

Energy Systems

Roth ClimaComfort® Compact System

Technical information and
assembly instructions



Living full of energy

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System description

■ System benefits

The Roth ClimaComfort® Compact System for heating and cooling via floors, walls, and ceilings in both modernisation and

new-build projects is noted for its very slim size (just 17 mm) and the excellent responsiveness this helps deliver.



■ Applications and general information

The system description mainly focuses on the planning and implementation work for the Roth ClimaComfort® Compact System. It is embedded in a thin layer of mineral-based filling and sealing compound, whose thickness does not comply with the minimum thickness under DIN 18560 – Floor screeds in building construction. To avoid any confusion with conventional heating screed, the term '**filling and sealing compound**' will be used in the rest of the document.

This system is mainly used in renovation projects. It reflects the state of the art. Irrespective of this, the persons responsible for a project must check whether the filling and sealing compound selected is suitable for the relevant application based on the general conditions at the site in question.

System description

System components

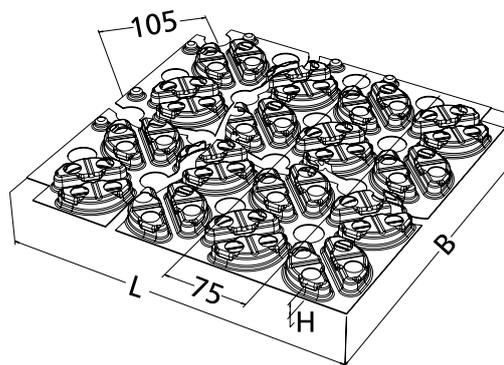
Roth ClimaComfort® Compact System panel

High-strength transparent system panel with 14 mm installation height, of semi-crystalline material. The special panel structure with undercutting supports standardised and secure fixing of pipes. ClimaComfort S5 System Pipes 75 mm11 x 1,30 mm are installed in a coiled or meandering pattern as required using an installation grid of 75 mm. Diagonal installation with spacing of 105 mm is possible.



Roth ClimaComfort® Compact System panel

ClimaComfort Compact System panels overlap by 22 mm on both sides to facilitate interconnection of the panels and have an adhesive back to ensure all-over adhesion of the panels as well as secure fixing to the subsurface. Filling holes and vent holes used to insert the filling and sealing compound ensure a secure and stable connection with the base.



Technical data	
Material No.	1115007104
Description	CC Compact System panel
Dimensions L x W x H [mm]	1072 x 772 x 14
Knob height H_N [mm]	14
Installation grid [mm]	75
Effective installation area [m ²]	0,785
Material	PET
Packing unit [pcs. m ²]	10 pcs./7,84 m ² /box
Area of application	Used for renovation projects where very low installation heights and low weights per unit area are required. Used on firm, supporting subsurfaces with thin-layered smoothing agents.
Structure	Composite structure with supporting subsurface
Overlap [mm]	22 mm (adhesive)
Building material class	B2
Installation spacing VA [mm]	75; 150; 225; diagonal 105
Mass per unit area [kg]	approx. 30 (17 mm installation height, pipe VA 75 and water capacity)

Roth ClimaComfort S5 System Pipe

5-layer safety pipe in accordance with DIN 22391, with an oxygen barrier layer according to DIN 4726, protected from increased mechanical demands by a PE coating. Permanent bonding of the pipe layers using S5 CoEx Technology. The ClimaComfort S5 System Pipe is resistant to stress cracking and stable against thermal ageing.



