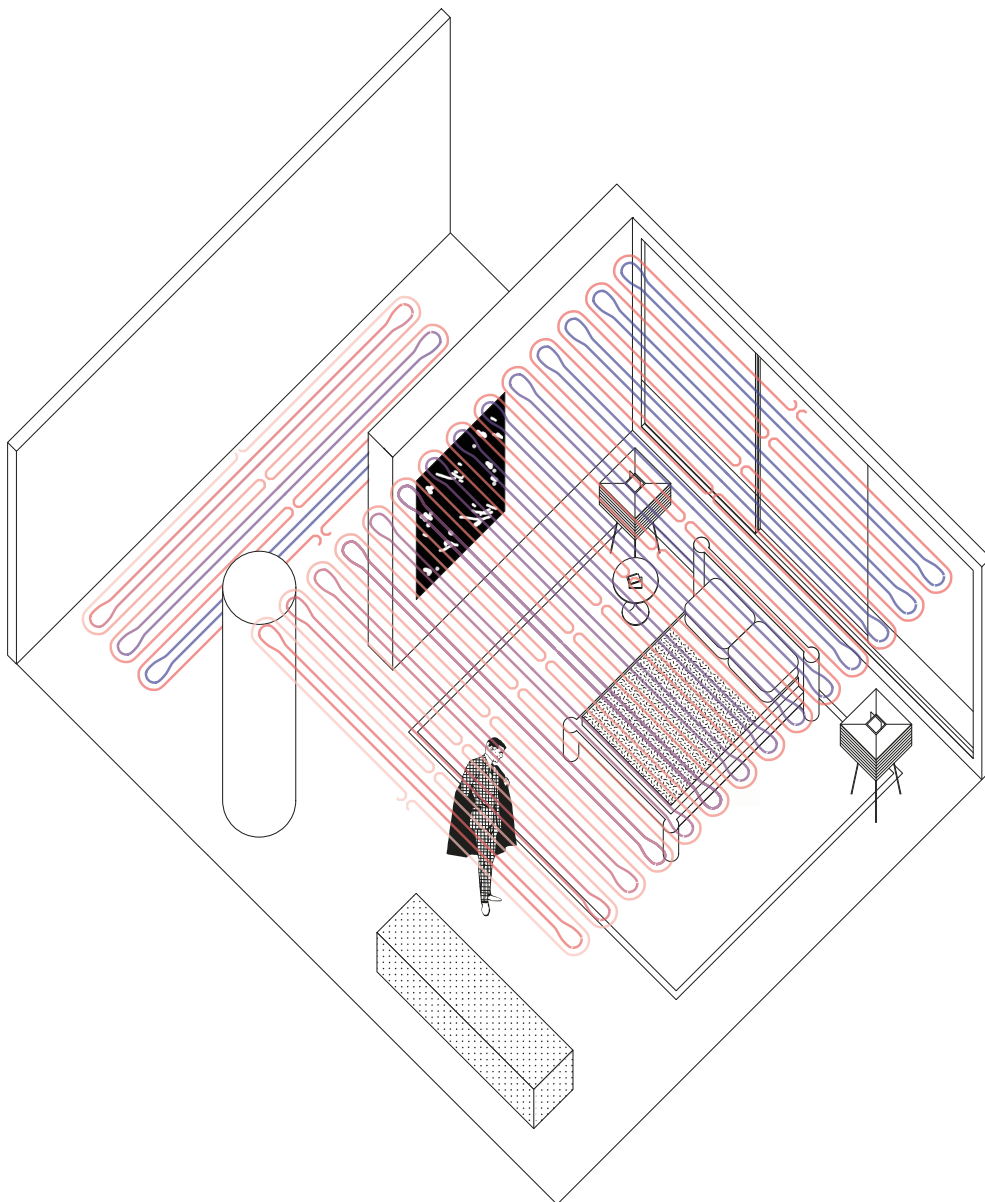


MORE FTA

HIGH-EFFICIENCY INSULATION PANEL
FOR DRY INSTALLATIONS



DESCRIPTION

USE

The MORE FTA panel is the ideal solution for new constructions, thanks to its very low thermal inertia and therefore reduced system adjustment times, which combines well with the high inertia of the building envelope and is also suitable for renovations and on mezzanines or in any case in which there is reduced room height.

Thanks to its flexibility of installation, MORE FTA can also be used on ceilings and false ceilings as well as on walls.

In the latter case, the radiant panel is installed in the masonry and then covered with plasterboard or gypsum fibreboard.

LAYING THE TUBES

The panel has grooves in the EPS layer, designed to accommodate 16 mm diameter pipes of the type RBM MORE PLUS (PE-RT Type II/EVOH/PE-RT) series 3968 or MORE 4L series 3969.

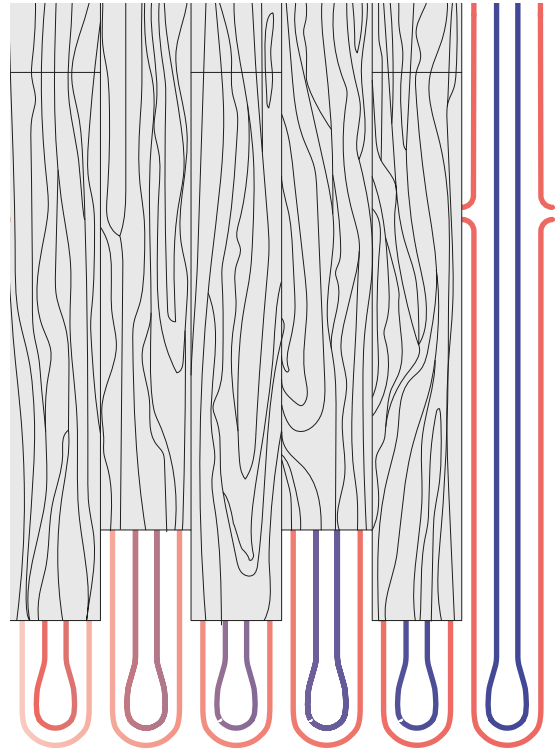
ADVANTAGES OF THE PANEL

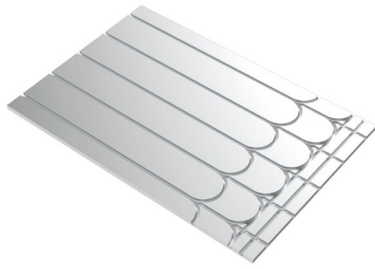
The main advantages of the MORE FTA panel are:

- No screed.
- Quick, easy installation and immediate walkability (it is not necessary to wait for cement screed to dry).
- Minimum space required (overall thickness min. 35 mm including flooring).
- Very low thermal inertia of the system.
- Reduced weight.
- Versatility (allows laying ceramic or parquet finishing coatings directly on the panel*).
- Increased thermal resistance.
- Under tube thermal insulation.

WARNINGS

Prior to installing MORE FTA, a perfectly level and even substrate must be provided.

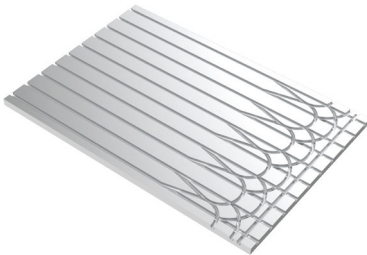




Installation pitch 160 mm

PRODUCTION RANGE

Description	Code	Dimensions Panel [mm]	Th. Insulation [mm]	Thermal res. m ² K/W	No. of panels per pack	Usable surface covered by 1 package
Panel MORE FTA installation pitch 160 mm Series 3977.A	3977M2000	1200x800	20	0.56	23	22.08 m ²
	3977M2500	1200x800	25	0.71	19	18.24 m ²
	3977M3300	1200x800	33	0.95	15	14.4 m ²
	3977M4800	1200x800	48	1.41	10	9.6 m ²



Installation pitch 80 mm

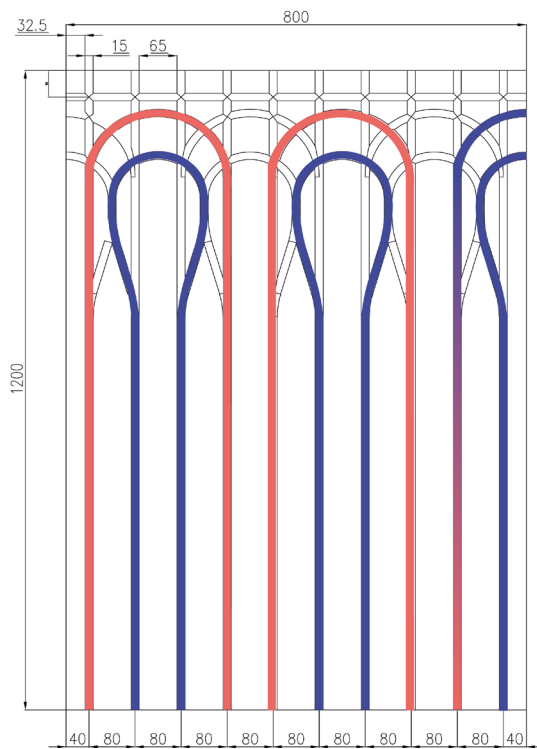
PRODUCTION RANGE

Description	Code	Dimensions Panel [mm]	Th. Insulation [mm]	Thermal res. m ² K/W	No. of panels per pack	Usable surface covered by 1 package
Panel MORE FTA installation pitch 80 mm Series 3977.B	3977M2010	1200x800	20	0.51	23	22.08 m ²
	3977M2510	1200x800	25	0.66	19	18.24 m ²
	3977M3310	1200x800	33	0.90	15	14.4 m ²
	3977M4810	1200x800	48	1.36	10	9.6 m ²

