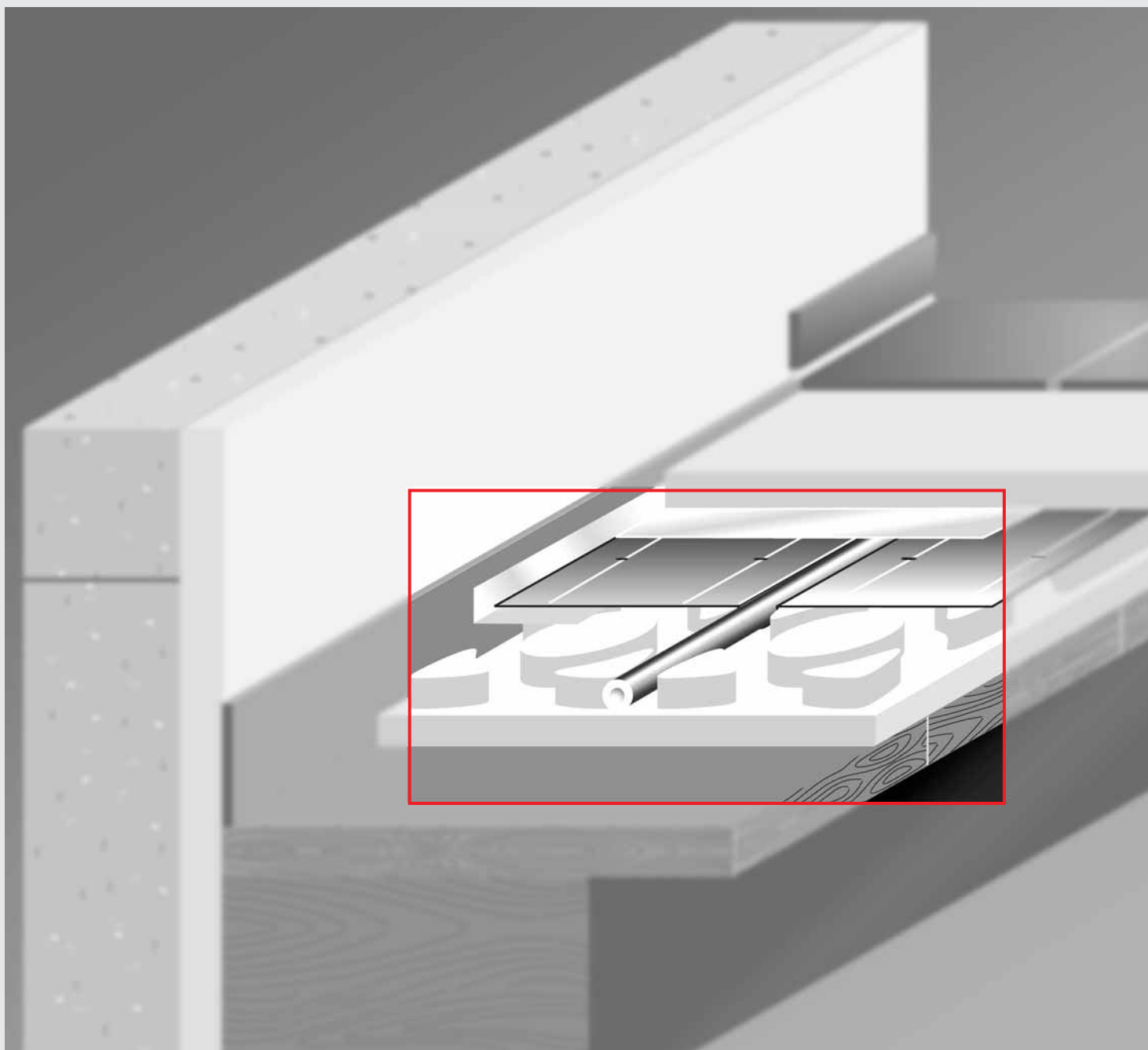


DRY CONSTRUCTION SYSTEM

TECHNICAL INFORMATION



ENERGY AND SANITARY SYSTEMS

System description

■ System description/ system advantages

The Roth dry construction system (TBS) is a warm water floor heating system which was designed primarily for dry installation in conformance with DIN EN 1264. If certain conditions are taken into account for assembly, it is also suitable for wet installation. The system was designed for use with the

14 mm Roth system heating pipe Alu-Laserflex and allows laying distances of 10 cm, 20 cm and 30 cm. It is characterised by low construction height, low mass-per-unit area, and the fact that it can be brought into operation very quickly after installation and has a fast reaction speed.

■ Areas of application

The Roth dry construction system (TBS) can be applied in all the building types specified in DIN EN 1264 – residential, office and commercial buildings as well as other buildings whose

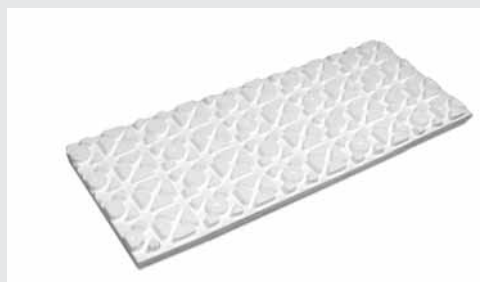
use conforms to or is similar to that stipulated for residential buildings. The Roth dry construction system is perfect for both old and new buildings.

■ System components

System-specific components for the Roth dry construction system are listed below:

- Roth TBS system panel PS 30 SE
- Roth heat conducting lamella (100 mm and 200 mm wide)
- Roth system heating pipe Alu-Laserflex 14 mm
- Roth PE cover film
- Roth PE foam

We would like to draw attention to the fact that the function of the system is only guaranteed if the complete Roth system components are used.



Roth TBS system panel PS 30 SE



Roth heat conducting lamella



Roth system heating pipe Alu-Laserflex 14 mm



Roth PE cover film

Installation requirements

- The supporting ground must be able to fulfil the static requirements for the support of the floor construction and the anticipated working load.
- The height and evenness of the surface of the supporting ground must conform with the maximum allowances and evenness tolerance of DIN 18202 "Superstructure tolerance", Table 3 Line 3.

Evenness tolerances					
Distance between measuring points (m)	0,1	1	4	10	15
Evenness tolerances (mm)	2	4	10	12	15

- In compliance with DIN 18560, uneven surfaces or wires and conduits laid on bare floors must be compensated, e.g. by installing insulation, applying screed or other correction masses, and a horizontal, even surface must be created as founda-

tion for the system insulation. Loose, granular bulk material is not suitable.

- The supporting ground must be visibly dry and swept clean before the Roth TBS dry construction system is installed.
- Structure joints from the supporting ground must be integrated into the floor construction design.
- In the case of floor surfaces which are in direct contact with the ground or surfaces where increased dampness is a factor, the surface must be sealed against ground moisture and non-pressing water, in conformance with DIN 18195. The specifications laid down by the building planner are to be followed here. If PVC or bitumen is used as a sealing material on the virgin soil, they are to be covered with PE film.
- In addition, the requirements laid out in DIN EN 1264 on warm water floor heating and all other applicable regulations and standards are to be observed, particularly the EnEV and DIN 4109 on impact noise insulation.

Installation requirements

To install the Roth dry construction system, the following tools are recommended or required:

- Roth pipe cutter
- Roth calibration tool
- Roth bending spring 14 mm, or Roth pipe bender
- Roth knife
- Wrench, size 30
- Measuring tape or folding rule

Tools



Roth PE foam



Roth edge insulation strip, 160 mm

Accessories

Installation instructions

Installation information

When installing the Roth dry construction system, the following notes are to be observed during the installation and processing of the individual system components:

- When installing the TBS system panels, it must be ensured that they are evenly placed on the ground with their entire surface. The panels should be arranged that the grooves of the panels are aligned.
- When laying the TBS system panels ensure that the laminated film strip on the 160 mm Roth edge insulation strip is laid stress-free on the system panel and is covered by the PE film.
- The width to be selected for the heat conducting lamellas depends on the projected laying distance; a 10 cm wide heat conducting lamella is required for a 10 cm laying distance and a 20 cm wide lamella for laying distances of 20 cm and 30 cm. When laying the heat conducting lamellas, make sure that they are not laid into the bended area but end on the straight pipe piece, in order to avoid damage to the Roth system heating pipe Alu-Laserflex in the bending area. The individual heat conducting lamellas are pushed flush against each other and should not overlap. When the heat conducting lamellas are laid in this manner, the joints between the TBS system panels are covered seamlessly. The heat conducting lamellas have predetermined breaking points every 10 cm. Thus they can be shortened to the desired length without tools.

It is not permissible to cut the heat conducting lamellas, as this may lead to sharp edges which could lead to damages on the pipe wall due to the heat expansion respectively contraction of the heating pipe in case of temperature changes.