Roth ClimaComfort S5 System Pipe

System description

ClimaComfort S5		
Pipe dimensions	Material No.	Available lengths/Weight per PU
11	1135003441 or 1135003741	120 m/5 kg or 240 m/10 kg
Properties	small diameter for minimum installation heights	
Colour	light yellow pipe with red stripes	
Pipe layers	5-layer pipe	
Production processes	S5 CoEx Technology	
Thermal conductivity [W/mK]	0,35	
Linear elongation coefficient [1/K]	1,95x10 ⁻⁴	
Building material class	B2	
Min. bending radius	5 x da	
Pipe roughness [mm]	0,0003*	
Pipe dimensions	Water capacity [l/m]	
11	0,04	
Pipe markings	Metre details, pipe designation, material, dimensions, manufacturer, pipe class, max. temperature (long-term), oxygen tightness, any testing institute, date of manufacture, A number (manufacturer), running metre details	
Max. temperature over long term [°C]	70	
Max. temperature over short term [°C]	100	
Max. pressure [bar]	6	
Testing and certification basis	DIN 4726, DIN EN ISO 22391	
Approval number	DIN CERTCO 3V331	
Connection technology	Roth screw coupling and transfer connector or screw connection	
Optimal installation temperature [°C]	>0	
Permissible water additives	Roth antifreeze FKN 28	

* Measured via metrology

Filling and sealing compound

Ready-made mixture as a special, self-spreading, hydraulically curing compound of high solidity for filling Roth ClimaComfort® Compact System panel and creating a load-bearing layer designed to accommodate floor coverings in combination with the subsurface. Use after appropriate pretreatment and in accordance with the manufacturer's instructions, on concrete, cement screeds, calcium sulphate-bound screeds, or ceramic coverings. Base layer for any floor coverings based on special cement, mineral aggregates (special medium-grain grading curve – synthetic resin-coated), for manual and mechanical processing.

- > Ready to cover: approx. 25 kg/m² (system coverage 3 mm)
- > Delivery: ready-made mixture in a bag, depending on the manufacturer
- > Ready to cover: approx. 30 min (20 °C/65% relative humidity)
- > Min. processing temperature: 5 °C at floor level
- > Can be walked on: after approx. 3-4 hours
- > Functional heating: acc. to manufacturer's instructions
- > Ready to cover: after approx. 2 days – needs to be tested by floor installer.
- > **The latest manufacturer's instructions must be followed without exception.**

To be purchased from the manufacturers listed below:

Henkel
Bostik
PCI
Knauf
Kiesel
Ardex
Sopro
Glass
botament
Weber
Sakret
WICO

System description

Roth ClimaComfort® Compact screw fitting

For connecting the 11 x 1,30 mm Roth ClimaComfort S5 System Pipe to the Roth manifold with flow rate indicator.
Consists of: a brass union nut with 3/4"/11 mm internal thread, brass pipe adapter with Euro cone and clamp ring.

Technical data	
Dimension:	3/4" internal thread/11 mm
Spanner size:	SW 30 mm
Packing unit:	1 pcs.



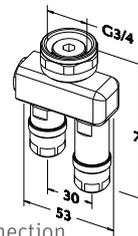
Roth ClimaComfort® Compact screw fitting

Roth ClimaComfort® Compact T-connection

For connecting 2 heating circuits of the same length made from 11 x 1,30 mm Roth ClimaComfort S5 System Pipes to the heating circuit pipe coupling of the Roth manifold with flow rate indicator.

Comprising:

- > Dimension: 3/4" inn. thr./2 x 11 mm
- > Packing unit: 1 pcs.



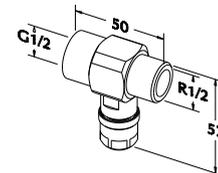
Roth ClimaComfort® Compact T-connection

Roth ClimaComfort® Compact single submanifold

For connecting heating circuits made from 11 x 1,30 mm Roth ClimaComfort S5 System Pipes to a controlled thermal heat supply as a single manifold or for combining several units where the circuits are the same length.

Consists of a brass profile with connection for both 1/2" outer thread and 1/2" inner thread, 1 heating circuit pipe couplings for 11 x 1,30 mm Roth ClimaComfort S5 System Pipes with screw connection.

- > Connection for both 1/2" inner thread and 1/2" outer thread
- > Packing unit: 1 pcs.



