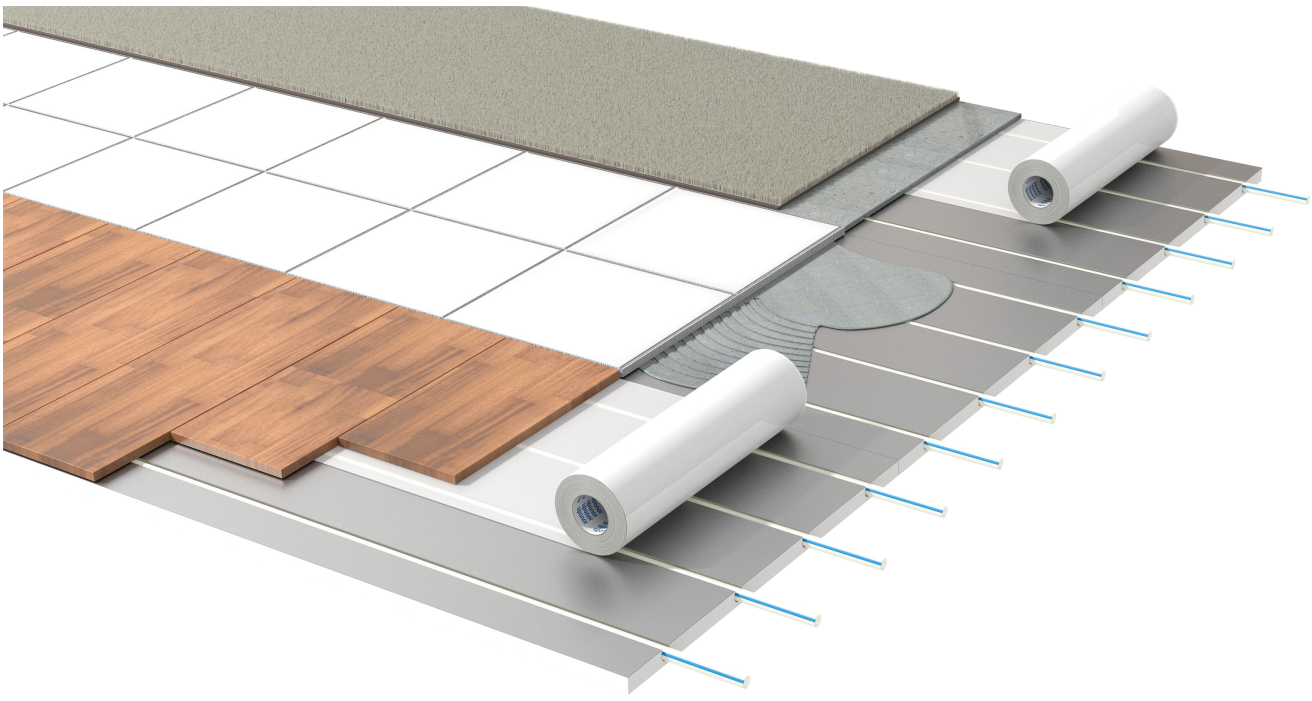
Uponor Siccus 16

EN Technical information



RP0000384

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1 System description

The Uponor Siccus 16 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 16 is a combination of low height underfloor heating and cooling panel with heat-conducting surface and one of Uponor 16 mm underfloor heating pipes such as Uponor Comfort Pipe PLUS, Uponor Comfort Pipe, Uponor Smart UFH-pipe or Uponor MLCP RED 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 16 installation panel is equipped with built-in pipe guide channels that securely hold the Uponor UFH 16 mm 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 16 panel includes three extra channels on one side to facilitate additional loops for feeding pipes.

Lay directly on a level floor: For floating laminate, parquet flooring, or carpet and vinyl over dry screed, lay the installation panel 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 150 mm. For ceramic tiles or natural stone flooring, glue the Siccus 16 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 and natural stone 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 16 panel

RP0000382

The Uponor Siccus 16 panel is an EPS400 panel grade 400kpa with dimensions 1200 x 600 x 20 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 150 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.

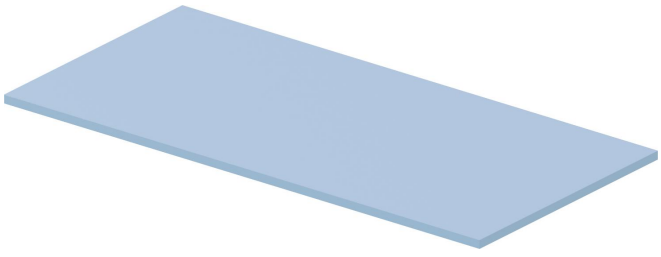
A live load up to 2 kN/m^2 or a point load up to 2 kN can use this panel.

Uponor Siccus 16 edge support

RP0000383

The Uponor Siccus 16 edge support is a MDF strip with dimensions 1000 x 45 x 19 mm and is ideal for installing on the wall sides and in doorways. The edge support is only used for tiles or natural stone installations, not for direct parquet or laminate installations.

Uponor Multi insulation panel



RP0000387

The Uponor Multi insulation panel is a XPS 400 thermal insulation panel with dimensions 1250 x 600 x 20 mm. The panel is ideal for use in front of a manifold, allowing for easier installation of heating pipes.

Uponor Siccus PS Cutter

RP0000380

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.

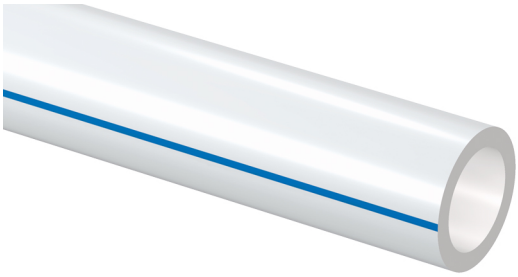
Uponor Comfort Pipe PLUS

RP0000302

The Uponor Comfort Pipe PLUS is a highly flexible PE-Xa pipe with 5 layers available in the dimension 16 x 2,0 mm.

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

Uponor Comfort Pipe



RP0000123

The Uponor Comfort Pipe is a highly flexible PE-Xa pipe available in the dimension 16 x 1,8 mm.

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

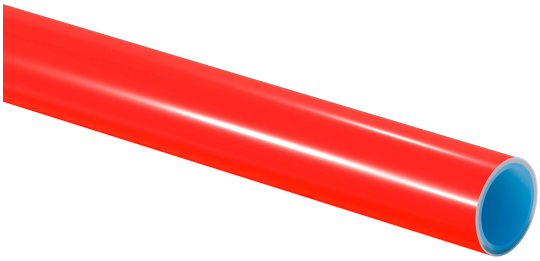
Uponor Smart UFH-pipe

RP0000347

The Uponor Smart UFH-pipe is a PE-RT pipe and is an economical system for underfloor heating available in the dimension 16 x 2,0 mm.

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

Uponor MLCP RED



RP0000337

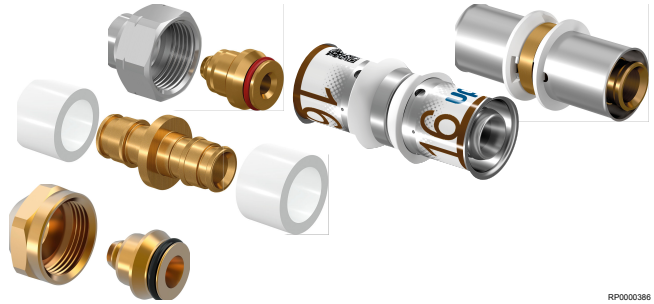
The Uponor MLCP RED is a composite pipe which is stable and easy to install, available in the dimension 16 x 2,0 mm.

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.