- When constructing the Roth dry construction system in conjunction with dry screed elements only the following may be used as additional insulation underneath the TBS system panels: polyurethane (PU) or polystyrene insulating panels of the qualities PS 20 SE and PS 30 SE (DIN 18164 Part 1, heat insulation materials with type codes "WD" or "WS") and Roth PE foam. When using PS 20 SE the maximum thickness of 50 mm should be excluded.
- Cement screeds and anhydrite screeds in accordance with DIN 18560 can be used as a load-distribution layer for the Roth dry construction system. Make sure that the PE film is placed directly onto the TBS system panels which provides an effective insulating layer cover corresponding to the screed consistency. In case of fluid screed, make sure that any PE film applied is glued luted at the overlapping points and at the connections to the edge insulation strip.
- When fitting components are used with respect to the heating pipes laid within the TBS system panels, a clearance suitable for the fitting size must be created in the system panel to guarantee a clean and even position of the load-distribution layer.

Installation steps

1. Check the installation requirements.
2. Cover the construction sealing on the bare floor with an overlapped laid PE film (see Page 3 "Installation requirements").
3. Lay the Roth edge insulation strip, 160 mm.



Installation instructions / commissioning



Pressure test:

Before depositing the load-distribution layer, a water pressure test is to be carried out and documented in writing, in accordance with DIN EN 1264.

4. Lay Roth TBS system panels. The groove joint is specially formed to be compatible with the TBS system panels which helps to create a closed, composite plate system across the whole isolating layer.
5. Place the Roth heat conducting lamellas (width: 100 mm or 200 mm, depending on the laying distance) in the grooves of the TBS system panels.
6. The heat conducting lamellas have predetermined breaking points every 10 cm. Thus they can be shortened to the desired length, without tools.
7. Install the Roth system heating pipe Alu-Laserflex 14 mm.
8. Place a PE film as separating layer between the heating system and the load-distribution layer.
9. Deposit a load-distribution layer.

For floor constructions which require insulation in compliance with energy saving guidelines EnEV (DIN EN 1264) or which must meet requirements regarding impact sound protection, an additional work step must be carried out by installing a suitable extra layer of insulation prior to laying the TBS system panels.

Installation steps

Heat test:

Heat test:

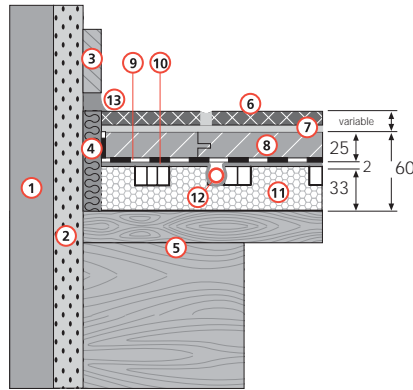
When the load-distribution layer is carried out with cement screed or anhydrite screed, a heat test is required and must be documented in writing, in accordance with DIN EN 1264. The heating of the system is a function test. Depending on the selected floor covering, it may be necessary to heat the screed again in order to reach the maximum permissible screed residual humidity for the covering.

Commissioning

Floor constructions

Floor constructions:

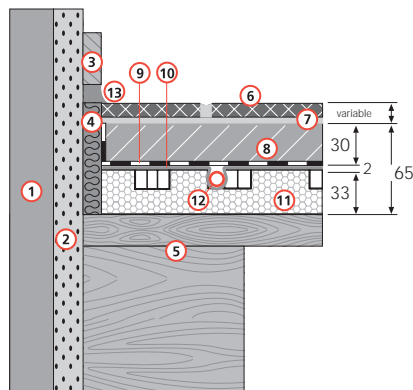
Roth floor heating
TBS system panel PS 30 SE
according to DIN 18164.
Construction with dry
screed on wood joist floor.



Ceilings over rooms with common usage in conform-
ance with DIN EN 1264
 $R_{\lambda, \text{INS}} = 0,75 \text{ m}^2 \text{ K/W}$

- 1 External wall
- 2 Course plaster
- 3 Skirting board
- 4 Roth edge insulation strip, 160 mm
- 5 Wood joist floor
- 6 Tiles
- 7 Mortar
- 8 Dry screed
- 9 Roth PE cover film
- 10 Roth heat conducting lamella
- 11 Roth TBS system panel
- 12 Roth system heating pipe Alu-Laserflex, 14 mm
- 13 Elast. joint sealer

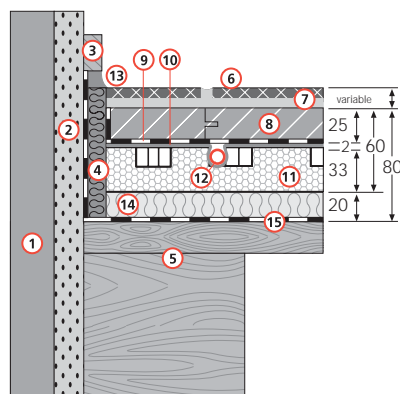
Roth floor heating
TBS system panel PS 30 SE
according to DIN 18164.
Construction with thin-
layer screed on wood joist
floor.



Ceilings over rooms with common usage in conform-
ance with DIN EN 1264
 $R_{\lambda, \text{INS}} = 0,75 \text{ m}^2 \text{ K/W}$

- 1 External wall
- 2 Course plaster
- 3 Skirting board
- 4 Roth edge insulation strip, 160 mm
- 5 Wood joist floor
- 6 Tiles
- 7 Mortar
- 8 Thin-layer screed acc. to DIN 18560
- 9 Roth PE cover film
- 10 Roth heat conducting lamella
- 11 Roth TBS system panel
- 12 Roth system heating pipe Alu-Laserflex, 14 mm
- 13 Elast. joint sealer

Double layer installation:
Roth floor heating
TBS system panel PS 30 SE
with Roth insulation plate
PS 20 SE 20 mm.
Construction with dry
screed on wood joist floor
If the groundwater level is
 $\leq 5 \text{ m}$, the heating insula-
tion should be reinforced.



Ceilings from non-heated or interval-heated rooms,
next to soil, in conform-
ance with DIN EN 1264
 $R_{\lambda, \text{INS}} = 1,25 \text{ m}^2 \text{ K/W}$

- 1 External wall
- 2 Course plaster
- 3 Skirting board
- 4 Roth edge insulation strip, 160 mm
- 5 Wood joist floor
- 6 Tiles
- 7 Mortar
- 8 Dry screed
- 9 Roth PE cover film
- 10 Roth heat conducting lamella
- 11 Roth TBS system panel
- 12 Roth system heating pipe Alu-Laserflex, 14 mm
- 13 Elast. joint sealer
- 14 Roth insulation panel PS 20 SE, 20 mm
- 15 Sealer against ground moisture in conform-
ance with
DIN 18195 and PE film 0,2 mm (not required,
if not next to soil)

Floor constructions

Ceilings against outside air ($-5 > T_d \geq -15 \text{ }^\circ\text{C}$)
in conformance with DIN EN 1264
 $R_{\lambda, \text{INS}} = 2.0 \text{ m}^2 \text{ K/W}$

- External wall
- Course plaster
- Skirting board
- Roth edge insulation strip, 160 mm
- Supporting ground
- Tiles
- Mortar
- Thin-layer screed in conformance with DIN 18560
- Roth PE cover film
- Roth heat conducting lamella
- Roth TBS system panel PS 30 SE
- Roth system heating pipe Alu-Laserflex, 14 mm
- Elast. joint sealer
- Sealer against ground moisture in conformance with DIN 18195 and PE film 0.2 mm (not required, if not next to soil)
- Roth insulation panel (see Table)

Floor constructions:

Double layer installation:
Roth floor heating
TBS system panel PS 30 SE
with Roth insulation panel.
Construction with thin-layer
screed on bare ground.

Table for illustration of special area of application – ceilings bordering outside air:
Required insulation dependent on outside temperature.