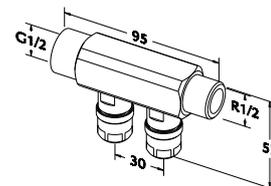
Roth ClimaComfort® Compact single submanifold

Roth ClimaComfort® Compact double submanifold

For connecting heating circuits of the same length made from 11 x 1,30 mm Roth ClimaComfort S5 System Pipes to a controlled thermal heat supply as a single manifold or for combining pipes.

Consists of a brass profile with connection for both 1/2" outer thread and 1/2" inner thread, 2 heating circuit pipe couplings for 11 x 1,30 mm Roth ClimaComfort S5 System Pipes with screw connection.

- > Connection for both 1/2" inner thread/and 1/2" outer thread
- > Packing unit: 1 pcs.



Roth ClimaComfort® Compact double submanifold

System description

Roth KlimaComfort® Compact press fitting

For directly connecting 11 x 1,30 mm Roth KlimaComfort S5 System Pipes to other Roth System Pipes. Consists of a brass double nipple with press contour and screw thread for 11 x 1,30 mm Roth KlimaComfort S5 System Pipe, incl. stainless steel crimping sleeve and screw connection.

Technical data			
Dimension [mm]	16/11	17/11	20/11
Packing unit	1 pcs.		



Roth KlimaComfort® Compact press fitting

Roth KlimaComfort® Compact reducing pipe nipple

Brass reducing component, one-sided 1/2" external thread, for connecting pipes and 11 x 1,30 mm Roth KlimaComfort S5 System Pipes, incl. screw connection.

- > Dimension: 1/2" external thread – 11 mm
- > Packing unit: 1 pcs.



Roth KlimaComfort® Compact reducing pipe nipple

Roth KlimaComfort® Compact coupling

Consists of 1 brass double nipple and 2 screw connections for connecting 11 x 1,30 mm Roth KlimaComfort S5 System Pipes (repair scenarios)

- > Dimension: 11 mm
- > Packing unit: 1 pcs.



Roth KlimaComfort® Compact coupling

Roth KlimaComfort® Compact edge insulating strip

For separating the filling and sealing compound from adjacent rising components, 5 mm thick special foam plastic, 50 mm high with welded PE film, with adhesive strips for fixing to the subsurface.

- > Dimensions: 5 x 50 mm
- > Packing unit: 25 m



Roth KlimaComfort® Compact edge insulating strip 80 mm

System description

Roth ClimaComfort® Compact expansion joint profile

For the secure separation of field areas and the formation of permanently flexible joints consisting of a closed-cell PE core with stable PET coating and 90° angled, self-adhesive contact zone, 8 mm wide, 40 mm high, and 1800 mm long.

- > Packing unit: 1 pcs.

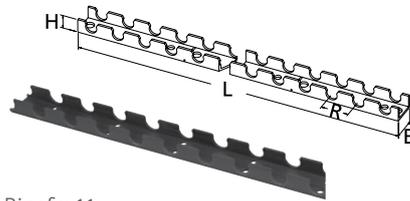


Roth ClimaComfort® Compact expansion joint profile

Roth Pipefix 11

U rail with 25 mm perforated grid for fixing pipes on uneven surfaces (wall and slab), adapted to Roth 11 mm ClimaComfort S5 System Pipes with predefined separation points. The base is self-adhesive.

- > Dimensions: 4000 x 30 x 15,50 mm
- > Packing unit: 10 pcs.