RP0000386

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

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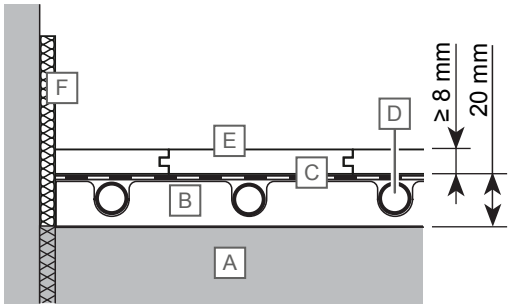
2 Planning/design

2.1 Floor constructions

Depending on the surface type, three installation methods are generally possible (for installing the Siccus 16 system refer to and follow the instructions given in the Uponor installation manual).

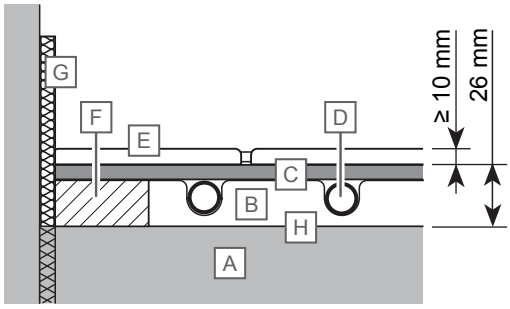
1. **Laying parquet/laminate:** It is essential to make sure that a separation layer is installed between the top floor and the installation panel.
2. **Laying tiles/natural stone:** Direct installation on Siccus 16 panel.
3. **Laying carpet/vinyl or other coverings:** A load-bearing subsurface, for example gypsum board, must be installed.

Parquet/laminate design



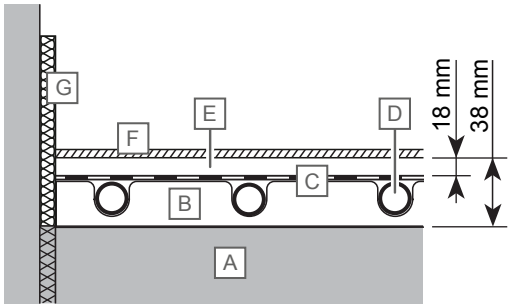
Item	Description
A	Existing floor
B	Uponor Siccus 16 panel
C	Uponor Multi PE foil
D	Uponor UFH Pipe (16 mm)
E	Parquet/laminate
F	Uponor Minitec edging strip

Tiles/natural stone design



Item	Description
A	Existing floor
B	Uponor Siccus 16 panel
C	Primer + tile adhesive
D	Uponor UFH Pipe (16 mm)
E	Tiles/natural stone
F	Uponor Siccus 16 edge support
G	Uponor Minitec edging strip
H	Panel adhesive

Carpet/vinyl or other coverings design

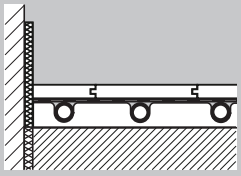
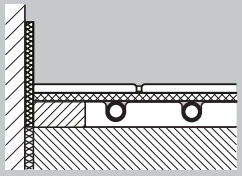
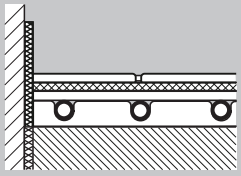
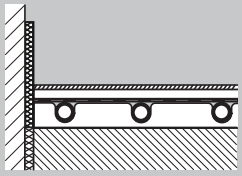


Item	Description
A	Existing floor
B	Uponor Siccus 16 panel
C	Uponor Multi PE foil
D	Uponor UFH Pipe (16 mm)
E	Gypsum board
F	Carpet/vinyl or other coverings
G	Uponor Minitec edging strip

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.

Uponor Siccus 16

		Parquet/laminate	Tiles/natural stone		All coverings
			Without load distribution layer	With load distribution layer	
					
Application with	Direct flooring	- Click parquet/laminate - Uponor Multi foil PE 0,2 mm - Uponor Siccus 16 panel	- Tiles/natural stone - Adhesive[2)] - Uponor Siccus 16 panel - Adhesive[2)]	-	- All coverings - Knauf Brio 18 mm[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus 16 panel
	Thermal insulation	- Click parquet/laminate - Uponor Multi foil PE 0,2 mm - Uponor Siccus 16 panel - Insulation XPS	-	- Tiles/natural stone - Knauf Brio 18 mm[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus 16 panel - Insulation EPS-DEO/XPS/PUR	- All coverings - Knauf Brio 18 mm[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus 16 panel - Insulation EPS-DEO/XPS/PUR
	Sound insulation	-	-	- Tiles/natural stone - Knauf Brio 18 mm[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus 16 panel - Insulation Knauf WF (wood fiber)[1)]	- All coverings - Knauf Brio 18 mm[1)] - Uponor Multi foil PE 0,2 mm - Uponor Siccus 16 panel - Insulation Knauf WF (wood fiber)[1)]
Additional insulation CS (10) (KPa)/ height (mm)	With load distribution (Knauf Brio 18 mm)	-	-	EPS-DEO: ≥ 8 / ≤ 50 XPS: ≥ 400 / ≤ 50 PUR: ≥ 150 / ≤ 50 Wood fiber: ≥ 150 / ≤ 10	EPS-DEO: ≥ 8 / ≤ 50 XPS: ≥ 400 / ≤ 50 PUR: ≥ 150 / ≤ 50 Wood fiber: ≥ 150 / ≤ 10
	Without load distribution	XPS: ≥ 400 / ≤ 50	-	-	-
Technical constraints	Height of covering	Parquet ≥ 12 mm Laminate ≥ 8 mm	Tiles ≥ 10 mm Natural stone ≥ 10 mm	[1)]	[1)]
	Tiles/natural stone format	-	Tiles 100 - 600 mm Natural stone 100 - 600 mm	[1)]	[1)]
	Live load/point load	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)]	2,0 kN/m² or 1,0 kN[1)]

1) Refer to the **Knauf** technical documentation.
2) For Mapei 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

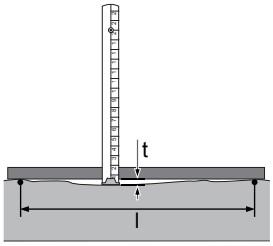
When installing on wooden beam ceilings or existing floor coverings, it's essential to make sure the level subsurface, especially for dry screed panels. If the subsurface is not level, a leveling layer will be necessary. If there are any uncertainties, it is advisable to consult the manufacturer of the 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 16 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 16 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.



SD0000242

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

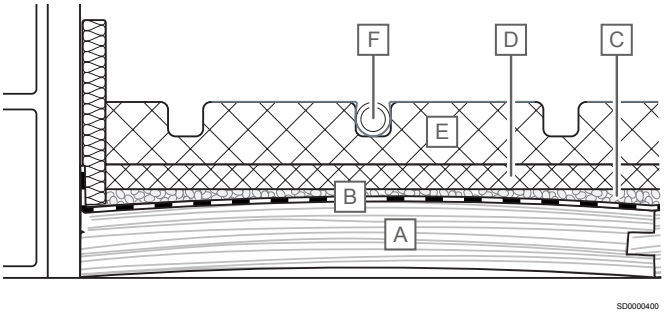
For parquet/ laminate flooring, wooden beam construction with a max. deflection of 1/500 is permitted.

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 16 system.



SD0000400

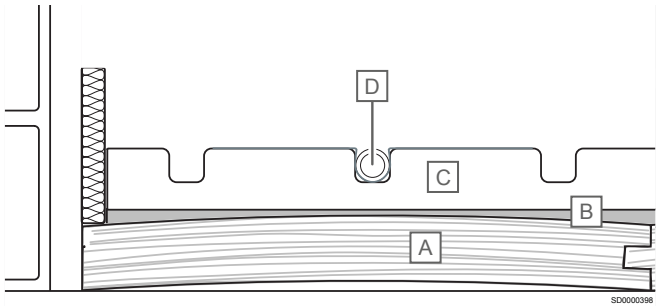
Item	Description
A	Timber joist floor
B	Moisture barrier
C	Self levelling compound
D	Cover panel (according to manufacturer specifications)
E	Uponor Siccus 16 panel
F	Uponor UFH Pipe (16 mm)

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 16 system.