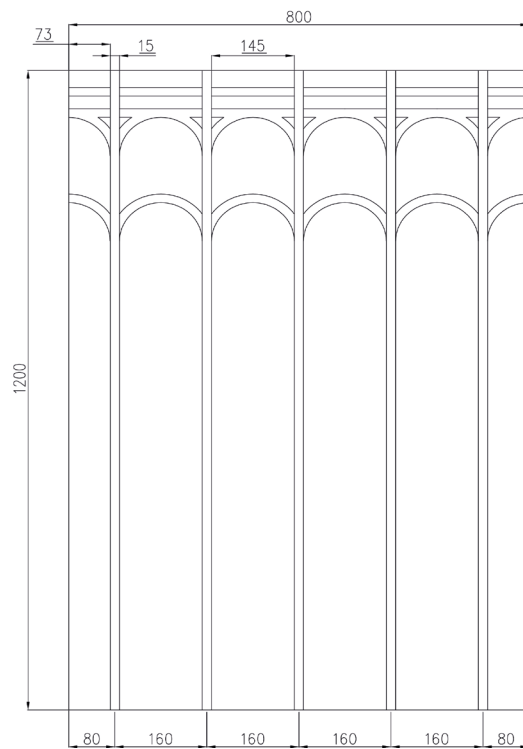
DIMENSIONAL FEATURES

Centre distance of the milling process, EPS panel for the tube to be housed	Pitch 160 mm Pitch 80 mm
Panel dimensions	1200x800 mm - 0.9 6m ² useful surface area
EPS insulating thickness	20/25/33/48 mm
Tube diameter applicable to the panel	external ϕ 16 mm - POLYETHYLENE MORE PLUS & MORE 4L

EXAMPLE OF TUBE DEVELOPMENT AND MAIN DIMENSIONS



Panel with 80 mm installation centre distance



Panel with 160 mm installation centre distance

CONSTRUCTION FEATURES

Panel made of EPS 300 in grey colour, pre-formed for the creation of a radiant floor and ceiling heating system, coupled on the surface with a smooth heat-sealing aluminium sheet, with joints for the installation of tubes with an external diameter of 16 mm.

TECHNICAL FEATURES OF THE INSULATING PANEL (EPS 300)

EPS Classification (according to UNI-EN 13163)	EPS 300	
Thermal Conductivity	$\lambda_D = 0.033$	W / m K
Declared thermal resistance UNI EN12643:2021	R \approx 0.56/0.51 (th. 20) R \approx 0.71/0.66 (th. 25) R \approx 0.95/0.90 (th. 33) R \approx 1.41/1.36 (th. 48)	m ² K / W m ² K / W m ² K / W m ² K / W
Compression resistant up to 10% compression	$\sigma_{10} \leq 300$ CS(10)	kPa
Compression resistant up to 2% compression	$\sigma_2 \leq 90$ CS(10)	kPa
Reaction to fire	Euroclass "E"	

NORMATIVE REFERENCES

UNI EN 13163:2012 - Thermal insulation products for buildings - Evaluation of conformity.

UNI EN 1264-3:2021 - Water-based surface embedded heating and cooling systems - Sizing

ADVANTAGES OF THE MORE FTA SYSTEM

The MORE FTA system is much quicker in reaching the operating temperature compared to a traditional radiant panel with screed. The image below shows the relation between the time of commissioning a plant realised in comparison to MORE FTA system with a flooring applied directly onto the panel and a radiant system with a traditional screed (th. 45 mm and th.110 mm).



0:43 MINUTES
MORE FTA



6:12 HOURS
TRADITIONAL SYSTEM
THICKNESS 45 mm
SCREED

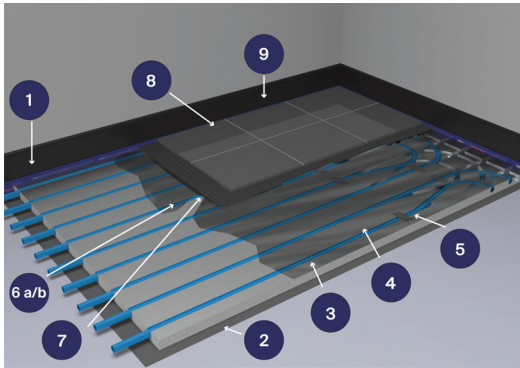


7:42 HOURS
TRADITIONAL SYSTEM
TH. 110 mm
SCREED

- This feature also makes it ideal for intermittent programming or with attenuation of the system operation;
- More uniform and quicker heat distribution compared to traditional systems: this feature allows for a larger pitch and, as a result, a decrease in the linear development of tubes, which means using less tubes and quicker installation time;
- Benefits on living comfort and savings on running costs;
- The design of the system allows you to limit installation thickness of the floor system as much as possible;
- The heat-sealing aluminium sheet already implemented at the top of the panel in EPS 300 collects the heat from the bottom side of the tube and takes it to the floor to be heated, limiting the downward dispersions and optimising heat diffusion.

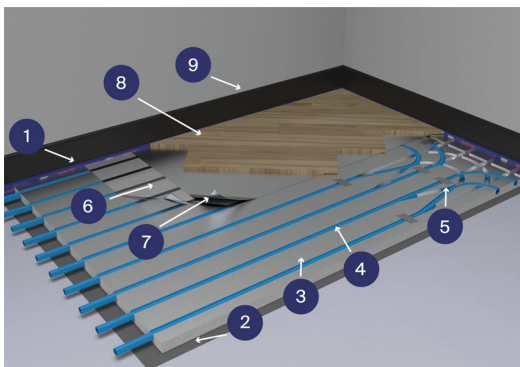
MORE FTA SYSTEM COMPONENTS:

SYSTEM WITH GLUED CERAMIC COVERING



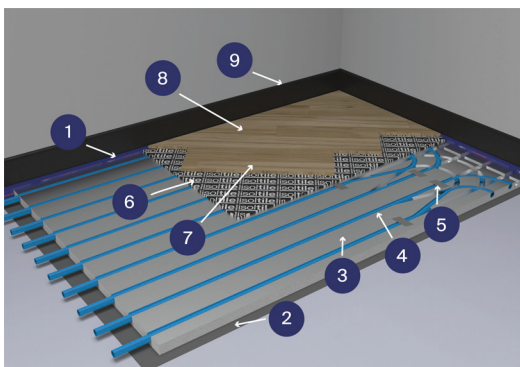
- 1) Perimeter expansion joint;
- 2) Glue for fixing the panel to the substrate (MORE FTA AD);
- 3) MORE FTA panel;
- 4) MORE PLUS tube Ø16x2 mm;
- 5) If necessary, aluminised tape to secure the tube on the bends (about 1m/m²);
- 6a/b) Protection epoxy primer (e.g. PRIMER MF RBM by Mapei) and Acrylic primer for superior glue adhesion (e.g. ECO PRIM T by Mapei or ACTIVE PRIME FIX by Kerakoll or similar - product not supplied).
- 7) Class C2E tile adhesive (e.g. ELASTORAPID by Mapei or H40 NO LIMITS + TOP LATEX By Kerakoll or similar - product not supplied);
- 8) Tiles (*) (minimum dim. 25x25 cm or alternatively 15x30 cm strips);
- 9) Skirting board.

SYSTEM WITH FLOATING PARQUET COVERING



- 1) Perimeter expansion joint;
- 2) Glue for fixing the panel to the substrate (MORE FTA AD);
- 3) MORE FTA panel;
- 4) MORE PLUS tube Ø16x2 mm;
- 5) If necessary, aluminised tape to secure the tube on the bends (about 1m/m²);
- 6) PE protective sheet; (code: 778M.20.02) or alternatively:
- 7) Support mat (e.g. Isolmant TOP by Isolmant - not supplied) (**)
- 8) Floating parquet placed resting on the underlying surface;
- 9) Skirting board.

SYSTEM WITH GLUED PARQUET COVERING



- 1) Perimeter expansion joint
- 2) Glue for fixing the panel to the substrate
- 3) MORE FTA Panel
- 4) MORE PLUS tube Ø16x2 mm
- 5) If necessary, aluminised tape to secure the tube on the bends (about 1m/m²)
- 6) ISOLTILE Classic by Isolmant or TOP INCOLLAPAVIMENTO by Isolmant substrate mat (mat NOT supplied) (*)
- 7) Glue for parquet (not supplied)
- 8) Parquet
- 9) Skirting board

(*) It is also possible to glue the tile directly to the FTA panel using glues such as H40 EXTREME by Kerakoll or similar and avoiding, only in this case, the use of both primers (epoxy and acrylic) prescribed in point 6 a/b)

(**) For the compatibility of the finishes with the mat models, please refer to their technical data sheets, which can be found on the manufacturer's website.