Requirements as per DIN EN 1264

Roth TBS system plate	Roth insulation panel	Measure A	Measure B	Measure C
Roth TBS system panel PS 30 SE	PS 20 SE 50 mm	33 mm	50 mm	115 mm
Roth TBS system panel PS 30 SE	PU 32 mm	33 mm	32 mm	97 mm

Ceilings against non-heated or interval-heated rooms,
next to soil, in conformance with DIN EN 1264
 $R_{\lambda, \text{INS}} = 1,25 \text{ m}^2 \text{ K/W}$

- External wall
- Course plaster
- Skirting board
- Roth edge insulation strip, 160 mm
- Wood joist floor
- Tiles
- Mortar
- Dry screed
- Roth PE cover film
- Roth heat conducting lamella
- Roth TBS system panel
- Roth system heating pipe Alu-Laserflex, 14 mm
- Elast. joint sealer
- Roth insulation panel PS 20 SE, 20 mm
- Sealer against ground moisture in conformance with DIN 18195 and PE film 0.2 mm (not required, if not next to soil)

Measure a: Height additional insulation

Measure b: Height dry screed

Measure c: Height system panel and dry screed

Measure d: Complete height with additional insulation

	Fermacell	Knauf Brio	Knauf Brio	Thomsit	Thomsit	Creaton	Thin layer screed DIN 18560	
Measure b	25	18	23	15	20	20	30	Measure a
Measure c	60	53	58	50	55	55	65	-
Measure d	80	73	78	70	75	75	85	20
Measure d	92	85	90	82	87	87	97	32
Measure d	110	103	108	100	105	105	115	50

Floor constructions

Description	Area of application	Working load surface load DIN 1055-3	Working load individual load DIN 1055-3	Dimensions (mm)	Surface weight (kg/m ²)	Heat conductivity (W/mK)	Class
Fermacell Screed element 2E22	1. Rooms and halls in buildings, hotel rooms incl. bathrooms 2. Halls in offices, surgeries, lounges	4 kN/m ²	3 kN	1500x500x25	34 kg/m ²	$\lambda_R = 0,32$	A2
Knauf Brio 18	1. Rooms and halls in buildings, hotel rooms 2. Offices, surgeries, lounges Knauf Brio panels are not allowed to be used in wet rooms	3 kN/m ²	2 kN	1500x500x18	22 kg/m ²	$\lambda_R = 0,38$ $\lambda_{10} = 0,30$	A1
Knauf Brio 23	1. Rooms and halls in buildings 2. Offices, surgeries, lounges Knauf Brio panels are not allowed to be used in wet rooms	3 kN/m ²	2 kN	1500x500x23	28 kg/m ²	$\lambda_R = 0,38$ $\lambda_{10} = 0,30$	A1
Thomsit Best Ready screed panels	1. Rooms and halls in buildings, hotel rooms incl. bathrooms 2. Halls in offices, surgeries, lounges	2 kN/m ²	1 kN	333x333x15	37 kg/m ²	$\lambda_R = 2,1$	A1
Screed tiles	1. Rooms and halls in buildings <small>Details of data sheets of each supplier.</small>	1 kN/m ²	1 kN	400x180x20 500x250x20	38,3 kg/m ² 40 kg/m ²	$\lambda_{10} = 0,41$	A1

* Individual load: referring to 1m² with side length of 5 x 5 cm.

For further details please contact individual supplier.

Floor constructions/commissioning

When selecting additional insulation, the minimum requirements in conformance with EN 1264 must be observed. Requirements resulting from a consideration of the entire building under EnEV guidelines are to be specified by the building planner. The entire construction of the insulation for the floor heating system must be adapted to the building-specific requirements accordingly.

If the requirements stipulated in DIN 4109 are to be fulfilled, this must be taken into consideration in the floor construction in the form of suitable insulation measures at the installation site.

To fulfill the requirements defined in the EnEV guidelines regarding the regulation technology for floor heating (individual room control as well as water-sided pre-control), all regulati-

on components and systems used in the area of Roth floor heating systems can also be used for the Roth dry construction system.

In floor constructions with a load distribution screed construction in wet systems. The TBS system panels for maximum working load up to 35 kN/ m² respectively 3500 kg/m² can be used.

- This depends on the class and thickness of the load distributing screed and the supporting ground.
- Floor constructions with 30 mm thin screed in accordance with DIN 18560: surface weight: 66 kg/m².

■ Notes

■ Regulation technology

■ Load distribution/
working load surface
weight

Calculation & planning

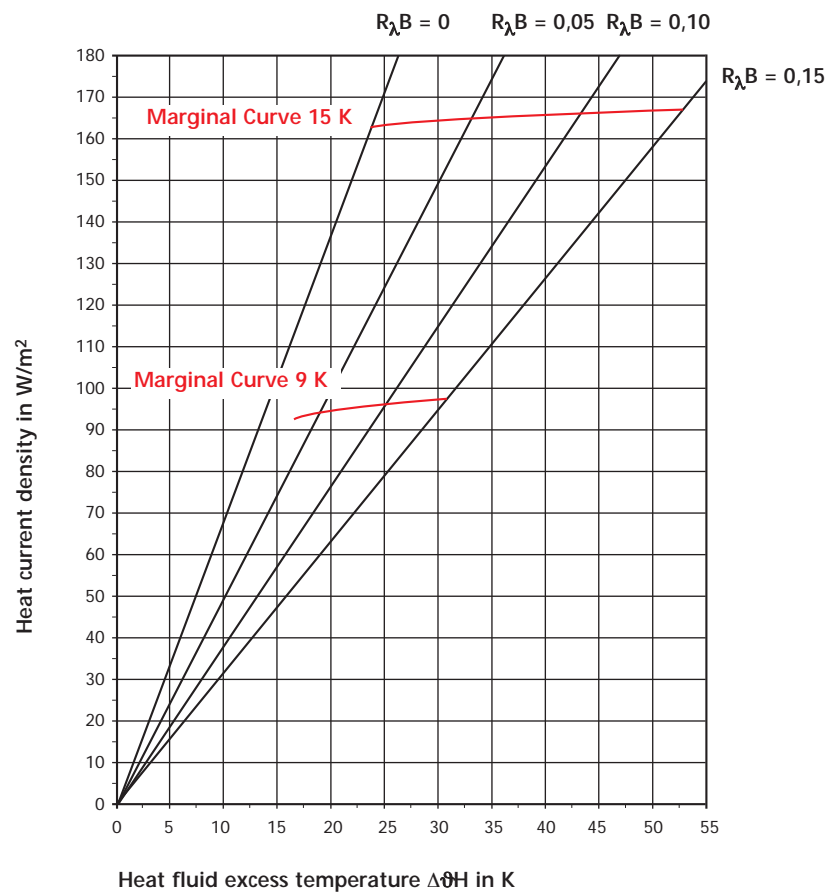
System heat current density

	Roth Alu-Laserflex 14 x 2 mm Cement or anhydrite flow screed 30 mm $\lambda = 1,20 \text{ W/mK}$		Residence zone requirement $t_{Fmax-t_i} = 9\text{K}$		Edge zone requirement $t_{Fmax-t_i} = 15\text{K}$	
	Heat conduction resistance floor covering	Systemline	System marginal heat current density	System marginal heat fluid excess temperature	System marginal heat current density	System marginal heat fluid excess temperature
	$R_{\lambda,B} \text{ (m}^2\text{K/W)}$	$q(\text{KH} \cdot \Delta t)$	$q(\text{W/m}^2)$	$\Delta\theta_H \text{ (K)}$	$q(\text{W/m}^2)$	$\Delta\theta_H \text{ (K)}$
Laying distance 100 mm	0,00	$6,85 \times \Delta t$	92,5	13,5	162,2	23,6
	0,05	$4,95 \times \Delta t$	93,1	18,8	163,3	33,0
	0,10	$3,86 \times \Delta t$	93,5	24,2	164,1	42,4
	0,15	$3,17 \times \Delta t$	93,9	29,6	164,7	51,9
Laying distance 200 mm	0,00	$5,02 \times \Delta t$	75,3	15,0	132,1	26,4
	0,05	$3,87 \times \Delta t$	77,1	19,9	135,2	34,9
	0,10	$3,15 \times \Delta t$	78,5	24,9	137,6	43,7
	0,15	$2,65 \times \Delta t$	79,6	30,0	139,7	52,6
Laying distance 300 mm	0,00	$3,33 \times \Delta t$	58,9	17,7	103,4	31,1
	0,05	$2,76 \times \Delta t$	61,2	22,2	107,3	38,9
	0,10	$2,35 \times \Delta t$	63,1	26,8	110,7	47,0
	0,15	$2,06 \times \Delta t$	64,9	31,5	113,8	55,3