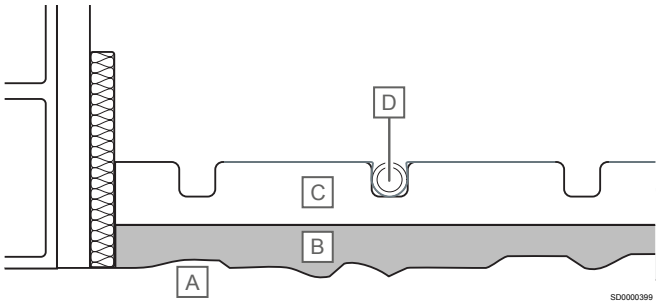
SD0000398

Item	Description
A	Timber joist floor
B	Levelling filler
C	Uponor Siccus 16 panel
D	Uponor UFH Pipe (16 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 16 system.



SD0000399

Item	Description
A	Concrete floor
B	Levelling screed
C	Uponor Siccus 16 panel
D	Uponor UFH Pipe (16 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 flooring

The direct floor installation method with tiles/natural stone on Uponor Siccus 16 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:

Floor construction		Primer	Adhesive Mortar/ Filling compound for standard bonding	Adhesive Mortar/ Filling compound for quick bonding
Uponor Siccus 16 panel and Uponor Siccus 16 edge support installation on subsurface				
Absorptive Subsurface	Cement	G PRO	Ultralite S1 Flex ZERO Ultralite S2 Flex	Keraflex Quick S1 Ultralite S1 Flex Quick Ultralite S2 Flex Quick Ultrabond Eco P16 (for ideal levelled cement floors)
	Anydrate	Eco Prim T Plus	Ultralite S1 Flex ZERO Ultralite S2 Flex	Keraflex Quick S1 Ultralite S1 Flex Quick Ultralite S2 Flex Quick
Non-absorptive Subsurface		Not required	Ultrabond Eco P16 Ultrabond Eco Pu 2K Ultrabond Eco S955 1K	-
Direct flooring of ceramic/natural stone on Uponor Siccus 16 panel and Uponor Siccus 16 edge support				
Tile size ≥ 100 x 100 mm ≤ 600 x 600 mm		Eco Prim Grip Plus	Ultralite S2 Flex, buttering-floating procedure	-
Direct ceramic-grout between tiles				
		Minimum grout width of 3 - 4 mm, depending on tile size, using MAPEI Ultracolor Plus.		

Observe and read below instructions:

- Uponor IM Siccus 16
- Mapei installation manuals and data sheets

Other application cases have not been tested.

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.

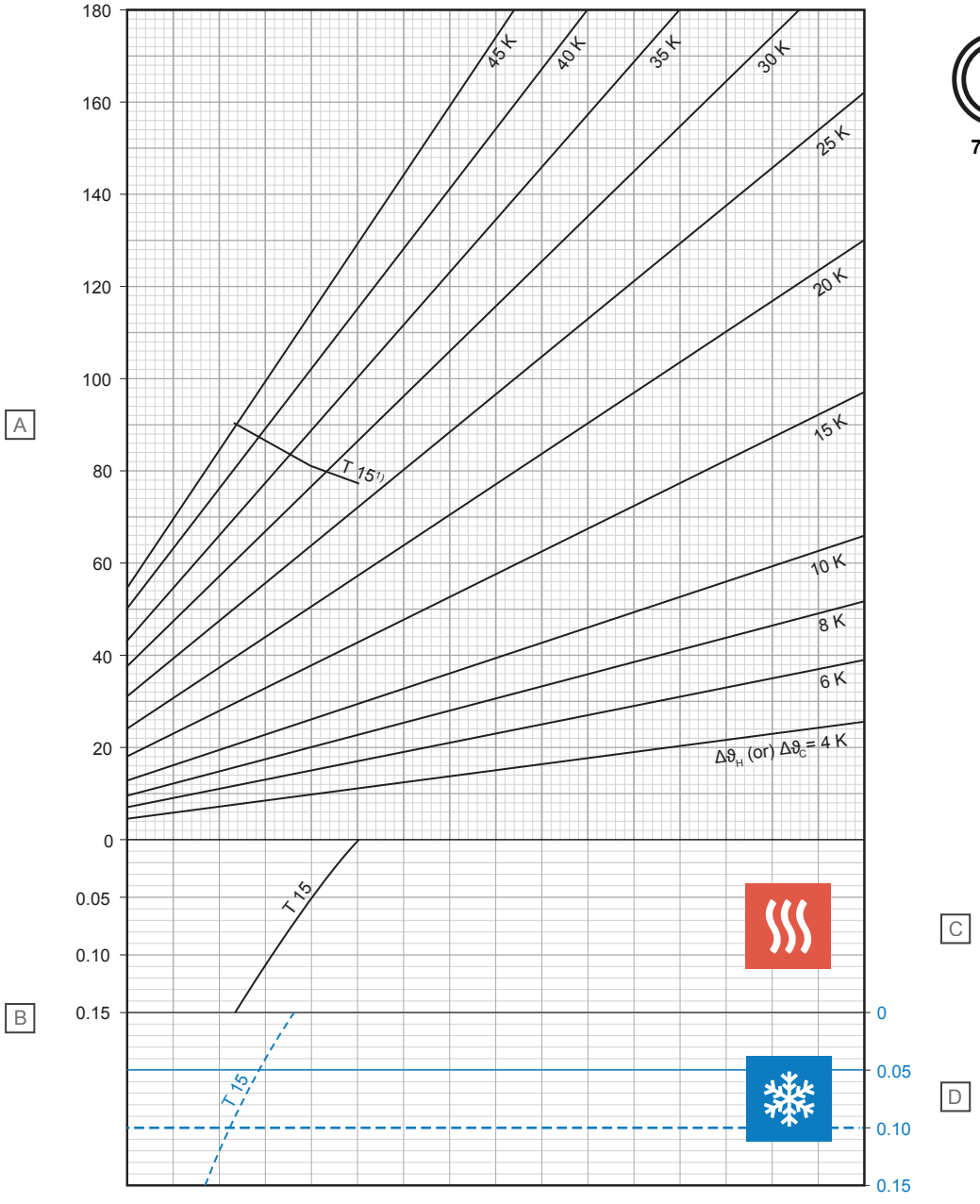
The following diagrams results are accurate and in accordance with EN 1264.