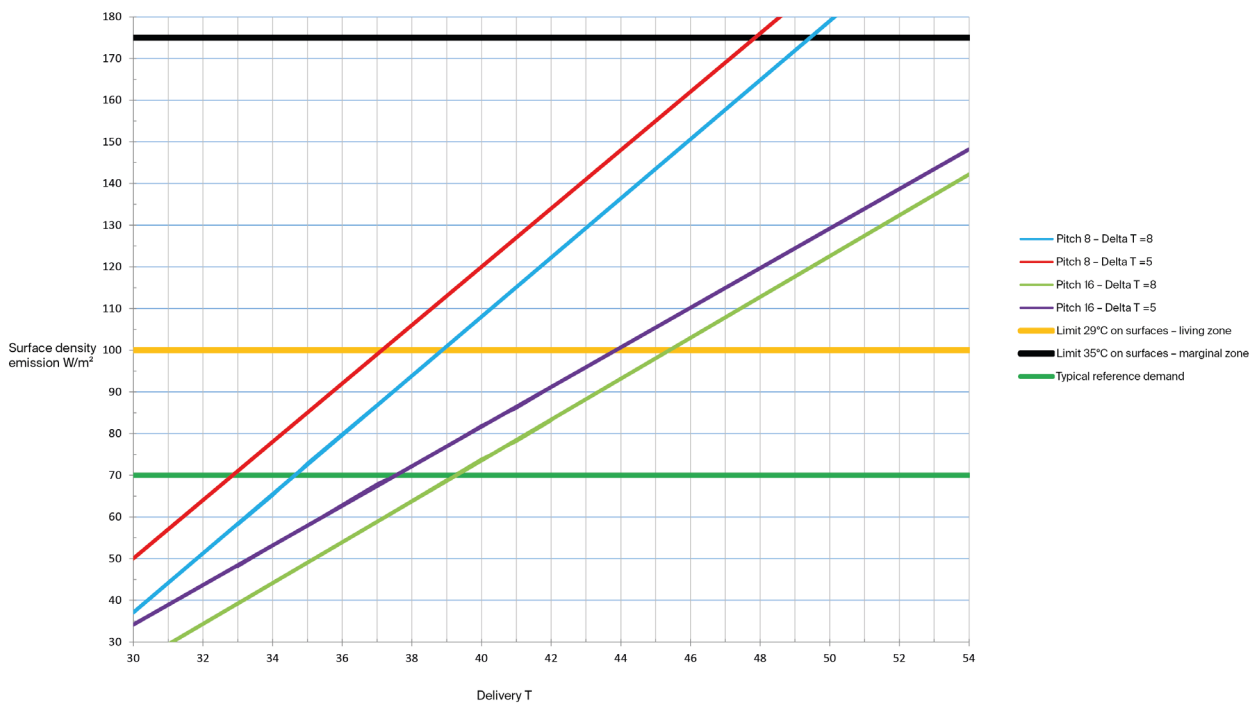
CERAMIC FLOOR LAYING

HEATING YIELDS OF THE MORE FTA RADIANT SYSTEM (VALUES ACCORDING TO EN 1264-3:2021)
 FINISH: CERAMIC 12.5 MM

OPERATING CONDITIONS OF THE SYSTEM:

Floor thermal resistance (ceramic 12.5 mm)	$R_{\lambda,B}$	0.01 m ² K/W
Tube thermal conductivity (polyethylene tube value)	λ_r	0.41 W/mK
External tube diameter	D_a	16.0 mm
Tube wall thickness	S_r	2.0 mm
Ambient temperature	Q_i	20.0 °C

SYSTEM CURVES:



SPECIFIC SURFACE DENSITY EMISSION AND SURFACE TEMPERATURE (**)

T _m [°C]	T Delta [°C]	Tube centre distance			
		8 [cm]		16 [cm]	
		"q [W/m ²]"	"θ _{f,m} [°C]"	"q [W/m ²]"	"θ _{f,m} [°C]"
33	5	71	26.6	48	24.7
	6	67	26.3	46	24.4
	7	63	25.9	43	24.1
	8	58	25.5	39	23.9
34	5	78	27.2	53	25.1
	6	74	26.9	50	24.8
	7	70	26.5	48	24.6
	8	65	26.1	44	24.3
35	5	85	27.8	58	25.5
	6	81	27.4	55	25.2
	7	77	27.1	52	25.0
	8	73	26.7	49	24.7
36	5	92	28.4	63	25.9
	6	88	28.0	60	25.7
	7	84	27.7	57	25.4
	8	80	27.3	54	25.2
37	5	99	28.9	68	26.3
	6	95	28.6	65	26.1
	7	91	28.3	62	25.8
	8	87	27.9	59	25.6
38	5	106	29.5	72	26.7
	6	102	29.2	70	26.5
	7	98	28.9	67	26.2
	8	94	28.5	64	26.0
39	5	113	30.1	77	27.1
	6	109	29.8	74	26.9
	7	105	29.4	72	26.6
	8	101	29.1	69	26.4
40	5	120	30.6	82	27.5
	6	116	30.3	79	27.3
	7	112	30.0	76	27.0
	8	108	29.7	74	26.8
41	5	127	31.2	86	27.9
	6	123	30.9	84	27.7
	7	119	30.6	81	27.4
	8	115	30.2	78	27.2
42	5	134	31.7	91	28.3
	6	130	31.4	89	28.1
	7	126	31.1	86	27.8
	8	122	30.8	83	27.6

** Values obtained by complying with the above operating conditions

θ_{f,m} = floor surface temperature

q = specific floor surface density emission

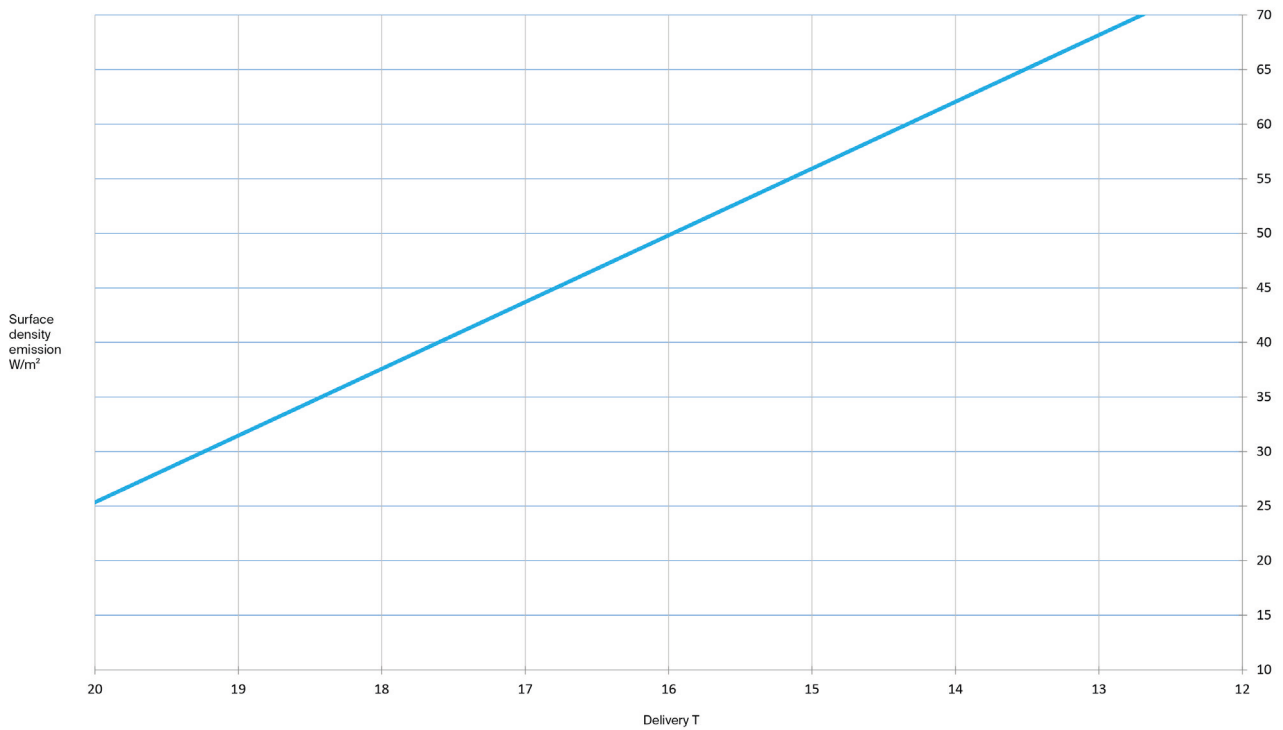
CERAMIC FLOOR LAYING

COOLING YIELDS OF THE MORE FTA RADIANT SYSTEM (VALUES ACCORDING TO EN 1264-3:2021)
 FINISH: CERAMIC 12.5 MM

OPERATING CONDITIONS OF THE SYSTEM:

Floor thermal resistance (ceramic 12.5 mm)	$R_{\lambda,B}$	0.01	m^2K/W
Tube thermal conductivity (polyethylene tube value)	λ_R	0.41	W/mK
External tube diameter	D_a	16.0	mm
Tube wall thickness	S_r	2.0	mm
Ambient temperature	Q_i	26.0	$^{\circ}C$
Ambient relative humidity	H_r	65	%
$T\Delta$ (delivery_return)	ΔT	3	$^{\circ}C$

SYSTEM CURVES:



SPECIFIC SURFACE DENSITY EMISSION AND SURFACE TEMPERATURE (**)

Tm	T Delta	Cooling	
		Tube centre distance 8 cm	
		"q [W/m ²]"	"θ _{f,m} [°C]"
13	3	68	16
14	3	62	16.9
15 (*)	3	56	17.8
16	3	51	18.6
17	3	43	19.5
18	3	37	20.3
19	3	31	21.2
20	3	26	22.1

* Recommended minimum delivery T. limit.