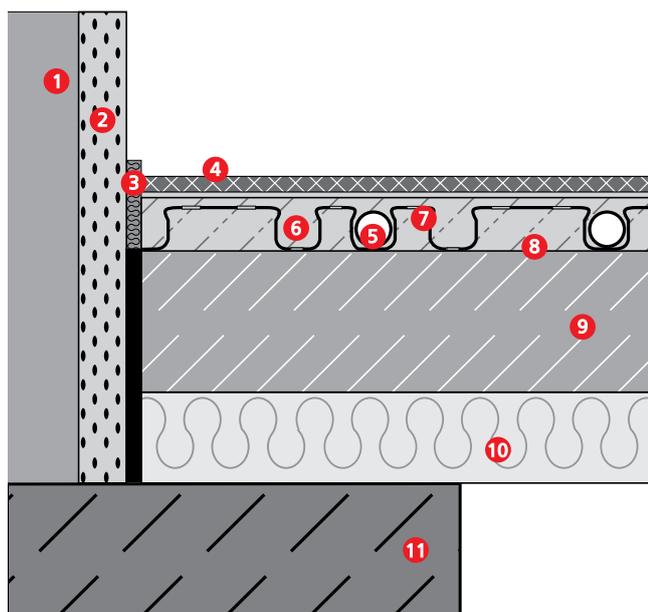
Roth Pipefix 11

Set-up and configuration

The calculations for the Roth ClimaComfort® Compact System are based on the basic characteristic curve under DIN EN 1264, Part 2 and the DIN EN 12831 standard heating load calculation.

The system layout is based on the sizes calculated in accordance with DIN EN 1264, taking into account the permitted limit values from the system performance charts.

■ Structure of the Roth ClimaComfort® Compact System



- ① Wall
- ② Plaster
- ③ Roth edge insulating strip
- ④ Roth ClimaComfort S5 System Pipe 11 mm
- ⑤ Covering
- ⑥ Filling and sealing compound
- ⑦ Roth ClimaComfort® Compact System panel 14 mm, 17 mm
- ⑧ Primer
- ⑨ Existing insulation
- ⑩ Existing subsurface (screed, etc.)
- ⑪ Supporting subsurface

■ Insulation requirements for existing buildings

Floors separating residential apartments:

The insulation requirements under EnEV do not apply to floors separating residential apartments. Checks should be made to ensure compliance with the insulation standard for floors separating residential apartments under DIN EN 1264 of $R_{\lambda, \text{ins}} \geq 0,75 \text{ m}^2 \text{ K/W}$. DIN EN 1264 Part 4 can however only serve here as a guide as its requirements relate to standard systems.

Floors adjacent to unheated rooms or the ground:

The requirements under the currently applicable version of EnEV must be observed in all cases. If the surface area to be renovated is less than 10% of the surface area of the entire building, there are no insulation requirements (EnEV, Section 9, sub-section 3, item 3). For larger area sections, the insulation requirements under EnEV Appendix 3, sub-section 5, line d apply. During installation or when renewing the entire floor structure (insulation, screed, floor covering, etc.) for floor heating, a heat transfer coefficient of $0,50 \text{ W/m}^2 \text{ K}$ for the overall building component should be maintained.

It is important to check that sufficient insulation, as envisaged under EnEV, has been provided in the existing floor structure. If additional insulation is required, but the thickness of the insulation layer is limited for technical reasons, the requirements under EnEV will be deemed to have been satisfied if the thickest possible layer of insulation is installed based on the recognized rules of engineering (value for measuring thermal conductivity is $R_{\lambda} = 0,040 \text{ W/kW}$).