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 16 application: Laminate/parquet floating floor as distribution layer (su = 8 mm with λu = 0,17 W/mK) with embeded Uponor Comfort Pipe PLUS 16 x 2,0 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)
15	77,2	27,46

D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
15	19,1	8

[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

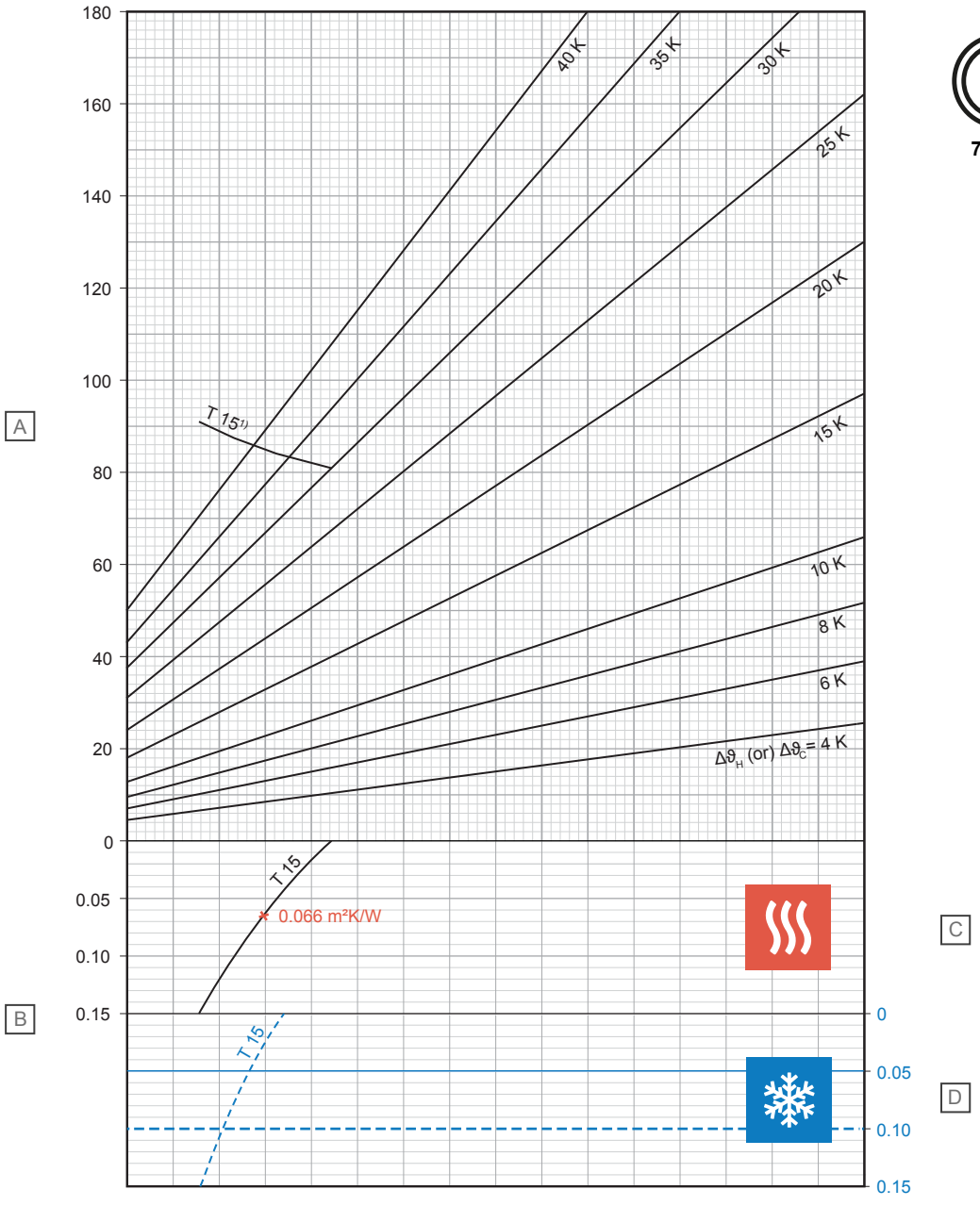
Uponor Siccus 16 application: Laminate/parquet floating floor as distribution layer (su = 8 mm with λu = 0,17 W/mK) with embeded Uponor MLCP RED 16 x 2,0 mm

The below diagram shows the performance of the laminate/parquet as distribution layer (su = 8 mm with λu = 0,17 W/mK). If the laminate/parquet is to be replaced with a thicker material, then the following manual conversion must be performed:

Actual:
Laminate λu = 0,17 W/mK, d = 0,008 m
R = d/λu
R = 0,008 m/0,17 W/mK = 0,047 m^2K/W

Target (example):
Oak parquet, R = 0,113 m^2K/W

Conversion:
0,113 - 0,047 = 0,066 m^2K/W



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

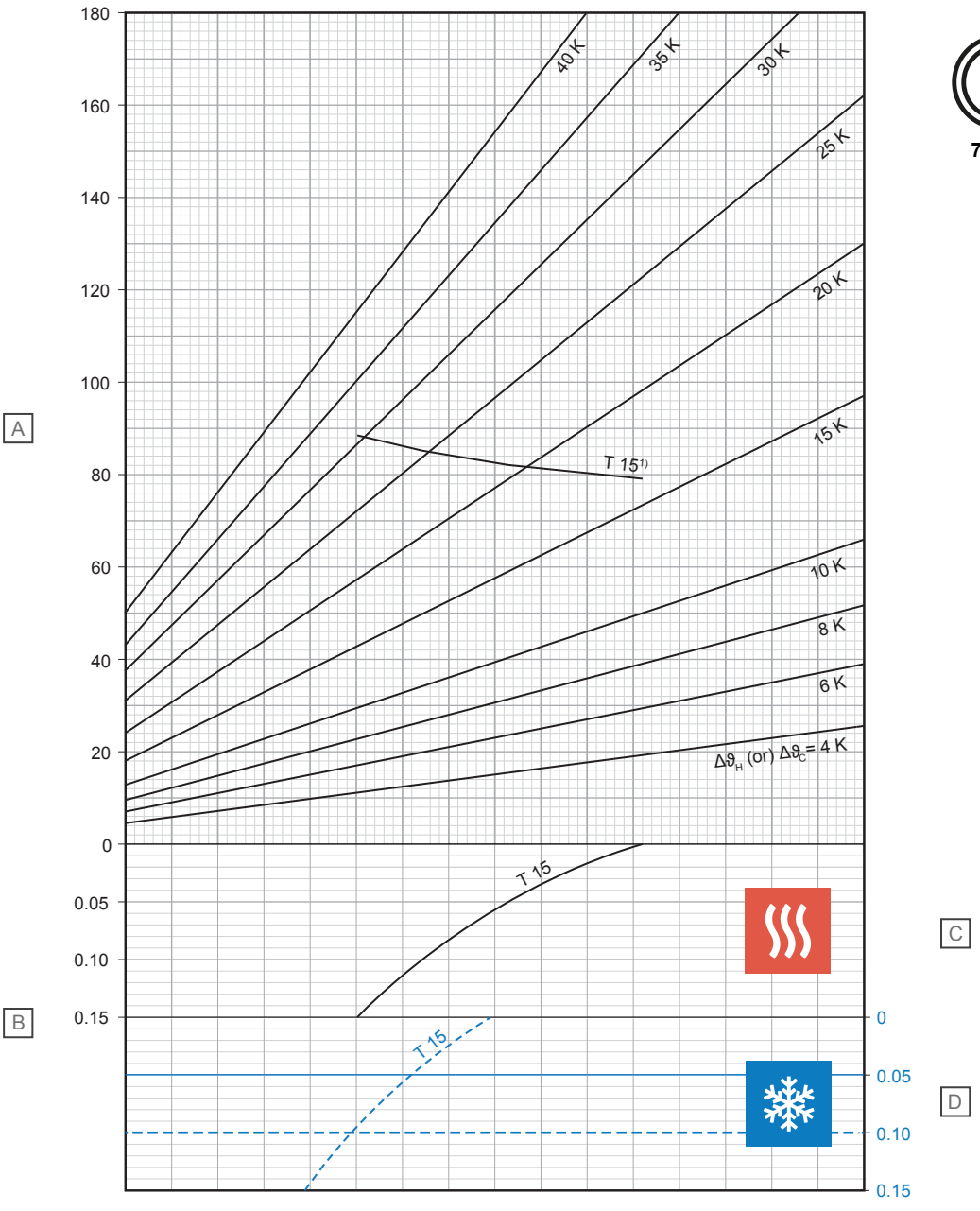
T (cm)	q_H (W/m²)	$\Delta\vartheta_{H,N}$ (K)
15	80,9	29,99