** Values obtained by complying with the above operating conditions

θ_{f,m} = floor surface temperature

q = specific floor surface density emission

LAYING FLOOR WITH FLOATING PARQUET

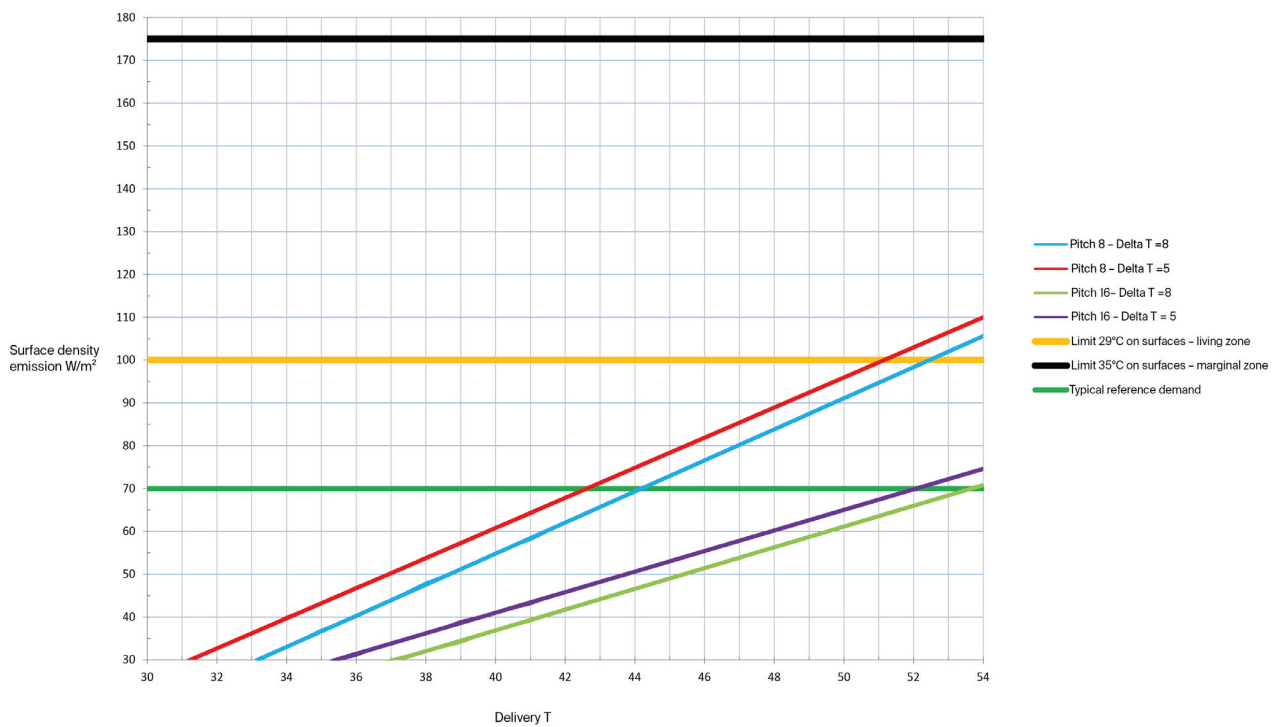
HEATING YIELDS OF THE MORE FTA RADIANT SYSTEM (VALUES ACCORDING TO EN 1264-3:2021)

FINISH: FLOATING PARQUET 15 MM

OPERATING CONDITIONS OF THE SYSTEM:

Floor thermal resistance (floating parquet + Isolmant TOP)	$R_{\lambda,B}$	0.15 m ² K/W
Tube thermal conductivity (polyethylene tube value)	λ_r	0.41 W/mK
External tube diameter	D_a	16.0 mm
Tube wall thickness	S_r	2.0 mm
Ambient temperature	Q_i	20.0 °C

SYSTEM CURVES:



SPECIFIC SURFACE DENSITY EMISSION AND SURFACE TEMPERATURE (**)

T _m [°C]	T Delta [°C]	Tube centre distance			
		8 [cm]		16 [cm]	
		"q [W/m ²]"	"θ _{f,m} [°C]"	"q [W/m ²]"	"θ _{f,m} [°C]"
33	5	36	23.5	24	22.5
	6	34	23.4	23	22.3
	7	32	23.2	21	22.2
	8	29	22.9	20	22.1
34	5	40	23.9	27	22.7
	6	37	23.7	25	22.6
	7	35	23.5	24	22.4
	8	33	23.3	22	22.3
35	5	43	24.2	29	22.9
	6	41	24.0	28	22.8
	7	39	23.8	26	22.7
	8	37	23.6	25	22.5
36	5	47	24.5	31	23.1
	6	45	24.3	30	23.0
	7	43	24.1	29	22.9
	8	40	23.9	27	22.7
37	5	50	24.8	34	23.4
	6	48	24.6	32	23.2
	7	46	24.4	31	23.1
	8	44	24.3	30	23.0
38	5	54	25.1	36	23.6
	6	52	24.9	35	23.4
	7	50	24.8	33	23.3
	8	48	24.6	32	23.2
39	5	57	25.4	39	23.8
	6	55	25.2	37	23.7
	7	53	25.1	36	23.5
	8	51	24.9	34	23.4
40	5	61	25.7	41	24.0
	6	59	25.5	40	23.9
	7	57	25.4	38	23.8
	8	55	25.2	37	23.6
41	5	64	26.0	43	24.2
	6	62	25.8	42	24.1
	7	60	25.7	41	24.0
	8	58	25.5	39	23.8
42	5	68	26.3	46	24.4
	6	66	26.1	44	24.3
	7	64	26.0	43	24.2
	8	62	25.8	42	24.1

** Values obtained respecting the operating conditions indicated above- Values obtained considering a desolidarising layer under parquet made of heat-conducting material (e.g. Isolmant TOP by Isolmant or similar)

θ_{f,m} = floor surface temperature

q = specific floor surface density emission

LAYING FLOOR WITH FLOATING PARQUET

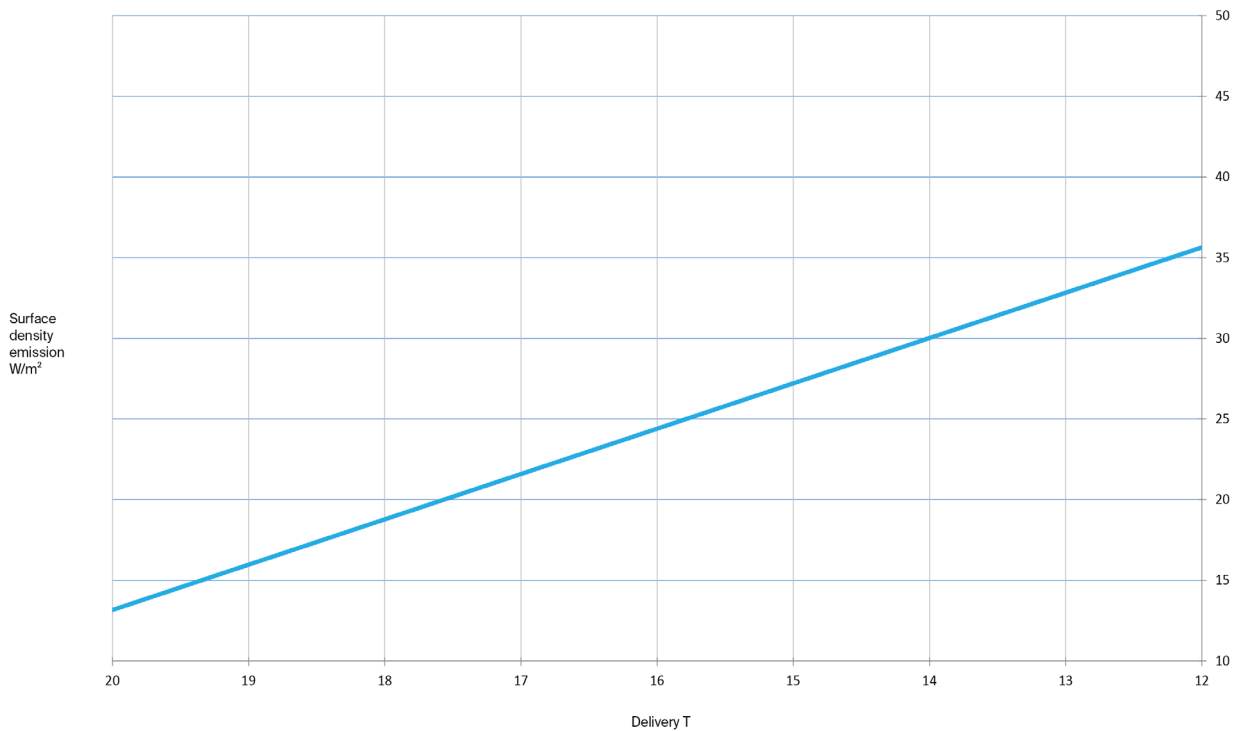
COOLING YIELDS OF THE MORE FTA RADIANT SYSTEM (VALUES ACCORDING TO EN 1264-3:2021)

FINISH: FLOATING PARQUET 15 MM

OPERATING CONDITIONS OF THE SYSTEM:

Floor thermal resistance (floating parquet + isolmant TOP)	$R_{\lambda,B}$	0.15	m^2K/W
Tube thermal conductivity (polyethylene tube value)	λ_r	0.41	W/mK
External tube diameter	D_a	16.0	mm
Tube wall thickness	S_r	2.0	mm
Ambient temperature	Q_i	26.0	$^{\circ}C$
Ambient relative humidity	H_r	65	%
$T\Delta$ (delivery_return)	$T\Delta$	3	$^{\circ}C$

SYSTEM CURVES:



SPECIFIC SURFACE DENSITY EMISSION AND SURFACE TEMPERATURE (**)

Tm	T Delta	Cooling	
		Tube centre distance 8 cm	
		"q [W/m ²]"	"θ _{f,m} [°C]"
13	3	33	20.9
14	3	30	21.4
15 (*)	3	27	21.8
16	3	24	22.3
17	3	22	22.7
18	3	19	23.1
19	3	16	23.6
20	3	13	24

* Recommended minimum delivery T. limit.