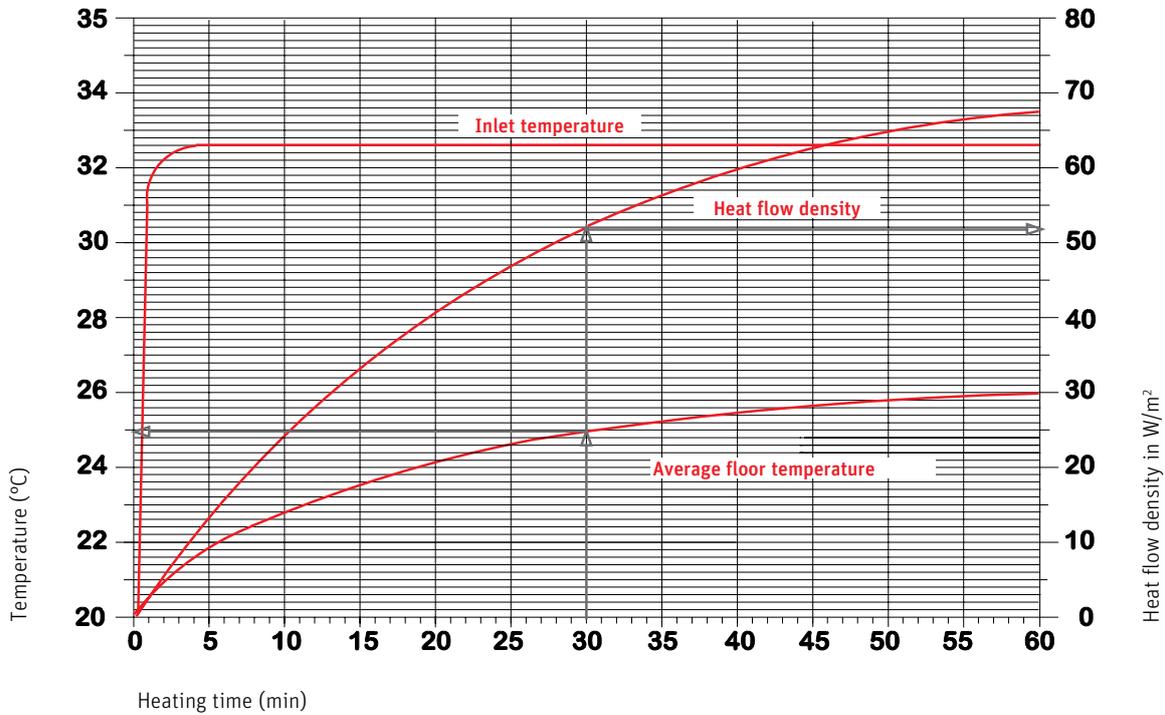
In the case of the basement slab, it is also necessary to check whether an insulation layer of at least 65 mm WLG 040 should be attached below. If the minimum slab height is not achieved, the EnEV requirements cannot be met. An application for exemption can also be made in accordance with EnEV Sections 24 and 25 for slabs which are adjacent to the ground and to which it is not possible to retrofit insulation as this is not feasible in accordance with EnEG Section 5, subsection 1.

Performance data



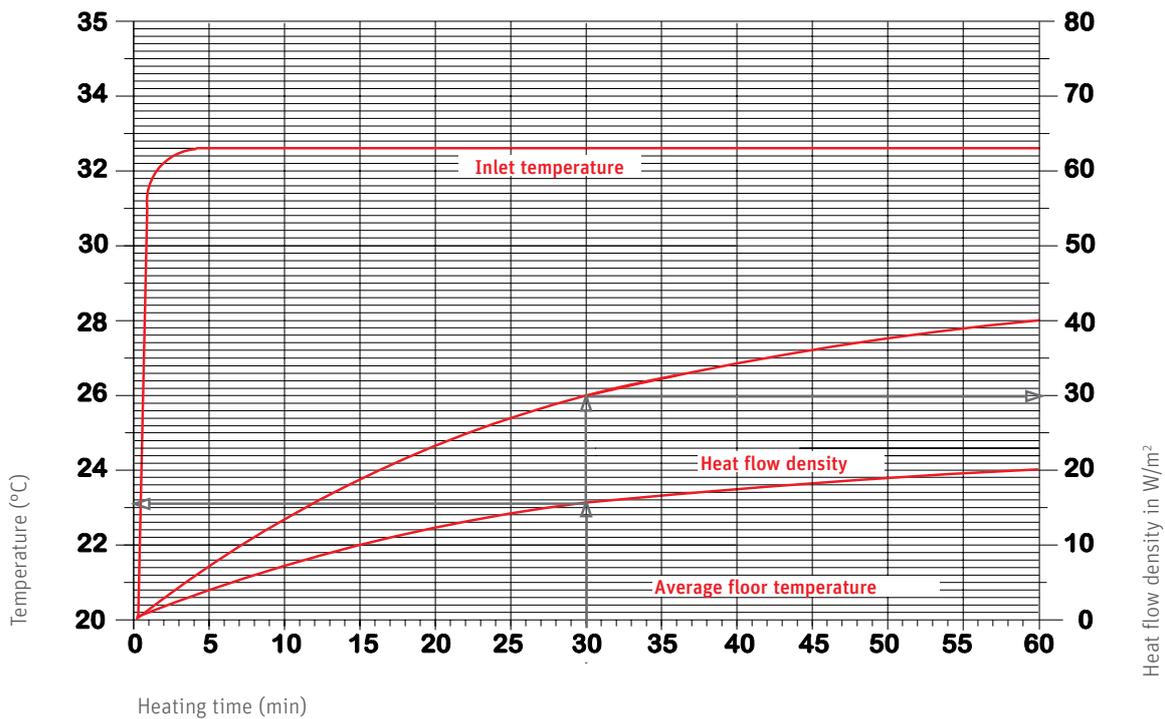
Roth ClimaComfort® Compact System heating curve, pipe pitch 75 mm