D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
15	18,5	8

[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 16 application: Tile/natural stone direct flooring with embedded Uponor Comfort Pipe PLUS 16 x 2,0 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

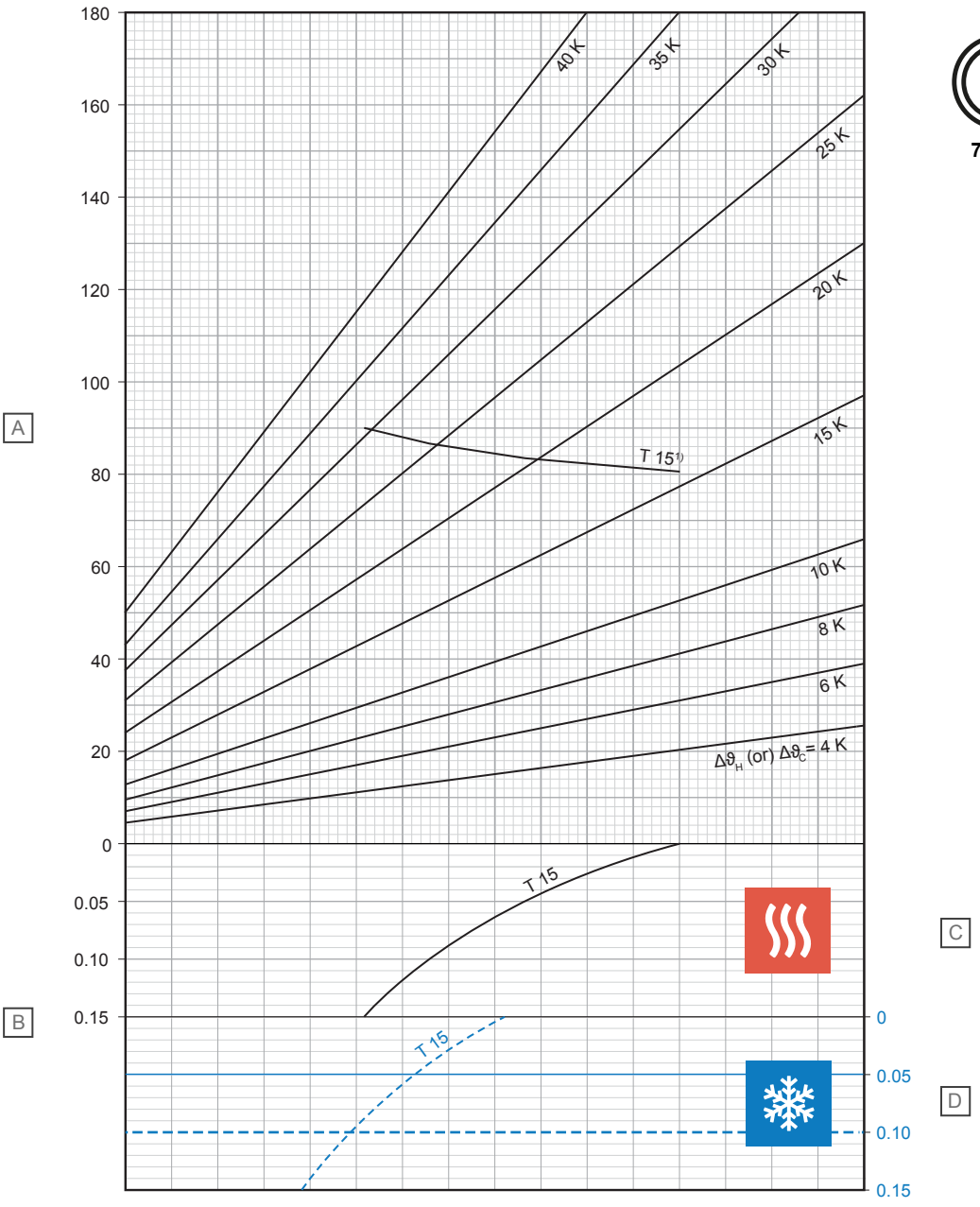
T (cm)	q_H (W/m²)	$\Delta\vartheta_{H,N}$ (K)
15	79,1	16,27

D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
15	30,4	8

[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 16 application: Tile/natural stone direct flooring with embedded Uponor MLCP RED 16 x 2,0 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

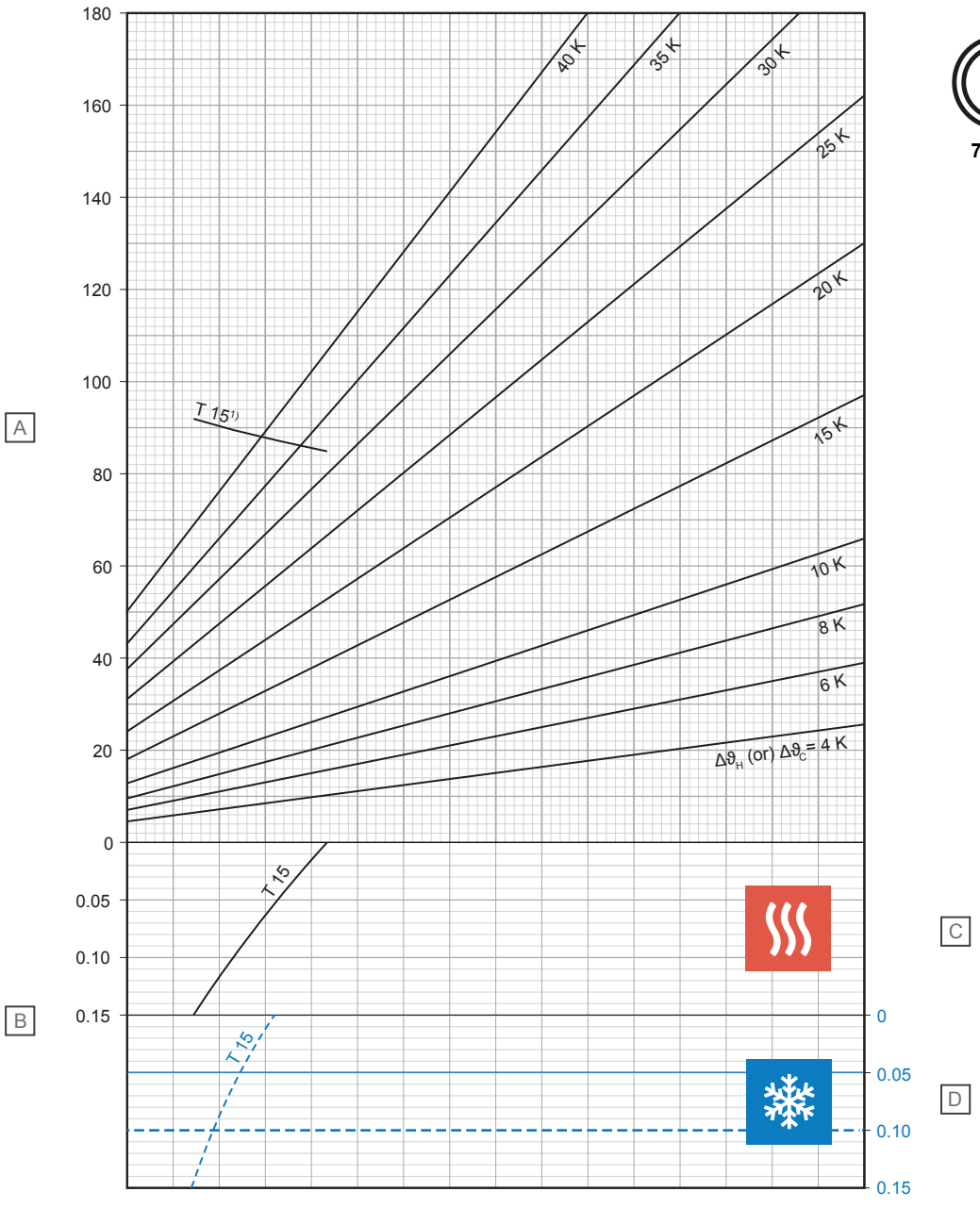
T (cm)	q_H (W/m²)	$\Delta\vartheta_{H,N}$ (K)
15	80,6	15,70

