1 mm (1).

- q_H = 51 W/m² (by $\Delta\vartheta_H$ = 20 K)

F - Example

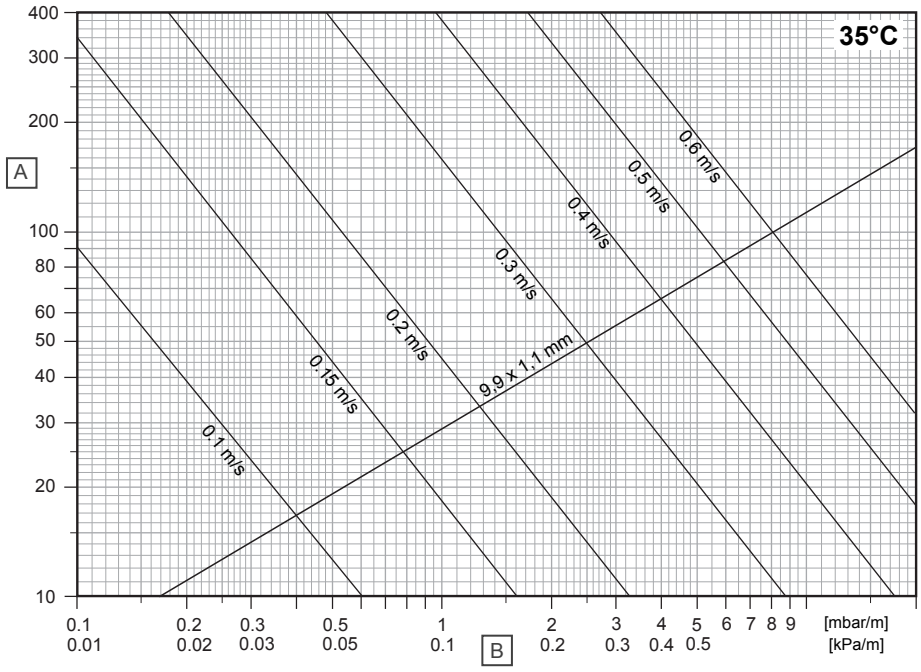
laminate (3: s_u=8 mm, λ_u=0,08 W/mK) floating on PE-foil (2: s=0,2 mm) on Uponor Siccus Mini panel with embedded Uponor Minitec Comfort pipes 9,9 x 1,1 mm (1).

- q_H = 59 W/m² (by $\Delta\vartheta_H$ = 20 K)

[1] Limit curve valid for ϑ_i 20 °C and $\vartheta_{F,max}$ 29 °C or ϑ_i 24 °C and $\vartheta_{F,max}$ 33 °C

2.5 Pressure drop diagrams

Uponor Minitec Comfort Pipe



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Item	Unit	Description
A	kg/h	Mass flow rate
B	R	Pressure gradient

3 Installation

3.1 Installation process

Note

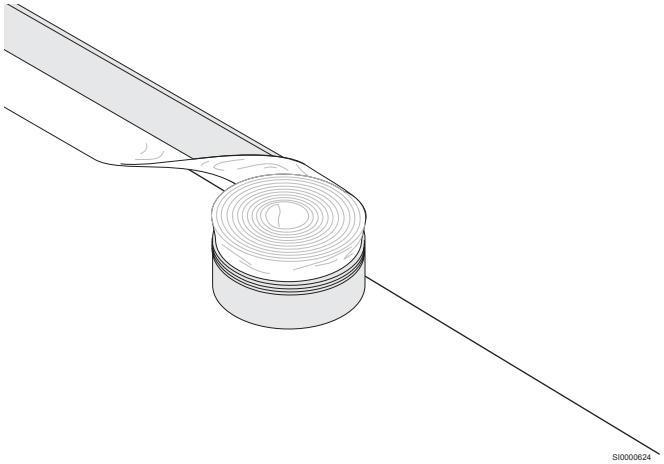
The installation must be performed by a qualified person in accordance with local standards and regulations.

Note

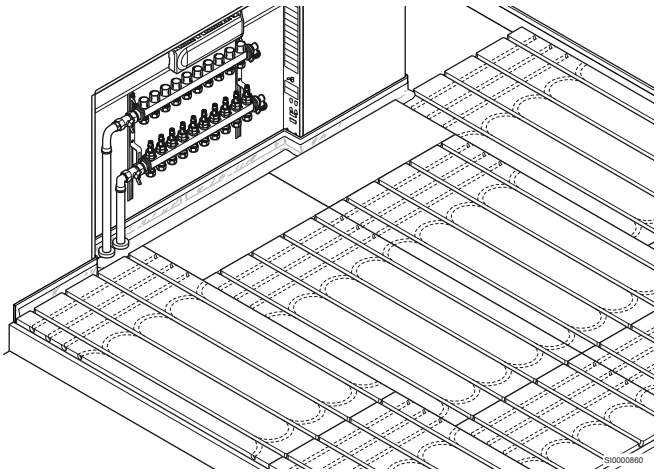
Tiles/ natural stone type coverings require additional installation steps compared to parquet/laminate type coverings. Refer to and follow the instructions given in the installation manual.

As a guidance, always read and follow the instructions given in respective Uponor installation manual.