Floor structure: 17 mm, filling and sealing compound + tiles ($R_{\lambda,B} = 0,01 \text{ m}^2\text{K/W}$), change in inlet temperature 20 °C to 32,7 °C (constant), room temperature 20 °C



Roth ClimaComfort® Compact System heating curve, pipe pitch 150 mm

Floor structure: 17 mm, filling and sealing compound + tiles ($R_{\lambda,B} = 0,01 \text{ m}^2\text{K/W}$), change in inlet temperature 20 °C to 32,7 °C (constant), room temperature 20 °C



Performance data



System heat flow density

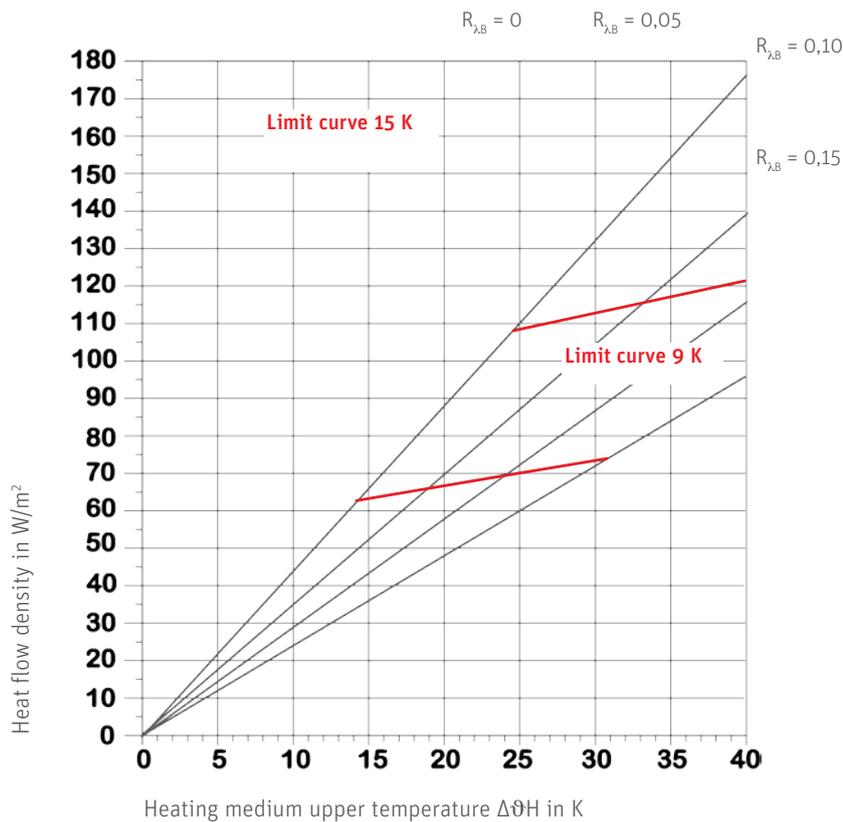
The performance data for the heating and cooling surfaces has been calculated according to DIN EN 1264 and registered with and monitored by DIN CERTCO.