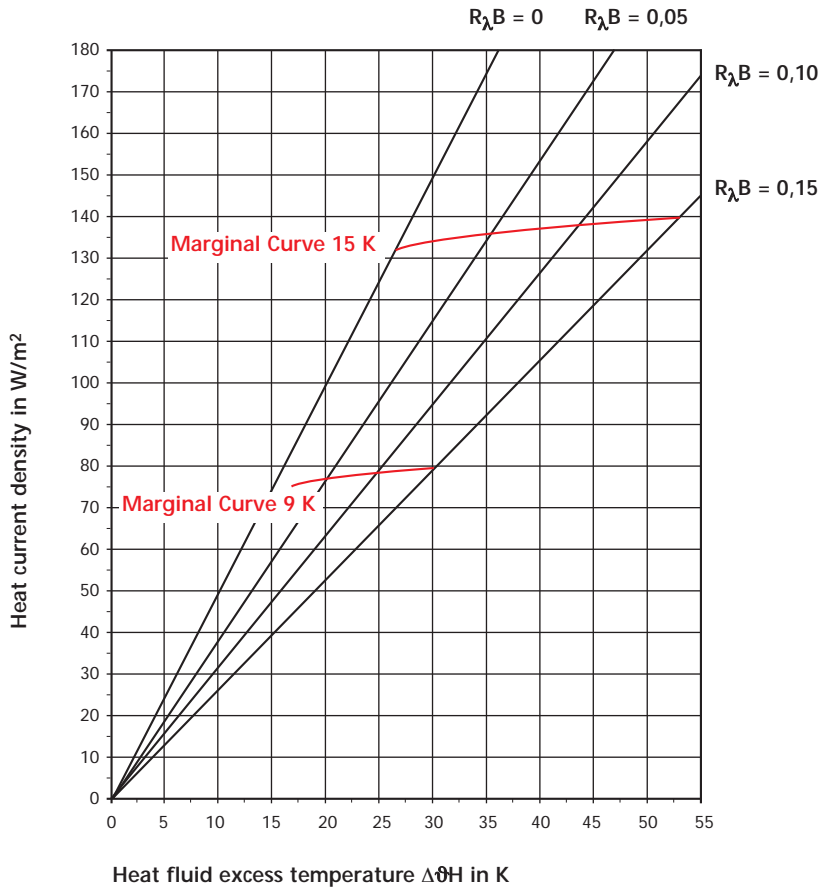
Roth dry construction system heat current density application floor heating

Pipe separation 100 mm
Screed thickness 30 mm

(Cement or anhydrite flow screed)



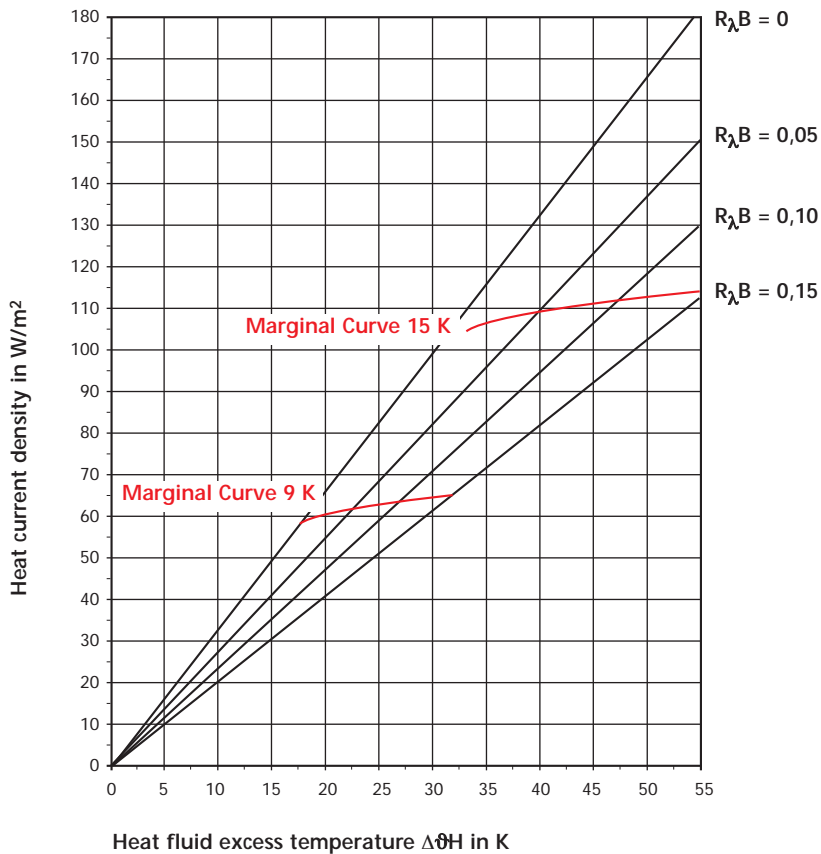
Calculation & planning



Roth dry construction system heat current density application floor heating

Pipe separation 200 mm
Screed thickness 30 mm

(Cement or anhydrite flow screed)



Roth dry construction system heat current density application floor heating

Pipe separation 300 mm
Screed thickness 30 mm

(Cement or anhydrite flow screed)

Performance data for Roth dry construction system

Performance data for Roth dry construction system

Cement or anhydrite screed 30 mm pipe covering (spread: 5 K) $R_{\lambda,B} = 0,00 \text{ m}^2 \text{ K/W}$

Resistance to thermal conduction of the floor covering $R_{\lambda,B} = 0,00 \text{ m}^2 \text{ K/W}$		Heat fluid temperature ϑ_H 35,00 °C			Heat fluid temperature ϑ_H 40,00 °C			Heat fluid temperature ϑ_H 45,00 °C			Heat fluid temperature ϑ_H 50,00 °C			Heat fluid temperature ϑ_H 55,00 °C			
(screed 30 mm) (spread 5 K)	Laying distance	Heating pipe requirements Alu-Laserflex 14 mm	max. heat flux density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface
	LD (cm)	L (m/m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)
Interior temperature 15,00 °C	10	10,00	103	24,2	6,48	120	25,6	5,88	154	28,3	5,01	188	31,0	4,41	223	33,6	3,96
	20	5,00	75	22,0	10,17	88	23,0	9,22	113	25,1	7,85	138	27,1	6,91	163	29,0	6,21
	30	3,33	50	19,8	15,35	58	20,5	13,92	75	21,9	11,86	92	23,3	10,44	108	24,7	9,39
Interior temperature 18,00 °C	10	10,00	82	25,5	7,47	99	26,9	6,62	134	29,7	5,49	168	32,4	4,74	202	35,1	4,22
	20	5,00	60	23,7	11,72	73	24,7	10,39	98	26,8	8,60	123	28,9	7,44	148	30,9	6,61
	30	3,33	40	21,9	17,70	48	22,6	15,69	65	24,1	12,99	82	25,5	11,24	98	26,9	9,98
Interior temperature 20,00 °C	10	10,00	69	26,4	8,39	86	27,8	7,28	120	30,6	5,88	154	33,3	5,01	188	36,0	4,41
	20	5,00	50	24,8	13,16	63	25,9	11,42	88	28,0	9,22	113	30,1	7,85	138	32,1	6,91
	30	3,33	33	23,3	19,87	42	24,1	17,24	58	25,5	13,92	75	26,9	11,86	92	28,3	10,44
Interior temperature 22,00 °C	10	10,00	55	27,2	9,67	72	28,7	8,13	106	31,5	6,35	140	34,3	5,31	175	36,9	4,62
	20	5,00	40	25,9	15,17	53	27,0	12,76	78	29,2	9,96	103	31,2	8,33	128	33,3	7,25
	30	3,33	27	24,7	22,90	35	25,5	19,26	52	26,9	15,04	68	28,4	12,59	85	29,8	10,95
Interior temperature 24,00 °C	10	10,00	41	28,0	11,61	58	29,5	9,31	92	32,4	6,93	127	35,2	5,67	161	37,9	4,87
	20	5,00	30	27,0	18,21	43	28,1	14,59	68	30,3	10,87	93	32,4	8,90	118	34,5	7,64
	30	3,33	20	26,1	27,51	28	26,9	22,04	45	28,4	16,42	62	29,8	13,43	78	31,2	11,54

Performance data for Roth dry construction system

Cement or anhydrite screed 30 mm pipe covering (spread: 5 K) $R_{\lambda,B} = 0,05 \text{ m}^2 \text{ K/W}$