** Values obtained respecting the operating conditions indicated above- Values obtained considering a desolidarising layer under parquet made of heat-conducting material (e.g. Isolmant TOP by Isolmant or similar) θ_{f,m} = ceiling surface temperature

θ_{f,m} = floor surface temperature

q = specific floor surface density emission

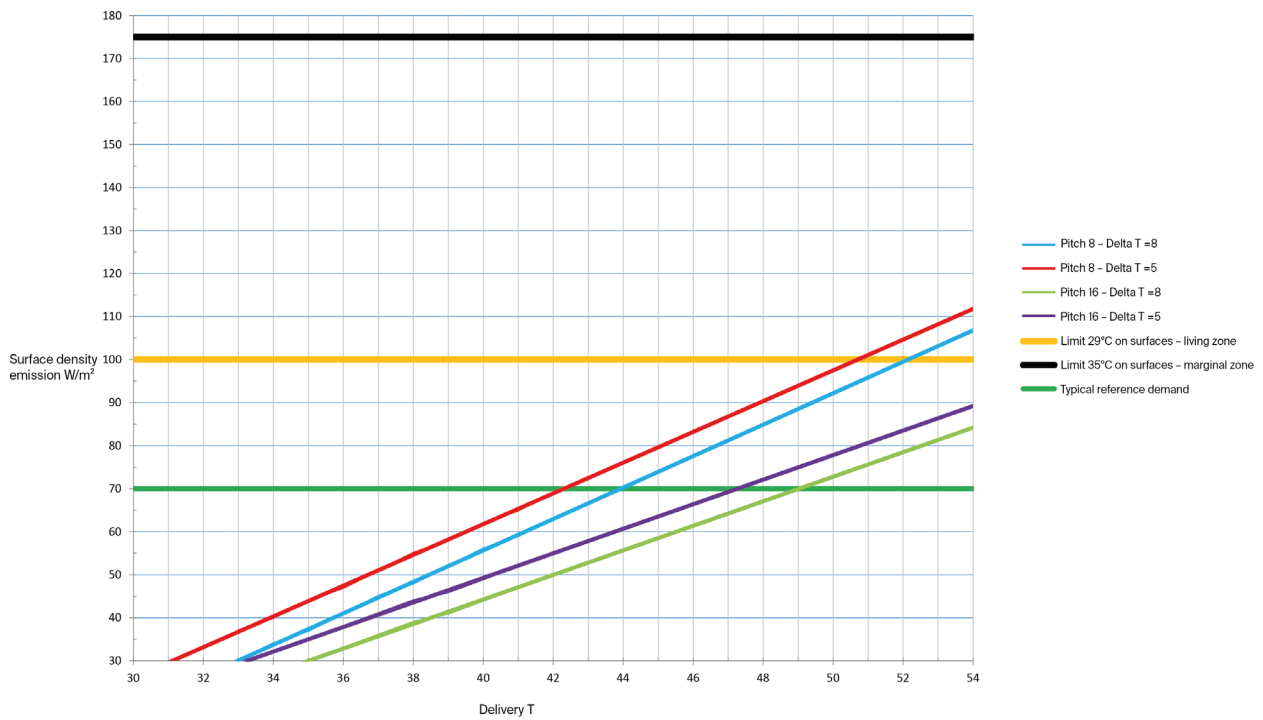
LAYING FLOOR WITH GLUED PARQUET ISOLTILE MAT

MORE FTA UNDERFLOOR HEATING SYSTEM WITH PARQUET COVERING (12.5 MM) GLUED WITH "ISOTILE" MAT

OPERATING CONDITIONS OF THE SYSTEM:

Floor thermal resistance (glued parquet + Isolmant TOP)	$R_{\lambda,B}$	0.15 m ² K/W
Tube thermal conductivity (polyethylene tube value)	λ_r	0.41 W/mK
External tube diameter	D_a	16.0 mm
Tube wall thickness	S_r	2.0 mm
Ambient temperature	Q_i	20.0 °C

SYSTEM CURVES:



SPECIFIC SURFACE DENSITY EMISSION AND SURFACE TEMPERATURE (**)

Tm [°C]	T Delta [°C]	Tube centre distance			
		8 [cm]		16 [cm]	
		"q [W/m ²]"	"θf,m [°C]"	"q [W/m ²]"	"θf,m [°C]"
33	5	37	23.6	29	22.9
	6	34	23.4	27	22.8
	7	32	23.2	26	22.6
	8	30	23.0	24	22.4
34	5	40	23.9	32	23.2
	6	38	23.7	30	23.0
	7	36	23.5	29	22.9
	8	34	23.3	27	22.7
35	5	44	24.2	35	23.5
	6	42	24.1	33	23.3
	7	40	23.9	32	23.1
	8	37	23.7	30	23.0
36	5	47	24.6	38	23.7
	6	45	24.4	36	23.6
	7	43	24.2	34	23.4
	8	41	24.0	33	23.3
37	5	51	24.9	41	24.0
	6	49	24.7	39	23.8
	7	47	24.5	37	23.7
	8	45	24.3	36	23.5
38	5	55	25.2	44	24.2
	6	53	25.0	42	24.1
	7	50	24.8	40	23.9
	8	48	24.6	39	23.8
39	5	58	25.5	46	24.5
	6	56	25.3	45	24.3
	7	54	25.1	43	24.2
	8	52	25.0	41	24.0
40	5	62	25.8	49	24.7
	6	62	25.6	48	24.6
	7	58	25.6	46	24.4
	8	56	25.3	44	24.3
41	5	65	26.1	52	25.0
	6	63	25.9	50	24.8
	7	61	25.8	49	24.7
	8	59	25.6	47	24.5
42	5	69	26.4	55	25.2
	6	67	26.2	53	25.1
	7	65	26.1	52	24.9
	8	63	25.9	50	24.8

** Values obtained in compliance with the operating conditions indicated above - Values obtained with a desolidarising layer for parquet gluing such as Isoltile Classic by Isolmant or similar
 θf,m = floor surface temperature
 q = specific floor surface density emission

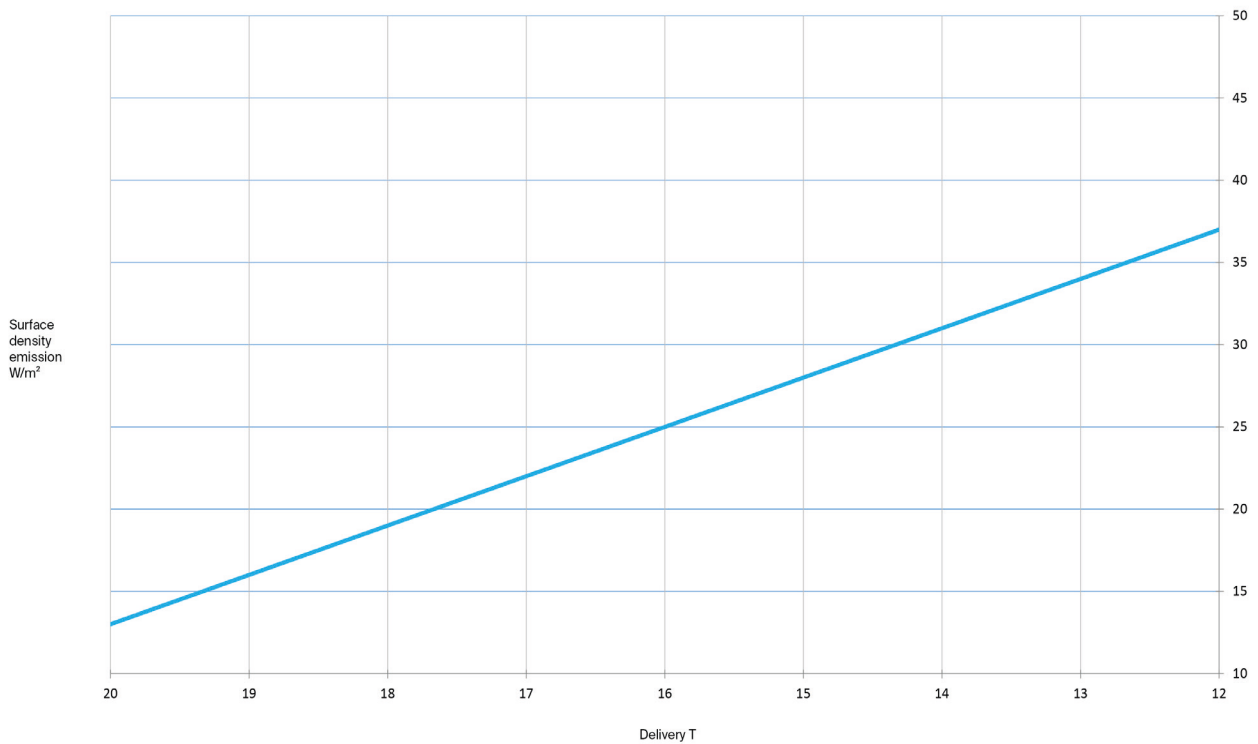
LAYING FLOOR WITH GLUED PARQUET ISOLTILE MAT

MORE FTA UNDERFLOOR COOLING SYSTEM WITH PARQUET COVERING (12.5 MM) GLUED WITH "ISOTILE" MAT

OPERATING CONDITIONS OF THE SYSTEM:

Floor thermal resistance (glued parquet + insulation)	$R_{\lambda,B}$	0.15	m^2K/W
Tube thermal conductivity (polyethylene tube value)	λ_r	0.41	W/mK
External tube diameter	From	16.0	mm
Tube wall thickness	S_r	2.0	mm
Ambient temperature	Q_i	26.0	$^{\circ}C$
Ambient relative humidity	H_r	65	%
$T\Delta$ (delivery_return)	$T\Delta$	3	$^{\circ}C$

SYSTEM CURVES:



SPECIFIC SURFACE DENSITY EMISSION AND SURFACE TEMPERATURE (**)

Tm	T Delta	Cooling	
		Tube centre distance 8 cm	
		"q [W/m ²]"	"θ _{f,m} [°C]"
13	3	34	20.8
14	3	31	21.3
15 (*)	3	28	21.7
16	3	25	22.2
17	3	22	22.6
18	3	19	23.1
19	3	16	23.5
20	3	13	24

* Recommended minimum delivery T. limit.