D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
15	31,2	8

[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 16 application: Carpet/vinyl with gypsum board (su = 18 mm with λu = 0,38 W/mK) with embedded Uponor Comfort Pipe PLUS 16 x 2,0 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

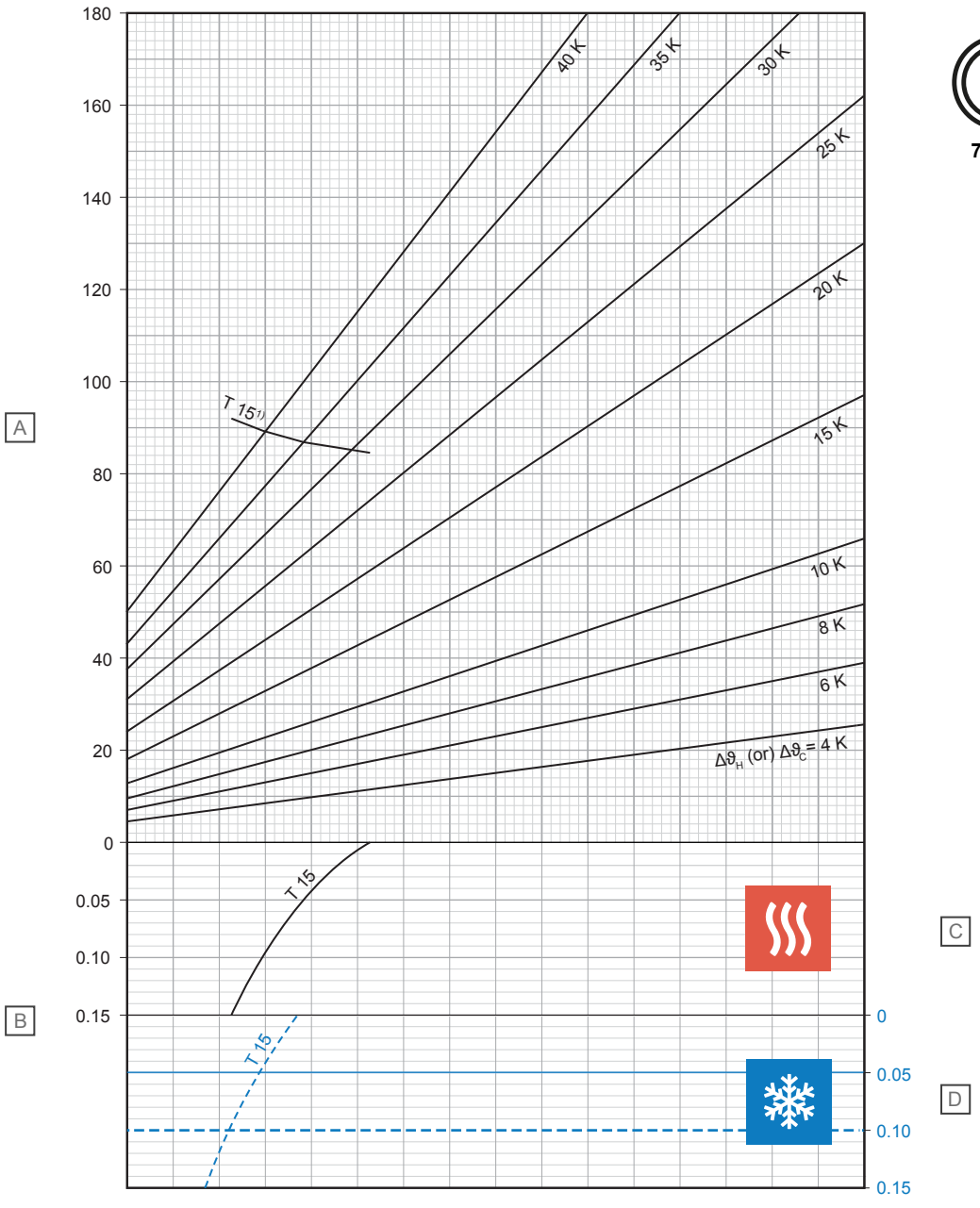
T (cm)	q_H (W/m²)	$\Delta\vartheta_{H,N}$ (K)
15	87,3	37,27

D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
15	16,5	8

[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 16 application: Carpet/vinyl with gypsum board (su = 18 mm with λu = 0,38 W/mK) with embedded Uponor MLCP RED 16 x 2,0 mm