Resistance to thermal conduction of the floor covering $R_{\lambda,B} = 0,05 \text{ m}^2 \text{ K/W}$		Heat fluid temperature ϑ_H 35,00 °C			Heat fluid temperature ϑ_H 40,00 °C			Heat fluid temperature ϑ_H 45,00 °C			Heat fluid temperature ϑ_H 50,00 °C			Heat fluid temperature ϑ_H 55,00 °C			
(screed 30 mm) (spread 5 K)	Laying distance	Heating pipe requirements Alu-Laserflex 14 mm	max. heat flux density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface
	LD (cm)	L (m/m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)
Interior temperature 15,00 °C	10	10,00	74	21,9	7,97	87	22,9	7,23	111	24,9	6,16	136	26,9	5,42	161	28,9	4,87
	20	5,00	58	20,5	12,00	68	21,3	10,87	87	22,9	9,27	106	24,5	8,16	126	26,1	7,33
	30	3,33	41	19,0	17,30	48	19,6	15,68	62	20,8	13,37	76	22,0	11,76	90	23,2	10,58
Interior temperature 18,00 °C	10	10,00	59	23,6	9,19	72	24,7	8,15	97	26,7	6,75	121	28,7	5,83	146	30,7	5,18
	20	5,00	46	22,5	13,83	56	23,3	12,26	75	25,0	10,15	95	26,6	8,78	114	28,1	7,80
	30	3,33	33	21,3	19,94	40	21,9	17,68	54	23,1	14,64	68	24,3	12,66	81	25,5	11,25
Interior temperature 20,00 °C	10	10,00	50	24,7	10,32	62	25,8	8,95	87	27,9	7,23	111	29,9	6,16	136	31,9	5,42
	20	5,00	39	23,8	15,53	48	24,6	13,47	68	26,3	10,87	87	27,9	9,27	106	29,5	8,16
	30	3,33	28	22,8	22,39	35	23,4	19,43	48	24,6	15,68	62	25,8	13,37	76	27,0	11,76
Interior temperature 22,00 °C	10	10,00	40	25,9	11,89	52	27,0	10,00	77	29,1	7,81	101	31,1	6,53	126	33,1	5,69
	20	5,00	31	25,1	17,90	41	26,0	15,05	60	27,7	11,75	79	29,3	9,83	99	30,9	8,56
	30	3,33	22	24,3	25,81	29	24,9	21,71	43	26,2	16,94	57	27,4	14,18	70	28,5	12,34
Interior temperature 24,00 °C	10	10,00	30	27,0	14,28	42	28,1	11,44	67	30,2	8,52	92	32,3	6,98	116	34,3	5,99
	20	5,00	23	26,4	21,49	33	27,3	17,22	52	29,0	12,83	72	30,6	10,50	91	32,3	9,01
	30	3,33	17	25,8	31,00	23	26,4	24,83	37	27,7	18,50	51	28,9	15,14	65	30,1	13,00

Performance data for Roth dry construction system

Performance data for Roth dry construction system Cement or anhydrite screed 30 mm pipe covering (spread: 5 K) $R_{\lambda,B} = 0,10 \text{ m}^2 \text{ K/W}$

Resistance to thermal conduction of the floor covering $R_{\lambda,B} = 0,00 \text{ m}^2 \text{ K/W}$			Heat fluid temperature ϑ_H 35,00 °C			Heat fluid temperature ϑ_H 40,00 °C			Heat fluid temperature ϑ_H 45,00 °C			Heat fluid temperature ϑ_H 50,00 °C			Heat fluid temperature ϑ_H 55,00 °C		
(screed 30 mm) (spread 5 K)	Laying distance	Heating pipe requirements Alu-Laserflex 14 mm	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface
	LD (cm)	L (m/m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)
Interior temperature 15,00 °C	10	10,00	58	20,5	9,34	68	21,3	8,47	87	22,9	7,21	106	24,5	6,35	125	26,1	5,71
	20	5,00	47	19,6	13,67	55	20,2	12,40	71	21,6	10,56	87	22,9	9,30	102	24,2	8,36
	30	3,33	35	18,5	19,17	41	19,0	17,37	53	20,0	14,81	65	21,1	13,03	76	22,0	11,72
Interior temperature 18,00 °C	10	10,00	46	22,5	10,76	56	23,3	9,54	75	24,9	7,90	95	26,6	6,83	114	28,1	6,07
	20	5,00	38	21,7	15,76	46	22,4	13,97	61	23,8	11,57	77	25,1	10,01	93	26,4	8,89
	30	3,33	28	20,8	20,09	34	21,4	19,58	46	22,4	16,22	58	23,4	14,03	69	24,4	12,46
Interior temperature 20,00 °C	10	10,00	39	23,8	12,09	48	24,6	10,49	68	26,3	8,47	87	27,9	7,21	106	29,5	6,35
	20	5,00	32	23,1	17,70	39	23,9	15,36	55	25,2	12,40	71	26,6	10,56	87	27,9	9,30
	30	3,33	24	22,4	24,81	29	23,0	21,52	41	24,0	17,37	53	25,0	14,81	65	26,1	13,03
Interior temperature 22,00 °C	10	10,00	31	25,1	13,93	41	26,0	11,72	60	27,6	9,15	79	29,3	7,66	98	30,9	6,66
	20	5,00	25	24,6	20,40	33	25,3	17,16	49	26,7	13,39	65	28,0	11,21	80	29,4	9,76
	30	3,33	19	24,0	28,59	25	24,5	24,05	36	25,6	18,77	48	26,6	15,71	60	27,6	13,67
Interior temperature 24,00 °C	10	10,00	23	26,4	16,73	33	27,3	13,40	52	29,0	9,99	71	30,6	8,17	91	32,2	7,02
	20	5,00	19	26,0	24,50	27	26,7	19,63	43	28,1	14,62	58	29,5	11,97	74	30,8	10,28
	30	3,33	14	25,5	34,34	20	26,1	27,51	32	27,2	20,49	43	28,2	16,77	55	29,2	14,40

Performance data for Roth dry construction system Cement or anhydrite screed 30 mm pipe covering (spread: 5 K) $R_{\lambda,B} = 0,15 \text{ m}^2 \text{ K/W}$

Resistance to thermal conduction of the floor covering $R_{\lambda,B} = 0,15 \text{ m}^2 \text{ K/W}$			Heat fluid temperature ϑ_H 35,00 °C			Heat fluid temperature ϑ_H 40,00 °C			Heat fluid temperature ϑ_H 45,00 °C			Heat fluid temperature ϑ_H 50,00 °C			Heat fluid temperature ϑ_H 55,00 °C		
(screed 30 mm) (spread 5 K)	Laying distance	Heating pipe requirements Alu-Laserflex 14 mm	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface
	LD (cm)	L (m/m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)
Interior temperature 15,00 °C	10	10,00	48	19,6	10,59	55	20,3	9,60	71	21,6	8,18	87	22,9	7,20	103	24,2	6,47
	20	5,00	40	18,9	13,72	46	19,5	12,44	60	20,6	10,60	73	21,7	9,33	86	22,9	8,39
	30	3,33	31	18,1	18,77	36	18,6	17,02	46	19,5	14,50	57	20,4	12,76	67	21,2	11,48
Interior temperature 18,00 °C	10	10,00	38	21,7	12,20	46	22,4	10,82	62	23,8	8,96	78	25,2	7,75	94	26,5	6,88
	20	5,00	32	21,2	17,59	38	21,8	15,60	52	22,9	12,92	65	24,1	11,17	78	25,2	9,93
	30	3,33	25	20,5	24,02	30	21,0	21,30	40	21,9	17,64	50	22,8	15,25	61	23,7	13,55
Interior temperature 20,00 °C	10	10,00	32	23,2	13,70	40	23,9	11,89	55	25,3	9,60	71	26,6	8,18	87	27,9	7,20
	20	5,00	27	22,7	19,76	33	23,3	17,14	46	24,5	13,84	60	25,6	11,79	73	26,7	10,38
	30	3,33	21	22,1	26,98	26	22,6	23,40	36	23,6	18,89	46	24,5	16,10	57	25,4	14,17
Interior temperature 22,00 °C	10	10,00	25	24,6	15,79	33	25,3	13,28	49	26,7	10,37	65	28,1	8,68	81	29,4	7,55
	20	5,00	21	24,2	22,77	28	24,8	19,15	41	26,0	14,95	54	27,2	12,51	68	28,3	10,89
	30	3,33	16	23,7	31,09	22	24,2	26,15	32	25,2	20,41	42	26,1	17,08	53	27,0	14,87
Interior temperature 24,00 °C	10	10,00	19	26,0	18,96	27	26,7	15,19	43	28,2	11,32	59	29,5	9,26	74	30,9	7,95
	20	5,00	16	25,7	27,35	23	26,3	21,91	36	27,5	16,32	49	28,7	13,36	62	29,8	11,47
	30	3,33	12	25,3	37,34	18	25,8	29,91	28	26,8	22,29	38	27,7	18,24	48	28,7	15,66