** Values obtained by complying with the above operating conditions. Values obtained with a desolidarising layer for gluing parquet such as Isotile Classic by Isolmant or similar

θ_{f,m} = floor surface temperature

q = specific floor surface density emission

MORE FTA SYSTEM INSTALLATION GUIDE

TECHNICAL SOLUTIONS FOR PANEL INSTALLATION AND SUBSEQUENT LAYING OF FLOORS

The following prescriptions derive from the experience acquired in the installation of the MORE FTA dry system by professional installers. The person installing this system must always use good sense, as well as in any other occasion. Installation is easier by following a specific drawing, so that the delivery and return ends of the pipes are connected at the same point. IT IS recommended that the hot part of the tube (delivery) is located along the outer wall, to compensate for extra heat losses, such as with windows for example.

WARNINGS:

Always use safe equipment and gloves to prevent cuts or injury. The aluminium covering panel can be extremely sharp during bending or tracing. Pay the utmost attention.

PRELIMINARY CHECKS:

VERIFICATION OF THE SUBSTRATE

The screed on which the FTA panel is to be installed must have a smooth, flat and compact surface in order to ensure the best possible bonding and contact between the panel and the substrate itself.

Carry out the following checks before installation.

- Checking surface flatness: place a 2 m long straightedge on the substrate and check that there are no depressions greater than 2-3 mm.
- Checking structural soundness: hitting the surface of the screed with a hammer must not create cracks or deep dents.
- Checking surface firmness: by rubbing the surface with the tip of a nail, no deep grooves should be created and no dust should appear.
- Crack control: cracks resulting from the natural shrinkage of cement are permitted. All evident cracks, particularly those affecting the entire thickness of the substrate and those that are evolving, must be consolidated with appropriate products.
- Surface cleanliness check: the surface of the substrate must have been thoroughly cleaned.
- Checking the moisture content of the substrate: the moisture content of the substrate must be within the limits stipulated in relation to the type of substrate. Checking the moisture content of the substrate must be carried out strictly with a calcium carbide hygrometer (other instruments may give incorrect indications under certain conditions).

The maximum permissible installation values, which must be strictly adhered to, are as follows:

- 2.0% for a cement substrate (maximum thickness 80 mm);
- 0.4% for an anhydrite substrate;
- 10.0% for wood panels.

For other types of substrate, always refer to what is good practice and the prescriptions of those in charge of its construction.

- 0 In the case of thick substrates, the check must be carried out on the entire thickness and not only on the surface.

In the event that the prescribed requirements are not met, the appropriate corrective measures must be taken before installation.

The installer must obtain a declaration/certificate from the company regarding the degree of moisture present at the time of installation in the substrate.

The FTA panel may also be installed on pre-existing floors, provided that all the requirements regarding flatness, solidity, compactness, surface cleanliness and absence of cracks as well as residual or rising damp that are necessary to ensure correct contact at every point of the surface and protection from undesirable external agents are met.

Before laying on existing hard floors (ceramic tiles, stone, etc.), particular care must be taken to ensure that the surface is suitable for proper bonding. Where necessary, preliminary action must be taken with deep cleaning, degreasing and surface scratching treatments using mechanical means and/or suitable chemicals.

Before laying on an existing wooden floor, it must be sanded in order to remove all traces of surface varnish.

ATTENTION:

The installation is not compatible with existing textile (e.g. carpet) or resilient (linoleum, PVC, etc.) floor coverings, which must therefore be removed.

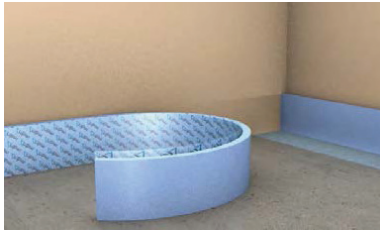
PRESERVATION OF THE FTA PANEL

The panel must be stored in rooms that are:

- safe, where there is no danger of damage from other materials or possible handling by unauthorised persons;

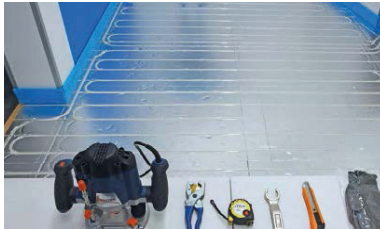
FLOOR LAYING:

1



Place the adhesive perimeter strip code 472M.08.12, along the whole perimeter of the premises where the radiant system will be installed and on the perimeter of all the building elements which will be in contact with the system, as must always be done when laying radiant floor systems.

2



We recommend laying the entire MORE FTA panel system before final gluing on the substrate. This allows to verify the absence of problems and if there is the need to make preventive additional marks. It may be handy to number panels with a marker once laid, for easier final installation.

3a



For bonding the panels to the substrate, RBM MORE can supply and recommend MORE FTA AD (3a) adhesive. Apply MORE FTA AD at a rate of approximately 100-150 g/m² on the underside of the MORE FTA panel. It is suggested that the adhesive be applied as shown in the diagram opposite (3a). Glue the panel to the substrate, ensuring uniform adhesion. Check that the existing surface on which the system will be installed (smoothed cement screed, cement smoothing, ceramic or natural stone floors, etc.) is free of dust and of separating substances, stable, flat, dry, free of rising damp and mechanically resistant.

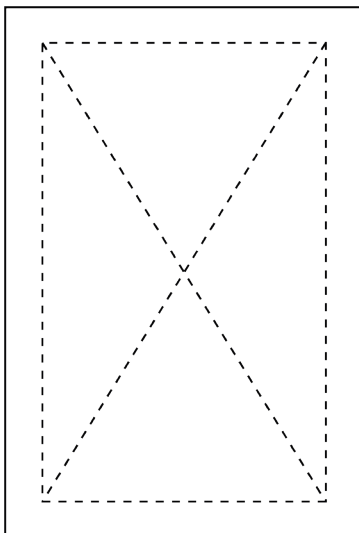
During the hardening phase (generally, about 30 minutes), MORE FTA AD increases in volume, it is, therefore, recommended not to exceed with the quantity. After this period, the panel will be firmly glued to the substrate. After glueing, with a suitable polyurethane thinner, clean away any excess product that has not hardened. It is advisable, when using MORE FTA AD, to use all personal protective equipment. For further indications/warnings, please refer to the safety data sheet of the product itself.

In the case of substrates that are not suitable for direct installation of the system, consolidate them by means of appropriate operations to be carried out by the construction company:

- for dusting substrates: PRIMER A dust-preventative by Chimiver Panseri SpA or similar;
- for crumbling substrates: PRIMER SF 1105 (A+B) by Chimiver Panseri SpA or similar;
- for uneven substrates or substrates made of lightened concrete: proceed with appropriate filling and levelling (e.g. screeds).

In the event the support is excessively porous-absorbing or not suitable for the use of MORE FTA AD, glue the panels using a cement-based adhesive type ADESILEX P4 by MAPEI® (*) (3b) or similar (use suitable adhesives without solvent that can attack the EPS of the panels). If one prefers (and only if permitted), use of water-based glue, generally, it is possible to apply it with a spatula (2 mm teeth).

3



3b

1



Place the adhesive perimeter strip code 472M.08.12, along the whole perimeter of the premises where the radiant system will be installed and on the perimeter of all the building elements which will be in contact with the system, as must always be done when laying radiant floor systems.

2



We recommend laying the entire MORE FTA panel system before final gluing on the substrate. This allows to verify the absence of problems and if there is the need to make preventive additional marks. It may be handy to number panels with a marker once laid, for easier final installation.



3c

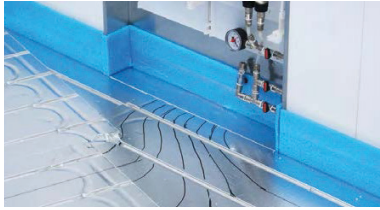
The temperature must range from 15 to 35°C. Operate for sections of the site in order to be able to walk without touching the glue. It is better to begin from the furthest corner of the room. Sprinkle the glue and let it dry for as long as it is sticky, to allow the panels to adhere better when installed. The operation can take from 10 minutes to half an hour, on the basis of the substrate and the ambient temperature. In case of a cement substrate, especially of a slab of the ground floor or basement, it is recommended to use a cement-based adhesive for tiles, spread with a toothed spatula (3-4 mm teeth).

3

Where applicable, it is possible to use “coating” glues (again solvent-free and not supplied by RBM MORE) with the same requirements commonly observed to use them. In all cases where a glue other than MORE FTA AD is used, it is important to glue the entire bottom surface of the panel for a uniform adhesion of the panel itself to the substrate, thus avoiding the presence of gaps, which generate noise when the system is used. When using water-based glue: Once the glue is spread on the floor it is ready, place the panel, adjust it, and press it in its position. Generally, it is possible to walk on the panels while the glue is drying, but with extreme caution and always in compliance with the prescriptions of the manufacturer of the adhesive. If the panels “slide” on the adhesive once positioned, this means that they have been positioned too early. If the adhesive was left to dry for too long, it is generally recommended to apply another layer over the first to avoid inadequate gluing. In the case of cement-based tile adhesive: lay the tiles before it dries. Remember to near the panels together and carefully remove the excess glue that comes out from the joints between the panels, before it dries. Generally, it is recommended not to walk on the panels while the glue is drying. If using a generic “coating” glue, follow the same requirements for gluing insulating coats on the outside walls, though by still following the rule of completely covering the surface of the panel.