DIN Geprüft
7F 524-F

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)
15	87,9	35,08

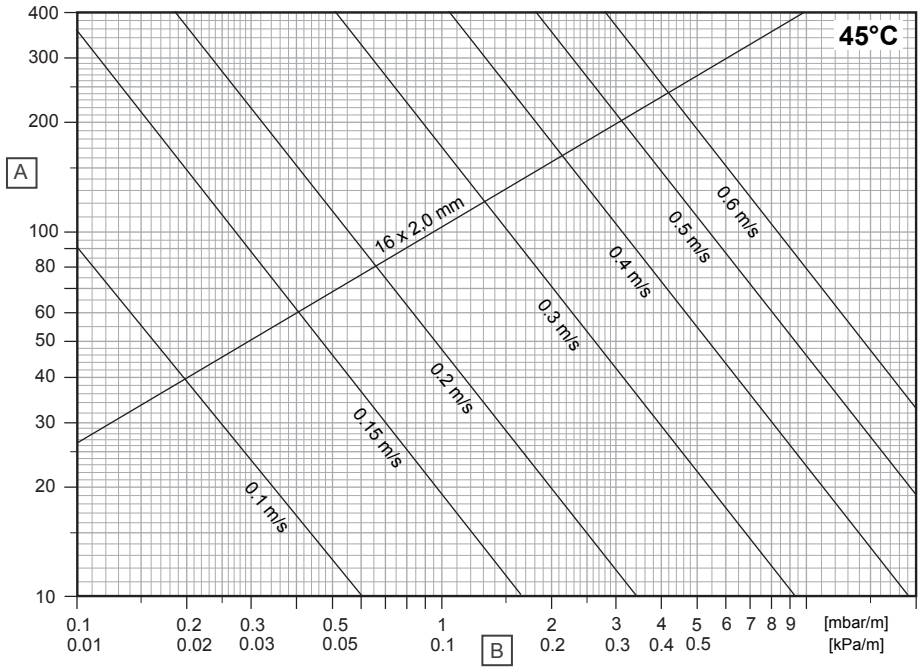
D - Cooling

T (cm)	q_C (W/m²)	$\Delta\vartheta_{C,N}$ (K)
15	17,5	8

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

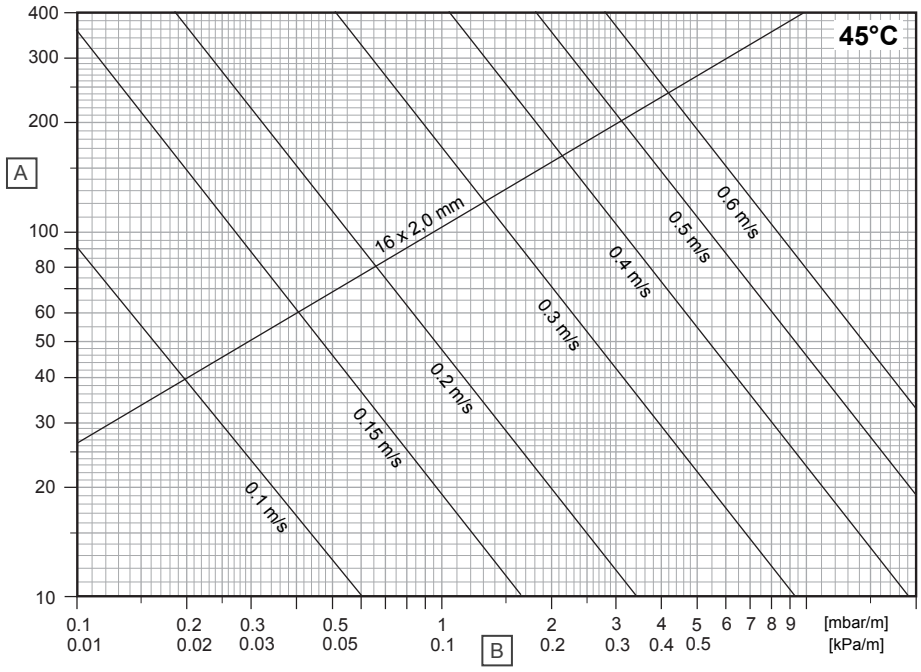
2.5 Pressure drop diagrams

Uponor Comfort Pipe PLUS



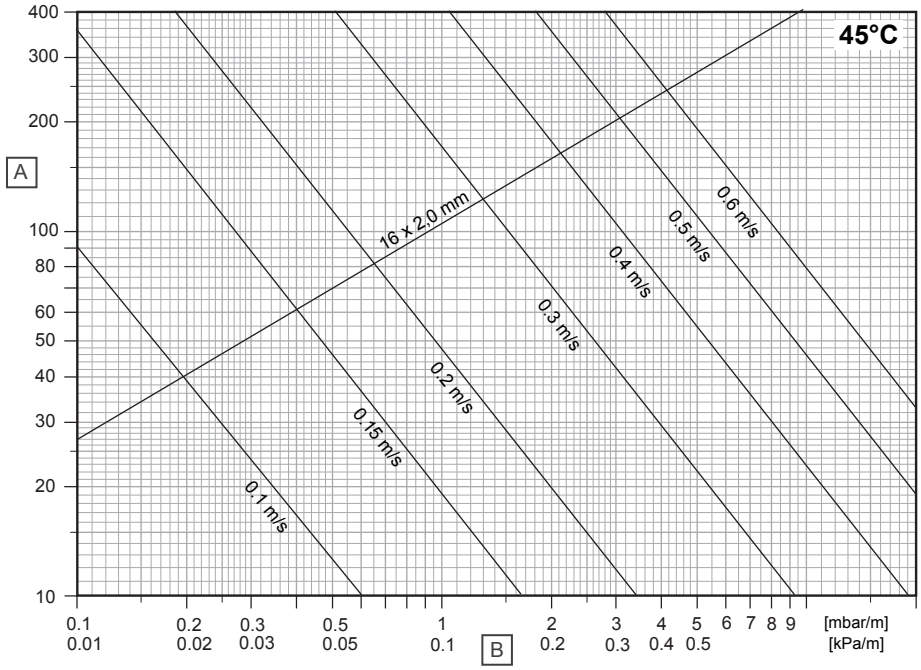
Item	Unit	Description
A	kg/h	Mass flow rate
B	R	Pressure gradient

Uponor Comfort Pipe



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

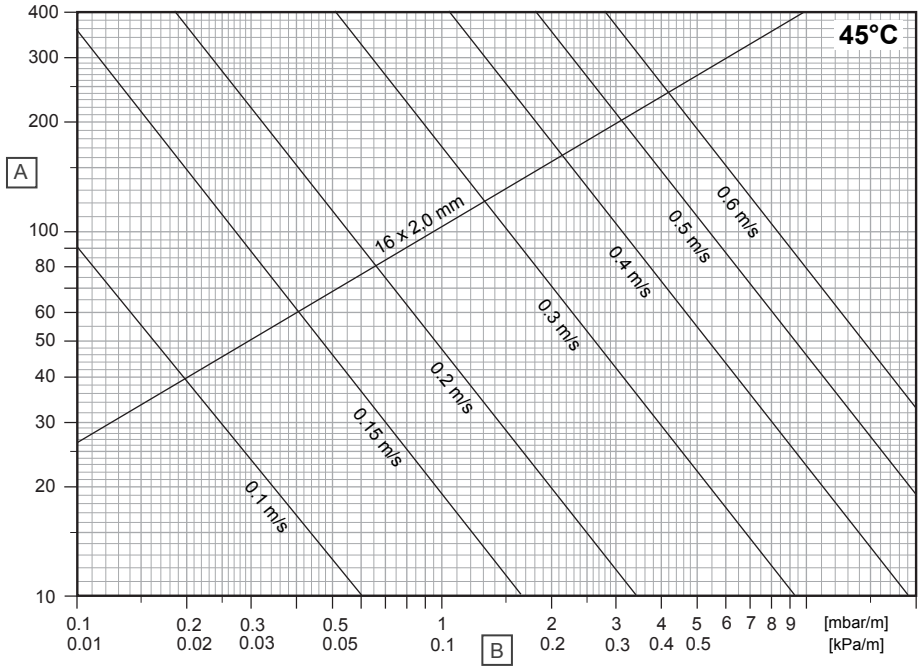
Uponor Smart UFH-pipe



DI0000351

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

Uponor MLCP RED



DI0000352

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

3 Installation

3.1 Installation process

Note

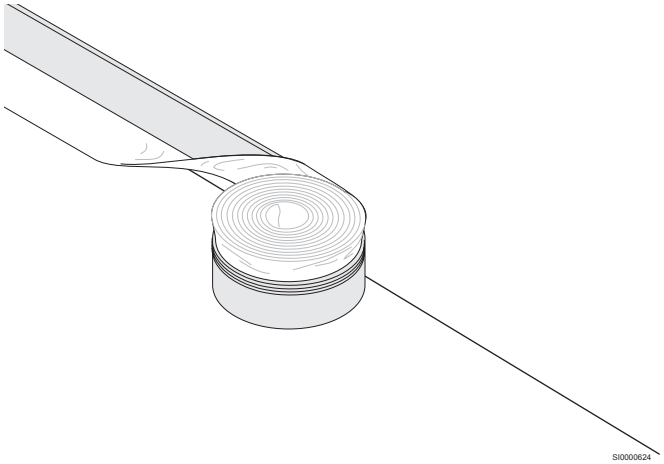
The installation must be performed by a qualified person in accordance with local standards and regulations.

Note

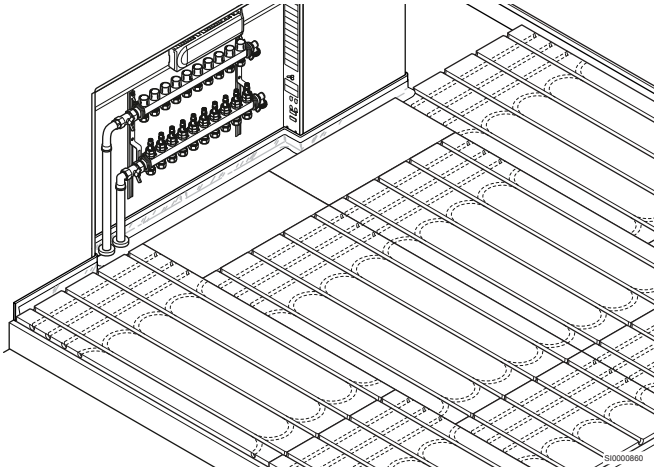
Tiles/ natural stone type coverings require additional installation steps compared to parquet/laminate type coverings. Refer to and follow the instructions given in the installation manual.