Calculation & planning

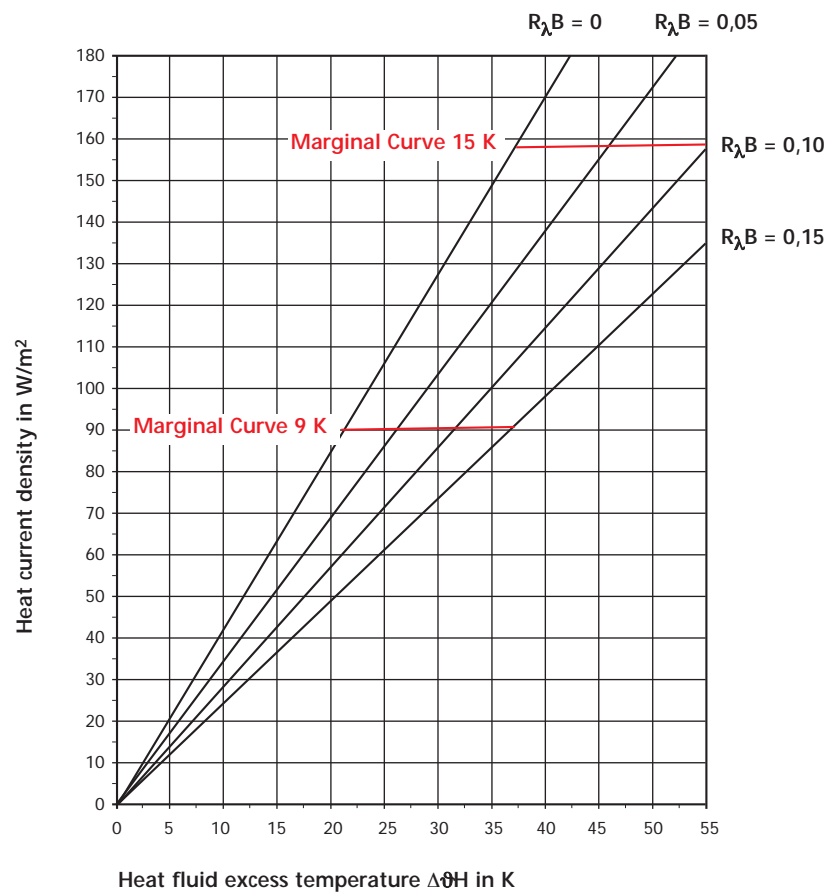
System heat current density

	Alu-Laserflex PE-HD 14 x 2 mm Fermacell screed element 25 mm $\lambda = 0,28 \text{ W/mK}$		Aufenthaltszone Bedingung $t_{Fmax-t_i} = 9\text{K}$		Randzone Bedingung $t_{Fmax-t_i} = 15\text{K}$	
	Wärmeleitwiderstand Bodenbelag	Systemline	System marginal heat current density	System marginal heat fluid excess temperature	System marginal heat current density	System marginal heat fluid excess temperature
	$R_{\lambda,B} \text{ (m}^2\text{K/W)}$	$q(\text{KH} \cdot \Delta t)$	$q(\text{W/m}^2)$	$\Delta\theta\text{H (K)}$	$q(\text{W/m}^2)$	$\Delta\theta\text{H (K)}$
Laying distance 100 mm	0,00	$4,21 \times \Delta t$	89,7	21,3	157,4	37,4
	0,05	$3,40 \times \Delta t$	90,2	26,5	158,2	46,5
	0,10	$2,85 \times \Delta t$	90,6	31,8	158,9	55,7
	0,15	$2,45 \times \Delta t$	90,9	37,1	159,5	65,0
Laying distance 200 mm	0,00	$3,06 \times \Delta t$	75,3	24,6	132,0	43,1
	0,05	$2,59 \times \Delta t$	76,5	29,5	134,1	51,7
	0,10	$2,25 \times \Delta t$	77,5	34,5	136,0	60,5
	0,15	$1,98 \times \Delta t$	78,5	39,6	137,7	69,4
Laying distance 300 mm	0,00	$2,08 \times \Delta t$	50,8	29,2	106,7	51,2
	0,05	$1,85 \times \Delta t$	62,4	33,8	109,4	59,3
	0,10	$1,66 \times \Delta t$	63,8	38,5	111,9	67,6
	0,15	$1,50 \times \Delta t$	65,1	43,4	114,3	76,1

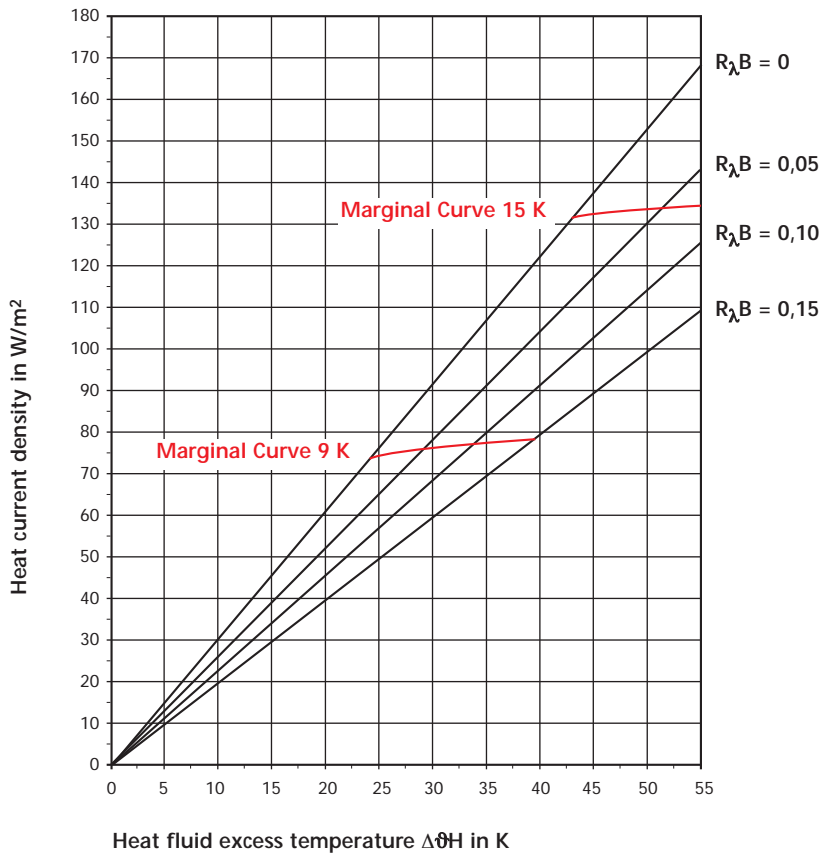
Roth dry construction system heat current density application floor heating

Pipe separation 100 mm
Screed thickness 25 mm

(Fermacell screed elements)



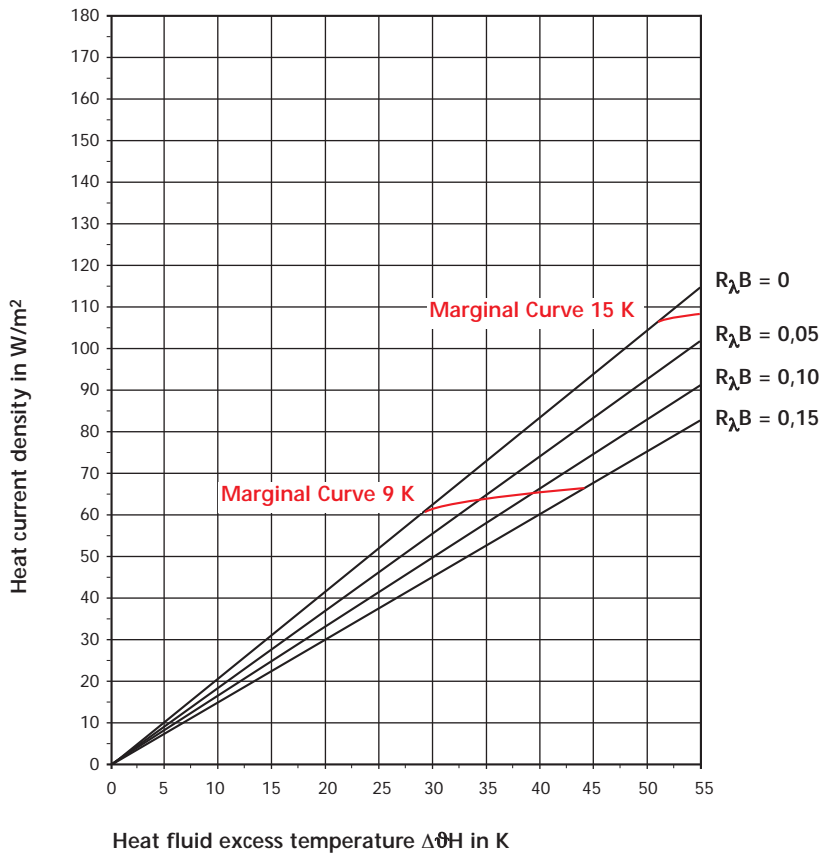
Calculation & planning



Roth dry construction system heat current density application floor heating

Pipe separation 200 mm
 Screed thickness 25 mm

(Fermacell screed elements)



Roth dry construction system heat current density application floor heating

Pipe separation 300 mm
 Screed thickness 25 mm

(Fermacell screed elements)

Performance data for Roth dry construction system

Performance data for Roth dry construction system

Farmacell screed 25 mm pipe covering (spread: 5 K) $R_{\lambda,B} = 0,00 \text{ m}^2 \text{ K/W}$