IMPORTANT:

- Make sure to near the panels together properly, making sure that the tube guide tracks fit into each other (3c).
- Always make sure that, once glued, the panels do not have any "empty" areas under them or circumstances that could cause them to bend over time, which could cause issues once the floor is finished the panel layer must be uniform, stable and flat.



4a



4b



4c



4d

Despite the fact that MORE FTA panels are already equipped with preformed grooves and bends to accommodate the pipes, it may be necessary to cut one or more new traces on-site and create a complete circuit, especially where the tubes are joined to connect to the manifold, or to make particular bends or routes not pre-traced on the panel.

The trace can be made by cutting the panel with a common box cutter or with an electric device (cutter), taking care to create traces that are compatible with the diameter of the tube they must house (neither too tight nor too loose - recommended bit / cutter of 16mm). First trace the channel with a pen or a marker on the surface of the panel. The curves of the tubes must not be too tight (the minimum bending radius for a 16 mm tube is 80 mm) (4a).

Use a common or electric cutter to cut a 16 mm wide and 17 mm deep channel (4b) and completely remove all residues, leaving the surface clean.

Bends (4c): At the bends, the track is already prepared. With the aid of a suitable tool remove the surface layer of aluminium by removing the pre-defined track.

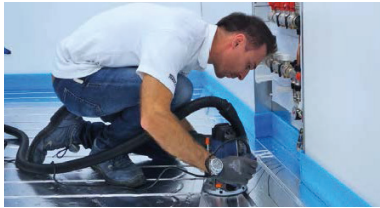
It is advisable to notch the surface layer of aluminium covering the pre-milled bend at one of the two sides of the bend and not in the middle. This will allow the resulting aluminium layer to be easily folded into the tube's groove without creating excessive thicknesses that could impede the correct insertion of the tube into its seat.

Insert the aluminised adhesive tape code 2018M.00.02 into the track created, in order to restore the aluminised surface layer (4d). Pay attention to properly adhere the aluminised tape to the bottom of the track in a way that does not prevent the correct insertion of the tube. The tube connected must not come out from its seat and must remain covered under the level of the surface of the panel. Do not insert tape the tracks made starting from the manifold if these are particularly large and close, since, considering the proximity of the pipes in that zone, this would help avoid excessive heat emission in this point.

It is not necessary to insert the tape into the grooves of the pre-formed bends with which the FTA panel is equipped. To ensure proper heat diffusion at these bends, it will be sufficient to apply a layer of 'flat' aluminised tape to cover the tube once it has been laid.



5a



5a



5a

Vacuum the tracks and the panels, to eliminate any processing residues that might cause interference in the installation.

Installing the tube (5a): Proceed by placing the tube starting from the distribution manifold. Check that the length of the circuit is correct. Because of the many tracks that may need to be made at this point, it may be more practical to lay the panel in the immediate vicinity of the manifold with the grooves parallel to the wall and make the starting tracks perpendicular to the grooves.

In the vicinity of the outlets from the manifold, care should be taken to ensure that the pipes are not raised above the level of the panel as the flooring would not be able to be bonded in these areas. If necessary, avoid the use of the supplied bend formers, taking care, of course, not to exceed the minimum bending radius of the tube, and ensuring that the pipes are secured so that they lie within the compartment delimited by the manifold's housing box.

Installation of the tubes through the walls: Before laying the tubes for heating through the wall or in the floor, insert the relative corrugated protective conduit. The operation must be carried out by two people: one lays the tube and the other stretches it with caution, pulling it from the other side. If the tube is blocked, it can create folds: avoid.

Laying of aluminised adhesive tape code 2018M.00.02: Apply adhesive tape on the tube bends and to keep it in place inside the tracks (just as you would use hook clips in the "classic" radiant floor system with moulded EPS panels). It is good practice to seal joints between panels with tape.

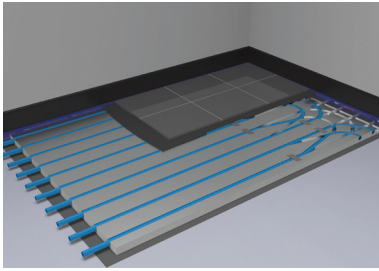
Fasten the tube with the tape where it tends to come out from its seat. In any case, it is absolutely necessary to ensure that the tube laid within its guides (whether preformed or made on site) does not protrude from the upper surface plane of the panel, in order to avoid possible problems with the subsequent stability of the room floor.

5

6

In some particular points of the system, where it is necessary to make a large number of millings on site, becoming practically unable to guarantee an adequate panel surface to provide sufficient support for the subsequent laying of the flooring (e.g. numerous outlets from the manifold or points of "passage" of the system, with a pipe installation pitch of less than 50 mm), it is recommended to make a suitable layer of screed over the tubes, in order to create a sufficiently flat and stable support layer. In some borderline cases, it may even be necessary to avoid using the MORE FTA panel altogether, replacing the entire panel with the levelling screed layer. It is up to the installer to assess and indicate where it is necessary to carry out this operation (this operation is in any case the responsibility of the construction company).

CERAMIC FLOOR LAYING INSTRUCTIONS:



The ceramic floor will be glued using common glues specific for gluing floors (e.g. class C2E or higher cement glues) directly to the FTA panel. Once the underfloor heating system has been installed and pressure-tested, move on to laying the floor (for pressure-testing and testing conditions, please also refer to the usual test conditions for radiant systems, as reported in UNI 1264-3:2021). The heating system must be switched off, especially during the laying of the tiles, as the heat could alter the drying time of the glue and of the mortar, negatively affecting the characteristics of durability.



- Apply an epoxy primer to protect the aluminium on the entire surface of the panels. RBM MORE requires **PRIMER MF by MAPEI® (*)** code 3055M.00.02, for roller laying or similar products (7a). Average use 0.2 kg/m².

PRIMER MF does not alter and does not damage the PEX tubes.

If using **PRIMER MF by MAPEI® (*)**, after 12 hours and not later than 36 hours from the application of the same, apply to the entire surface an acrylic primer that assists the subsequent sealing of the glue used for tiles. RBM MORE recommends **ECOPRIM T by MAPEI® (*)** or **ACTIVE PRIME FIX by KERAKOLL (*)**, with roller application. Average use 0.1 - 0.15 Kg/m². After 4-5 hours but no more than 48 hours after laying **ECOPRIM T**, ceramic or natural stone tiles must be glued with suitable adhesives such as **ELASTORAPID by MAPEI® (*)** or two-component adhesives such as **KERABOND by MAPEI® (*)** mixed with **ISOLASTIC by MAPEI® (*)** or **H40 NO LIMITS by KERAKOLL (*)** mixed with **TOP LATEX by KERAKOLL (*)**. As an alternative to the cycle described above, it is also possible to glue the tile directly to the FTA panel using glues such as **H40 EXTREME by KERAKOLL** or similar and, only in this case, avoiding the use of both primers (epoxy and acrylic) required above.

ATTENTION: The tiles must not be smaller than 25x25 cm (alternatively you can also use strips with a minimum size of 15x30 cm) and the joints must be filled with products such as ULTRACOLOR PLUS by MAPEI® or similar products (*) in the selected colour.

The floor expansion joints can be sealed with **MAPESIL LM by MAPEI®** or similar products (**).

The width of the joints must comply with the requirements of the reference standard for the installation of ceramic tiles (UNI EN 11493-1), assessed in relation to different aspects, including: type and size of the tiles, intended use, characteristics of the substrate, environmental conditions during use and under operating conditions. The same standard specifies that jointing (joint = 0 mm) is not permitted and that under no circumstances may a joint width of less than 2 mm be prescribed or adopted.

Laying large format tiles (e.g. 120x120x0.6 or 100x200x0.6 etc.) is permitted, but the size of these tiles makes them much more sensitive to imperfections and unevenness of the substrate that they are installed on. This may require different procedures from those prescribed in this manual.

7A

(*) Please refer to the manufacturer's manual for more details.



7A

In the case of areas on the floor where the size of the tiles needs to fall below the values provided above (e.g. cuts near the walls or recesses, etc.), make sure that any concentrate loads due to furniture etc. do not affect precisely these tiles. If it is not possible to do otherwise, provide for either a suitable distribution layer of surface load to be placed under the concentrated load or avoid placing the MORE FTA panel right near these zones, if necessary by keeping a small clearance from the wall that will be filled with a suitable self-levelling screed or with a fibre cement panel or a similar one with the same thickness value. This is done to avoid any cracks of the tiles. It is a good idea to **INFORM THE LANDLORD** by also inserting this sheet in the declaration of conformity of the system.

Apply the adhesive for tiles on the system using a toothed spatula.

IMPORTANT: The adhesive for the tiles must be applied in a perfectly uniform manner and cover the entire surface of the panel (and in any case always in line with the manufacturer's requirements) to avoid possible cracking of the tiles in case of application of concentrate loads on them or near the relative joints. The drying times of tile adhesives may be longer than indicated in the technical documentation of the tile adhesives, as the MORE FTA system constitutes a waterproof, non-draining substrate. Before proceeding with the sealing of the gaps between the tiles using special 'jointing' materials, make sure that the adhesive is perfectly dry by using specific tools recommended by the adhesive manufacturer.

Note: the above constitutes only a series of general recommendations to install the flooring. In case of doubt relating to the various indications reported, follow the instructions of the manufacturer of the flooring and / or of the relative accessories.

Always make sure that the panels are well glued to the substrate. If a panel or part of a panel is not perfectly stable and firm, it is imperative to investigate the reason and carry out any necessary steps to remedy the problem.