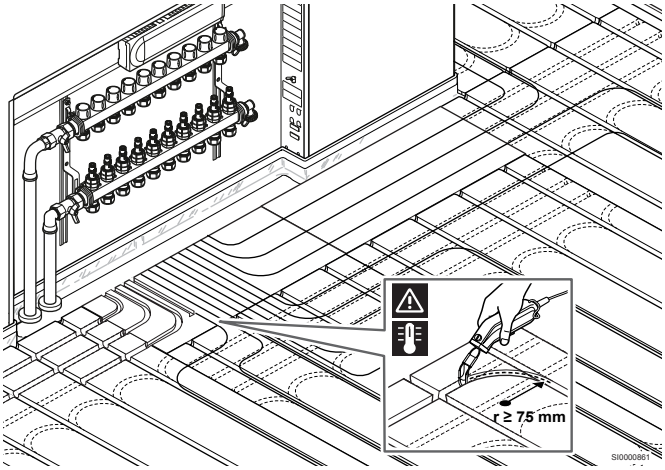
1. Multi-edging strip installation



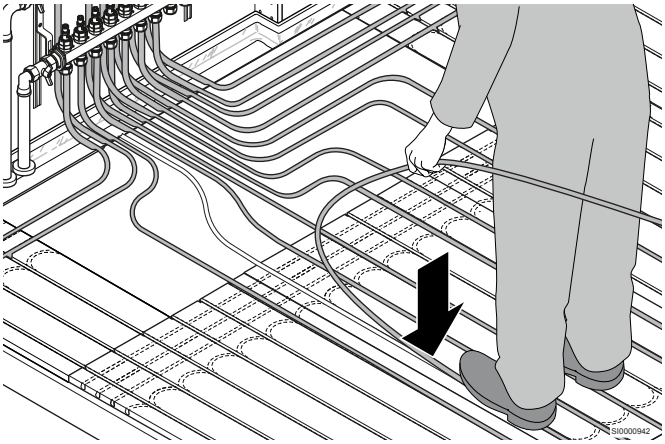
2. Panels installation



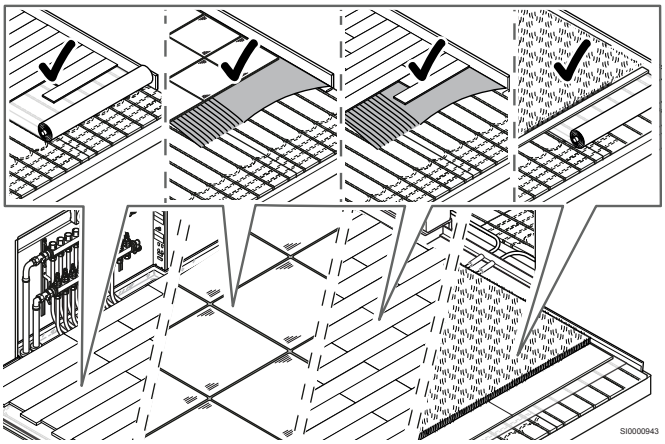
3. Engrave the grooves



4. Pipes installation



5. Flooring varieties



4 Technical data

4.1 Technical specifications

Uponor Siccus Mini

Description	Value	Value
Product name	Uponor Siccus Mini panel	Uponor Siccus Mini edge support
Material	EPS 400kpa	High density synthetic fiber
Dimension	1200 x 600 x 15 mm	1000 x 45 x 15 mm
Max. live load	7,5 KN/m²	7,5 KN/m²
Thermal conductivity	0,032 W/mK	-
Thermal resistance	0,60 m²K/W	-
Reaction to fire (refer to EN 13501-1)	Class E	Class E
Pipe spacing	100 mm	-
Type of system	Dry system	Dry system
Load distribution layer	See floor construction type 2.1	See floor construction type 2.1

Uponor Minitec Comfort Pipe

Description	Value
Product name	Uponor Comfort Pipe 9,9 x 1,1 mm
Pipe dimension	9,9 x 1,1 mm
Pipe length	60; 120; 240; 480 m
Material	PE-Xa, four-layer pipe
Colour	Natural with a blue longitudinal stripe
Manufacturing	Refer to EN ISO 15875
Certificates	DIN CERTCO
Area of application	Class 4 / 6 bar (EN ISO 15875)
Max. operating temperature[1)]	90 °C (EN ISO 15875)
Max. operating pressure	6 bar at 70° C
Pipe jointings	Uponor screw connection Uponor Q&E technology
Weight	0,039 kg/m
Water volume	0,044 l/m
Oxygen tightness	Refer to ISO 17455; DIN 4726
Density	0,934 g/cm³/more flexible
Building material class	E according to EN 13501-1
Min. bending radius	8xd if free bending (80 mm) 5xd if supported bend (50 mm)
Pipe roughness	0,007 mm
Best mounting temperature	≥ 0 °C
UV protection	Opaque cardboard (store remaining quantities in the cardboard box)

1) When more than one design temperature appears for any class, the times should be aggregated (e.g. the design temperature profile for 50 years class 5 is: 20 °C for 14 years followed by 60 °C for 25 years, 80 °C for 10 years, 90 °C for 1 year and 100 °C for 100h).

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