Resistance to thermal conduction of the floor covering $R_{\lambda,B} = 0,00 \text{ m}^2 \text{ K/W}$			Heat fluid temperature ϑ_H 35,00 °C			Heat fluid temperature ϑ_H 40,00 °C			Heat fluid temperature ϑ_H 45,00 °C			Heat fluid temperature ϑ_H 50,00 °C			Heat fluid temperature ϑ_H 55,00 °C		
(screed 25 mm) (spread 5 K)	Laying distance	Heating pipe requirements Alu-Laserflex 14 mm	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface
	LD (cm)	L (m/m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)
Interior temperature 15,00 °C	10	10,00	63	20,9	8,84	74	21,8	8,01	95	23,6	6,83	116	25,3	6,01	137	27,0	5,40
	20	5,00	46	19,4	13,93	54	20,1	12,63	69	21,4	10,76	84	22,7	9,47	99	24,0	8,52
	30	3,33	31	18,1	20,71	36	18,6	18,78	47	19,5	16,00	57	20,4	14,08	68	21,3	12,66
Interior temperature 18,00 °C	10	10,00	51	22,8	10,19	61	23,7	9,03	82	25,5	7,48	103	27,3	6,47	124	29,0	5,75
	20	5,00	37	21,6	16,05	44	22,3	14,23	60	23,6	11,79	75	24,9	10,19	90	26,2	9,06
	30	3,33	25	20,5	23,87	30	21,0	21,16	41	22,0	17,53	51	22,9	15,16	61	23,8	13,47
Interior temperature 20,00 °C	10	10,00	42	24,1	11,44	53	25,0	9,92	74	26,8	8,01	95	28,6	6,83	116	30,3	6,01
	20	5,00	31	23,1	18,03	38	23,8	15,64	54	25,1	12,63	69	26,4	10,76	84	27,7	9,47
	30	3,33	21	22,2	26,81	26	22,6	23,26	36	23,6	18,78	47	24,5	16,00	57	25,4	14,08
Interior temperature 22,00 °C	10	10,00	34	25,3	13,18	44	26,3	11,09	65	28,1	8,65	86	29,9	7,24	107	31,6	6,30
	20	5,00	24	24,5	20,78	32	25,2	17,48	47	26,6	13,64	63	27,9	11,42	78	29,2	9,94
	30	3,33	17	23,8	30,90	22	24,3	25,99	32	25,2	20,29	43	26,1	16,98	53	27,1	14,78
Interior temperature 24,00 °C	10	10,00	25	26,6	15,83	36	27,5	12,68	57	29,4	9,45	78	31,2	7,73	99	32,9	6,64
	20	5,00	18	25,9	24,96	26	26,6	19,99	41	28,0	14,90	57	29,4	12,19	72	30,7	10,47
	30	3,33	12	25,4	37,11	18	25,9	29,73	28	26,8	22,15	38	27,8	18,13	49	28,7	15,57

Performance data for Roth dry construction system

Farmacell screed 25 mm pipe covering (spread: 5 K) $R_{\lambda,B} = 0,05 \text{ m}^2 \text{ K/W}$

Resistance to thermal conduction of the floor covering $R_{\lambda,B} = 0,05 \text{ m}^2 \text{ K/W}$			Heat fluid temperature ϑ_H 35,00 °C			Heat fluid temperature ϑ_H 40,00 °C			Heat fluid temperature ϑ_H 45,00 °C			Heat fluid temperature ϑ_H 50,00 °C			Heat fluid temperature ϑ_H 55,00 °C		
(screed 25 mm) (spread 5 K)	Laying distance	Heating pipe requirements Alu-Laserflex 14 mm	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface
	LD (cm)	L (m/m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)
Interior temperature 15,00 °C	10	10,00	51	19,9	10,12	60	20,6	9,18	77	22,1	7,82	94	23,5	6,88	111	24,9	6,19
	20	5,00	39	18,8	15,49	45	19,4	14,04	58	20,5	11,97	71	21,6	10,53	84	22,7	9,47
	30	3,33	28	17,8	22,32	32	18,2	20,23	42	19,1	17,24	51	19,9	15,17	60	20,7	13,64
Interior temperature 18,00 °C	10	10,00	41	22,0	11,67	49	22,7	10,34	66	24,2	8,57	83	25,6	7,41	100	27,0	6,58
	20	5,00	31	21,1	17,85	38	21,7	15,83	51	22,8	13,11	63	24,0	11,34	76	25,0	10,07
	30	3,33	22	20,3	25,72	27	20,7	22,80	36	21,6	18,89	45	22,4	16,33	55	23,2	14,51
Interior temperature 20,00 °C	10	10,00	34	23,4	13,10	43	24,1	11,37	60	25,6	9,18	77	27,1	7,82	94	28,5	6,88
	20	5,00	26	22,6	20,05	32	23,2	17,39	45	24,4	14,04	58	25,5	11,97	71	26,6	10,53
	30	3,33	19	21,9	28,89	23	22,4	25,06	32	23,2	20,23	42	24,1	17,24	51	24,9	15,17
Interior temperature 22,00 °C	10	10,00	27	24,8	15,10	36	25,5	12,70	53	27,0	9,91	70	28,5	8,30	87	29,9	7,22
	20	5,00	21	24,2	23,11	27	24,8	19,44	40	25,9	15,17	53	27,1	12,70	66	28,2	11,05
	30	3,33	15	23,6	33,29	19	24,0	28,00	29	24,9	21,86	38	25,7	18,29	47	26,5	15,92
Interior temperature 24,00 °C	10	10,00	20	26,1	18,14	29	26,9	14,53	46	28,4	10,83	63	29,9	8,586	80	31,3	7,61
	20	5,00	16	25,7	27,75	22	26,3	22,23	35	27,5	16,56	48	28,6	13,55	61	29,7	11,64
	30	3,33	11	25,2	39,98	16	25,7	32,03	25	26,5	23,86	34	27,4	19,53	43	28,2	16,77

Performance data for Roth dry construction system

Performance data for Roth dry construction system

Farmacell screed 25 mm pipe covering (spread: 5 K) $R_{\lambda,B} = 0,10 \text{ m}^2 \text{ K/W}$

Resistance to thermal conduction of the floor covering $R_{\lambda,B} = 0,10 \text{ m}^2 \text{ K/W}$			Heat fluid temperature ϑ_H 35,00 °C			Heat fluid temperature ϑ_H 40,00 °C			Heat fluid temperature ϑ_H 45,00 °C			Heat fluid temperature ϑ_H 50,00 °C			Heat fluid temperature ϑ_H 55,00 °C		
(screed 25 mm) (spread 5 K)	Laying distance	Heating pipe requirements Alu-Laserflex 14 mm	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface
	LD (cm)	L (m/m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)
Interior temperature 15,00 °C	10	10,00	43	19,2	11,33	50	19,8	10,27	64	21,0	8,75	78	22,2	7,70	93	23,4	6,93
	20	5,00	34	18,4	16,94	39	18,9	15,36	51	19,8	13,09	62	20,8	11,52	73	21,8	10,36
	30	3,33	25	17,5	23,91	29	17,9	21,68	37	18,7	18,47	46	19,4	16,26	54	20,1	14,62
Interior temperature 18,00 °C	10	10,00	34	21,4	13,06	41	22,0	11,57	56	23,3	9,59	70	24,5	8,29	84	25,7	7,37
	20	5,00	27	20,7	19,52	33	21,3	17,31	44	22,3	14,34	55	23,2	12,40	66	24,2	11,02
	30	3,33	20	20,1	27,56	24	20,5	24,43	32	21,2	20,23	41	22,0	17,50	49	22,7	15,55
Interior temperature 20,00 °C	10	10,00	29	22,9	14,66	36	23,5	12,72	50	24,8	10,27	64	26,0	8,75	78	27,2	7,70
	20	5,00	23	22,3	21,93	28	22,8	19,02	39	23,9	15,36	51	24,8	13,09	62	25,8	11,52
	30	3,33	17	21,8	30,95	21	22,2	26,85	29	22,9	21,68	37	23,7	18,47	46	24,4	16,26
Interior temperature 22,00 °C	10	10,00	23	24,3	16,90	30	25,0	14,21	44	26,3	11,09	58	27,5	9,29	73	28,7	8,08
	20	5,00	18	23,9	25,27	24	24,4	21,26	35	25,5	16,59	46	26,5	13,89	57	27,4	12,09
	30	3,33	13	23,4	35,67	17	23,8	30,00	26	24,6	23,42	34	25,4	19,60	42	26,1	17,06
Interior temperature 24,00 °C	10	10,00	17	25,8	19,00	24	26,5	16,26	38	27,8	12,11	53	29,0	9,91	67	30,2	8,51
	20	5,00	14	25,5	30,35	19	26,0	24,32	30	27,0	18,11	42	28,1	14,82	53	29,0	12,73
	30	3,33	10	25,1	42,84	14	25,5	34,32	22	26,3	25,57	31	27,1	20,92	39	27,8	17,97