The radiant system must be absolutely stable and level before laying floor coverings.

INSTRUCTIONS FOR LAYING PARQUET:

VERIFICATION OF THE SPECIFIC ENVIRONMENTAL CONDITIONS FOR LAYING WOODEN FLOORS

Before starting the installation, make sure that any other work to be carried out on site (masonry, sanitary fitting, etc.) has been completed.

Ensure that the relative humidity in the room is between 45% and 65% and that the room temperature is between 16°C and 25°C. Compliance with these conditions is important both to avoid deformation of the strips and to ensure the proper functioning of the adhesives and other products used for laying.

CONDITIONS OF USE

Wood is naturally subject to dimensional variations depending on humidity and ambient temperature.

Consequently, the following requirements must be observed if the floor is to be constantly in perfect shape.

A. Air temperature and humidity

7B Constantly maintain an air temperature between 15°C and 30°C and, more importantly, a relative air humidity between 45% and 65%. This range corresponds to the optimal environmental conditions not only for the floor, but also for people's well-being.

If difficulties are encountered in keeping the air humidity above the minimum limit in the winter period, the use of appropriate humidification systems is recommended.

B. Floor surface temperature

The control system must be set so that the temperature measured at the floor surface does not exceed 27°C (consider that modern low-temperature systems already offer excellent room comfort with floor surface temperatures of around 24-25°C).

UNDERFLOOR COOLING

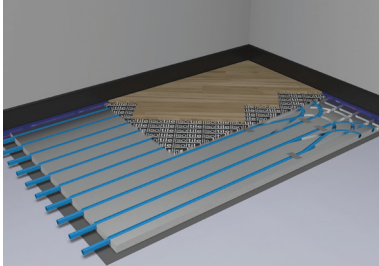
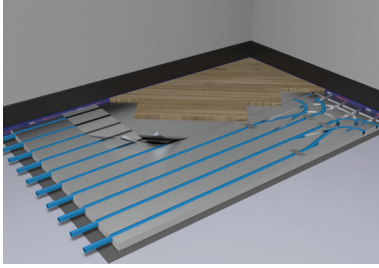
For systems in which cooling is also to be used, it is absolutely necessary to set up all suitable systems to categorically prevent the formation of condensation at every level of stratification of the floor system, i.e. both surface and in the gaps.

The lack of such set-ups could lead to the wood absorbing moisture and consequently showing dimensional deformations and changes in its surface appearance.

MORE offers complete and integrated solutions for the correct control of all these parameters.

PLEASE NOTE:

These prescriptions, borrowed from leading wood flooring experts, are valid in every case of parquet installation on radiant systems and not only on the MORE FTA system.



INSTRUCTIONS FOR FLOATING PARQUET:

- If a wooden, floating type floor is required, this will be laid on a support mat compatible with heating systems such as ISOLAMANT TOP by ISOLMANT®.

- Before proceeding with the laying of the mat and parquet, take care to lay a suitable protective layer with a vapour barrier function made of PE sheet code 778M.20.02, taking care to cover the entire system and to overlap the various sheets by at least 5-10 cm along the sides.

With the floating parquet laying solution, no surface treatment of the panel (primer or other) is required.

- The floor layer must always ensure that the substrate is suitable for the installation of his product before proceeding with the installation.

GLUED PARQUET INSTRUCTIONS:







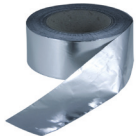


- In order to be able to glue a parquet floor, it will be necessary to install in between the MORE FTA panel and the chosen multilayer parquet product, a support layer suitable for gluing the parquet floor and able to withstand the natural dimensional movements that are induced in the wood by heat or cold transmitted by the radiant system (possible shrinkage and swelling, respectively). The supporting layer is made with a product such as ISOLTILE CLASSIC by ISOLMANT, which is simply placed on the MORE FTA panel, and the parquet is glued onto it, using specific adhesives for use with the parquet itself. The parquet is glued onto the substrate using common glues specific for gluing wooden floors.

Prefinished, 2-layer or 3-layer parquet flooring with a thermal resistance $\leq 0.10 \text{ m}^2 \text{ K/W}$ is compatible with this type of solution. However, always refer to the mat's technical data sheet for its compatibility with the chosen flooring.

Alternatively, the support layer **TOP INCOLLAPAVIMENTO** by ISOLMANT® can be used for floating installation on the MORE FTA panel and subsequent gluing of the parquet on the support thanks to the adhesive layer that **TOP INCOLLAPAVIMENTO** by ISOLMANT® is equipped with. In any case, it is always important that the support layer adheres to the MORE FTA panel and that it is a good heat conductor and has sufficient consistency to withstand the stresses that it will be subjected to. Generally, the manufacturer of the support will provide suitable specifications on the relative technical sheet, so that its own product can withstand, for example, the tensile stress of the wooden parquet according to the wood essence and thickness. Even with the glued parquet laying solution, no surface treatment of the panel (primer or other) is required.

- The floor layer must always ensure that the substrate is suitable for the installation of his product before proceeding with the installation. Solid wood parquet flooring is not permitted.

MAIN COMPONENTS THAT CAN BE USED WITH THE MORE FTA PANEL

	Series	Description
	3968.16.10 3968.16.20	MORE PLUS tube: 4-layer tube for underfloor heating, made of polyethylene (PE-RT Type II/EVOH/PE-RT). The outer layer provides strong protection of the EVOH layer against the defects due to mechanical agents. (e.g. scratches, gouges...). EVOH oxygen barrier tube, co-extruded, cod. 4726.
	3969.16.00 3969.16.10 3969.16.20	MORE 4L tube: 4-layer tube for underfloor and wall-mounted heating systems
	472M.08.12	Base edging joint: expansion joint made of expanded polyethylene, coupled with LDPE sheet for mortar containment, 80 mm high, 5 mm thick and supplied in 25 m rolls. FOR FLOOR INSTALLATION ONLY.
	483M.25.02	Corrugated conduit: diameter 25 mm for tube d. d. 17 - diameter 32 mm for tube d. 20-25 used as tube protector. Provides indispensable protection when tubes pass through expansion joints. Supplied in rolls of 50 or 25 m.
	603M.18.12	Bend former for 90° curves, made of polyamide with fibreglass. Used as a bend former and to provide tube protection near manifold connection.
	778M.20.02	Moisture barrier: made with a PE sheet, 0.2 mm thick. Roll supply, 200 m ²
	2018M.00.02	Anodised aluminium adhesive tape: Used to avoid the formation of heat bridges between two adjacent panels and to create a single insulating layer.
	3702M.00.02	Adhesive MORE FTA AD: Used to stick Kilma Futura panels on the existing substrate support (smoothed cement screed, cement smoothing, ceramic or natural stone floors). Supplied in 1 kg canisters. Average use 0.10 - 0.15 kg/m ²
	3055M.00.12	Epoxy PRIMER MF by Mapei: used to waterproof and protect the aluminised surfaces of the panel and tubes in case of subsequent installation of floors with cement-based glues or self-levelling screeds. Supplied in a kit consisting of 1 x 3 kg drum of Primer + 1 x 1 kg drum of Reagent. Average use 0.2 kg/m ² .

SPECIFICATIONS

SERIES 3977

MORE FTA insulating panel, with high mechanical resistance, in sintered expanded polystyrene type EPS 300, moulded with closed cells, covered on the top with aluminium foil, suitable for the construction of radiant air-conditioning systems with reduced thickness, without screed and load spreaders, with direct laying of the flooring on the panel and characterised by very low thermal inertia. Equipped with parallel straight seats for tubes Ø16x2mm with pre-set pitch and head curves pre-shaped in the panel.

Any additional seats and adhesions can easily be made on site by the installer using a common EPS milling machine. Due to the special shape of the guides, the system can be installed in a double-coil configuration for more even distribution of heat and, as a result, more perceived climatic wellbeing compared to single-coil installation typical of dry systems.

Thermal resistance according to UNI-EN 1264-3:2021

Declared thermal conductivity: 0.033 W/m K

Designation and classification according to Directive 89/106 EC CS(10)300

Panel size 160 mm pitch: 1200x800 mm (usable area 0.96 m²)

Panel size pitch 80 mm: 1200x800 mm (usable area 0.96 m²)

AVAILABLE IN THE FOLLOWING VERSIONS:

Thickness 20 mm (pitch 160 mm)

Minimum thermal resistance guaranteed = 0.56 m²K/W Panel Weight: 1 Kg

Thickness 25 mm (pitch 160 mm)

Minimum thermal resistance guaranteed = 0.71 m²K/W Panel Weight: 1.2 Kg

Thickness 33 mm (pitch 160 mm)

Minimum thermal resistance guaranteed = 0.95 m²K/W Panel Weight: 1.5 Kg

Thickness 48 mm (pitch 160 mm)

Minimum thermal resistance guaranteed = 1.41 m²K/W Panel Weight: 2.1 Kg

Thickness 20 mm (pitch 80 mm)

Minimum guaranteed thermal resistance = 0.51 m²K/W Panel Weight: 1.2 Kg

Thickness 25 mm (pitch 80 mm)

Minimum thermal resistance guaranteed = 0.66 m²K/W Panel Weight: 1.4 Kg

Thickness 33 mm (pitch 80 mm)

Minimum thermal resistance guaranteed = 0.90 m²K/W Panel Weight: 1.6 Kg

Thickness 48 mm (pitch 80 mm)

Minimum thermal resistance guaranteed = 1.36 m²K/W Panel Weight: 2.3 Kg

RBM spa reserves the right to improve and change the products described and relevant technical data at any moment and without prior notice. The information and images contained in this document are intended for information purposes only, are not binding and in any case do not exempt the user from strictly following the regulations in force and good practice standards.

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