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

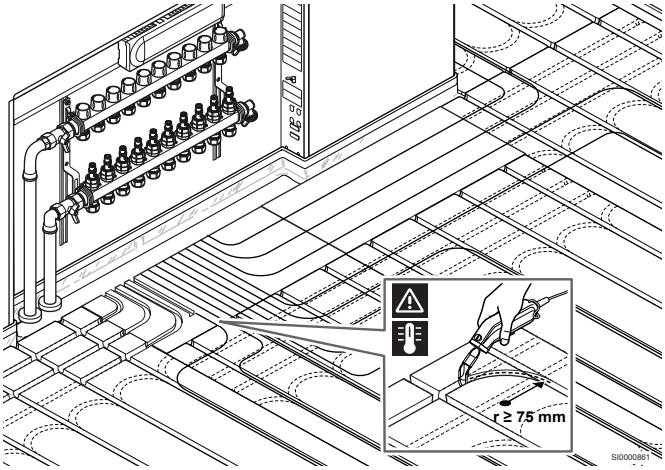
1. Multi-edging strip installation



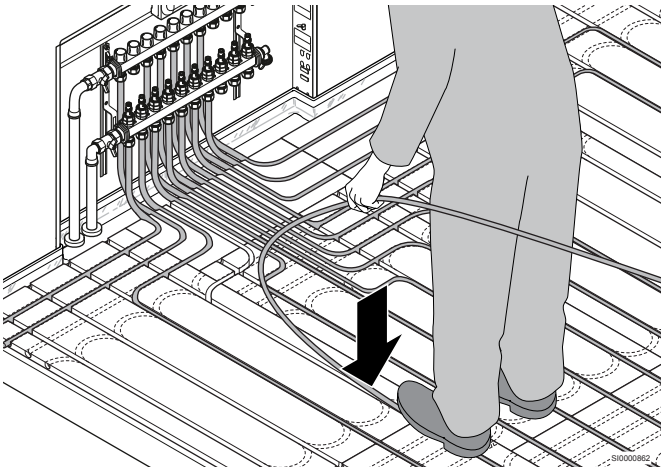
2. Panels installation



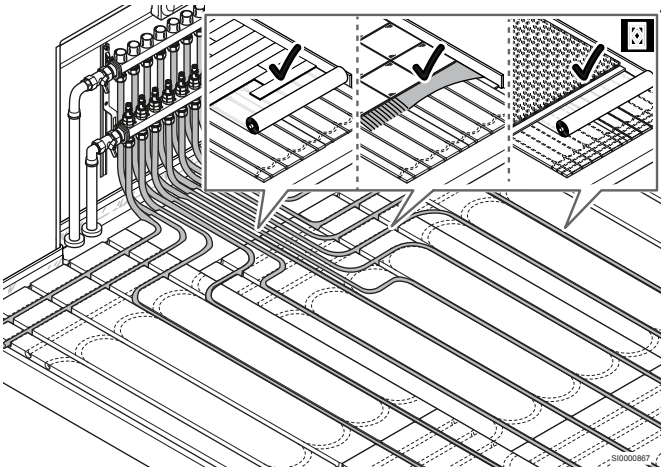
3. Engrave the grooves



4. Pipes installation



5. Flooring varieties



4 Technical data

4.1 Technical specifications

Uponor Siccus 16

Description	Value	Value
Product name	Uponor Siccus 16 panel	Uponor Siccus 16 edge support
Material	EPS 400kpa	High density synthetic fiber
Dimension	1200 x 600 x 20 mm	1000 x 45 x 19 mm
Max. live load	7,5 KN/m²	7,5 KN/m²
Thermal conductivity	0,035 W/mK	-
Thermal resistance	0,57 m²K/W	-
Reaction to fire (refer to EN 13501-1)	Class E	Class E
Pipe spacing	150 mm	-
Type of system	Dry system	Dry system
Load distribution layer	See floor construction type 2.1	See floor construction type 2.1

Uponor Comfort Pipe PLUS

	Value
Pipe designation	Uponor Comfort Pipe PLUS 16 x 2,0 mm
Pipe dimension	16 x 2,0 mm
Pipe length	120; 240; 640 m
Material	PE-Xa, five-layer pipe
Colour	White with two blue longitudinal stripes
Manufacturing	Refer to EN ISO 15875
Certificates	KOMO, DIN CERTCO
Area of application	Class 4 + 5 / 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 Smart press coupling, Uponor Q&E technology
Weight	0,091 kg/m
Water content	0,11 l/m
Oxygen tightness	Refer to ISO 17455; DIN 4726
Density	0,934 g/cm³
Material class	Class B2 and class E, DIN 4102 / EN 13501
Min. bending radius	8 x D; free-hand bending (128 mm) 5 x D; supported bending (80 mm)
Pipe roughness	0,007 mm
Ideal installation 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).

Uponor Comfort Pipe

	Value
Pipe designation	Uponor Comfort Pipe 16 x 1,8 mm
Pipe dimension	16 x 1,8 mm
Pipe length	240; 640 m
Material	PE-Xa
Colour	White with one 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 Smart press coupling, Uponor Q&E technology
Weight	0,091 kg/m
Water content	0,11 l/m
Oxygen tightness	Refer to ISO 17455; DIN 4726
Density	0,934 g/cm³
Material class	Class B2 and class E, DIN 4102 / EN 13501
Min. bending radius	8 x D; free-hand bending (128 mm) 5 x D; supported bending (80 mm)
Pipe roughness	0,007 mm
Ideal installation 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).

Uponor Smart UFH-pipe

	Value
Pipe designation	Uponor Smart UFH-pipe 16 x 2,0 mm
Pipe dimension	16 x 2,0 mm
Pipe length	240; 640 m
Material	PE-RT Type II, five-layer pipe
Colour	Natural colour
Manufacturing	Refer to EN ISO 22391
Certificates	KOMO, DIN CERTCO
Area of application	Class 4 + 5 / 6 bar (EN ISO 22391)
Max. operating temperature[1)]	90 °C (EN ISO 22391)
Max. operating pressure	6 bar at 70° C
Pipe jointings	Uponor screw connection Uponor Smart press coupling
Weight	0,0846 kg/m
Water content	0,113 l/m
Oxygen tightness	Refer to ISO 17455; DIN 4726
Density	0,941 g/cm³
Material class	Class B2 and class E, DIN 4102 / EN 13501
Min. bending radius	8 x D; free-hand bending (128 mm) 5 x D; supported bending (80 mm)
Pipe roughness	0,007 mm
Ideal installation 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).

Uponor MLCP RED

Description	Value
Pipe designation	Uponor MLCP RED 16 x 2,0 mm
Pipe dimension	16 x 2,0 mm
Pipe length	240; 480 m
Material	Multi-layer composite pipe (PE-RT - aluminium - PE-RT), monitored by SKZ (Southern German Plastics Centre), oxygen-tight refer to DIN 4726.
Colour	Red
Manufacturing	Refer to EN ISO 21003
Certificates	KOMO, DIN CERTCO
Area of application	Class 4 / 5 (ISO 10508)
Max. operating temperature	60 °C
Max. operating pressure	4 bar
Pipe jointings	Uponor screw connection Uponor S-Press PLUS
Weight	0,117 kg/m
Water volume	0,113 l/m
Oxygen tightness	Refer to ISO 17455; DIN 4726
Building material class	Class B2, refer to DIN 4102
Min. bending radius	4xd if free bending (64 mm) 3xd if supported bend (48 mm)
Pipe roughness	0,004 mm
Best mounting temperature	≥ 0 °C
UV protection	Brown cardboard (store remaining quantities in the cardboard box)

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