Performance data for Roth dry construction system

Farmacell screed 25 mm pipe covering (spread: 5 K) $R_{\lambda,B} = 0,15 \text{ m}^2 \text{ K/W}$

Resistance to thermal conduction of the floor covering $R_{\lambda,B} = 0,15 \text{ m}^2 \text{ K/W}$			Heat fluid temperature ϑ_H 35,00 °C			Heat fluid temperature ϑ_H 40,00 °C			Heat fluid temperature ϑ_H 45,00 °C			Heat fluid temperature ϑ_H 50,00 °C			Heat fluid temperature ϑ_H 55,00 °C		
(screed 25 mm) (spread 5 K)	Laying distance	Heating pipe requirements Alu-Laserflex 14 mm	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface	max. heat current density	mean surface temp.	max. heating circuit surface
	LD (cm)	L (m/m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)	\dot{q} (W/m ²)	ϑ_O (°C)	AHKR (m ²)
Interior temperature 15,00 °C	10	10,00	37	18,6	12,47	43	19,2	11,31	55	20,2	9,64	67	21,3	8,48	80	22,3	7,62
	20	5,00	30	18,0	16,52	35	18,4	14,98	45	19,3	12,76	54	20,2	11,23	64	21,0	10,10
	30	3,33	23	17,3	22,97	26	17,7	20,82	34	18,4	17,75	41	19,0	15,62	49	19,7	14,04
Interior temperature 18,00 °C	10	10,00	29	21,0	14,37	36	21,5	12,74	48	22,6	10,55	60	23,7	9,13	72	24,7	8,11
	20	5,00	24	20,4	21,18	29	20,9	18,78	39	21,8	15,55	49	22,7	13,45	58	23,5	11,95
	30	3,33	18	19,9	29,39	22	20,2	26,06	29	20,9	21,58	37	21,6	18,66	44	22,3	16,58
Interior temperature 20,00 °C	10	10,00	25	22,5	16,14	31	23,1	14,01	43	24,2	11,31	55	25,2	9,64	67	26,3	8,48
	20	5,00	20	22,1	23,78	25	22,5	20,64	35	23,4	16,66	45	24,3	14,20	54	25,2	12,49
	30	3,33	15	21,6	33,01	19	22,0	28,64	26	22,7	23,12	34	23,4	19,70	41	24,0	17,34
Interior temperature 22,00 °C	10	10,00	20	24,0	18,61	26	24,6	15,65	38	25,7	12,21	50	26,8	10,22	62	27,9	8,90
	20	5,00	16	23,7	27,41	21	24,2	23,06	31	25,1	18,00	41	26,0	15,06	50	26,8	13,11
	30	3,33	12	23,3	38,05	16	23,7	32,00	23	24,4	24,98	31	25,1	20,91	38	25,8	18,19
Interior temperature 24,00 °C	10	10,00	15	25,6	19,00	21	26,2	17,90	33	27,3	13,34	45	28,4	10,91	58	29,4	9,37
	20	5,00	12	25,3	32,92	17	25,8	26,38	27	26,7	19,65	37	27,6	16,08	47	28,5	13,81
	30	3,33	9	25,0	45,69	13	25,4	36,61	20	26,1	27,27	28	26,8	22,32	35	27,5	19,17



Heating report

for anhydrite or cement screed of floor heating and cooling systems according to DIN EN 1264 part 4

Object of construction: _____
Building contractor: _____
Building phase: _____

In the a. m. project the Roth floor heating and cooling system _____ was installed in accordance with building class A of DIN 18560 part 2 / DIN EN 1264 part 4.

Ø Roth system heating pipe PERTEX S5 _____ mm
Ø Roth system heating pipe X-PERT S5+ _____ mm
Ø Roth system heating pipe DUOPEX S5 _____ mm
Ø Roth system heating pipe Alu-Laserflex _____ mm
Ø Roth system pipe ClimaComfort _____ mm
Ø Roth system pipe Alu-Laserplus _____ mm
Thickness of screed: _____ Type of screed: _____
Bonding agent: _____ Manufacturer: _____

Process:

The anhydrite or cement screed must be heated before installation of the floor covering. For cement screed it can be started at the earliest 21 days, and for anhydrite screed depending on the indications of the manufacturer, however soonest 7 days after finishing the screed. The first heating starts with a supply temperature of 25 °C which must be kept for 3 days. Afterwards the maximum planning temperature is set up and kept for 4 additional days. In case of screeds which require special treatment the instruction of the supplier must be followed

- Completion of screed on: _____
- Beginning of heating with constant 25 °C supply temperature on: _____
- Beginning of heating with max. planning temperature _____ °C (according to DIN 18560 part 2 max. 55 °C for Roth system heating pipes allowed on: _____)
- End of heating (soonest 7 days after beginning of heating) on: _____
- Heating was interrupted (Yes / No). If yes: from _____ until _____
- The heated floor area was free / not free of building material and other coverings. The rooms were ventilated without draught, after turning off the floor heating the screed will be protected against draught and too fast drying (windows and outer doors closed). (Yes / No)
The system was approved for further building steps at an outside temperature of: _____ °C.

The system was out of operation at this time.
The screed was heated at a temperature of: _____ °C.

Important information:

After the described heating process it is not secured that the screed has achieved the status with maximal acceptable degree of moisture to be covered (guide value is included in table 1, DIN EN 1264, part 2). Before covering the floor the screed must be tested with a CM-meter (the test with this device should be effected in accordance with ZTV-SIB 90) by the foorer if it fulfils the correct status. In case a further heating of the screed is required, it must be effected by according operation of the heating system.

Confirmation:

Building contractor
Stamp / signature

Building supervisor / Architect
Stamp / signature

Installation company
Stamp / signature

Guarantee

Terms of guarantee

For the Roth dry construction systems, those guarantee terms and conditions apply which

are laid out in the Roth guarantee certificate supplied with the products.

CERTIFICATE OF GUARANTEE

Roth Floor Heating and Cooling Systems Roth Pipe Installation Systems

1. Within a 10 years following installation, although no longer than 10 1/2 years following delivery of the system components, we will provide, in accordance with our preference, either free-of-charge product replacement or repair and damage replacement in the event that damage appears in the system components which we have supplied which were caused by faults in materials or production.
Excluded from this are mechanical moving parts and products as well as electrical and electrically-powered parts and products for which we have provided the guarantee services in the event of faults in materials or production listed above within a time period of 12 months following installation.

2. Prerequisites for this guarantee are:

- a. exclusive use and installation of all system components belonging to the respective Roth floor heating system/pipe installation system,
- b. documented adherence to the planning, installation and operating instructions respectively valid at the time of the installation,
- c. adherence to the standards and regulations valid for this work type and for the relevant adjacent work types in connection with the respective Roth floor heating system/Roth pipe installation system,
- d. that the installation company and the companies carrying out the construction/finishing work types are respectively recognised and authorised specialist companies and that these companies have verified their confirmations with names and signatures on this certification document,
- e. that a completely filled out copy of this guarantee certificate is sent back to us without delay,
- f. that damages are immediately reported to us with simultaneous forwarding of the guarantee certificate,
- g. that claims are made within the guarantee period.

We are insured against claims made in this agreement under an extended company and product liability insurance policy with a coverage amount of **5.000.000 euros** per occurrence for personal and property injuries.

The stipulations contained in consumer protection laws are unaffected by this guarantee.
The preceding guarantee bond affects the following:

Object of construction: _____

Building contractor: _____

The following have been installed:

Roth industrial floor heating system	<input type="checkbox"/>	Roth sport and sprung floor heating system	<input type="checkbox"/>	Roth original Tacker system	<input type="checkbox"/>
Roth open area floor heating system	<input type="checkbox"/>	Roth knob system	<input type="checkbox"/>	Roth wall heating system	<input type="checkbox"/>
Roth dry construction system	<input type="checkbox"/>				

Roth Pipe installation systems:

Roth radiator connection system Roth domestic hot water system

The system components belonging to the respective Roth floor heating system and/or the respective Roth pipe installation system were delivered and installed completely on the respective date of installation.

Floor heating system: Area laid _____ m²

Radiator connection system: Number of radiator connections _____ pieces

Domestic hot water system: Number of borrow area connections _____ pieces

Specialist heating company: _____

Construction/ finishing work types:	Signature _____	Stamp _____	Date of installation _____
	Signature _____	Stamp _____	Date of completion _____
	Signature _____	Stamp _____	Date of completion _____

Commissioning:

Signature _____	Stamp _____	Date of the commissioning _____
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