DIN CERTCO registration number: 7 F 221-F

	ClimaComfort S5 System Pipe 11 x 1,30 mm, filling and sealing compound 17 mm =1,20 W/mK		Installation zone condition tFmax-ti = 9 K		Boundary zone condition tFmax-ti = 15 K	
	Thermal resistance floor covering	System characteristic curve	System heat flow density limit	System heating medium upper temperature limit	System heat flow density limit	System heating medium upper temperature limit
	$R_{\lambda,B}$ (m ² K/W)	q (KH*Δt)	q (W/m ²)	ΔθH (K)	q (W/m ²)	ΔθH (K)
Installation spacing 75 mm	0,00	7,508 x Δ t	92,10	12,27	161,60	21,53
	0,05	5,497 x Δ t	93,80	17,07	164,60	29,94
	0,10	4,335 x Δ t	95,60	22,05	167,70	38,67
	0,15	3,579 x Δ t	97,40	27,22	170,90	47,74
Installation spacing 150 mm	0,00	5,636 x Δ t	76,20	13,52	133,60	23,71
	0,05	4,324 x Δ t	79,70	18,42	139,70	32,31
	0,10	3,508 x Δ t	83,60	23,80	146,40	41,74
	0,15	2,951 x Δ t	87,70	29,72	153,80	52,12
Installation spacing 225 mm	0,00	4,412 x Δ t	62,10	14,09	109,00	24,71
	0,05	3,472 x Δ t	65,70	18,93	115,30	33,20
	0,10	2,862 x Δ t	69,70	24,36	122,30	42,73
	0,15	2,434 x Δ t	74,20	30,50	130,20	53,49

Roth ClimaComfort® Compact System heat flow density, floor applications

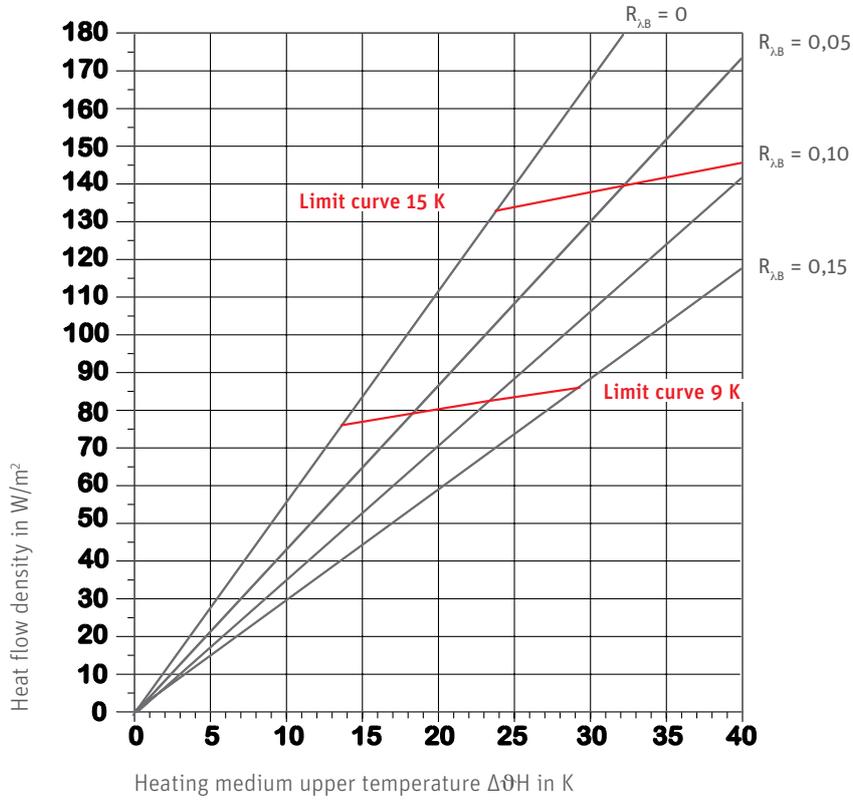
Heating, pipe pitch 75 mm, size 17 mm, filling and sealing compound



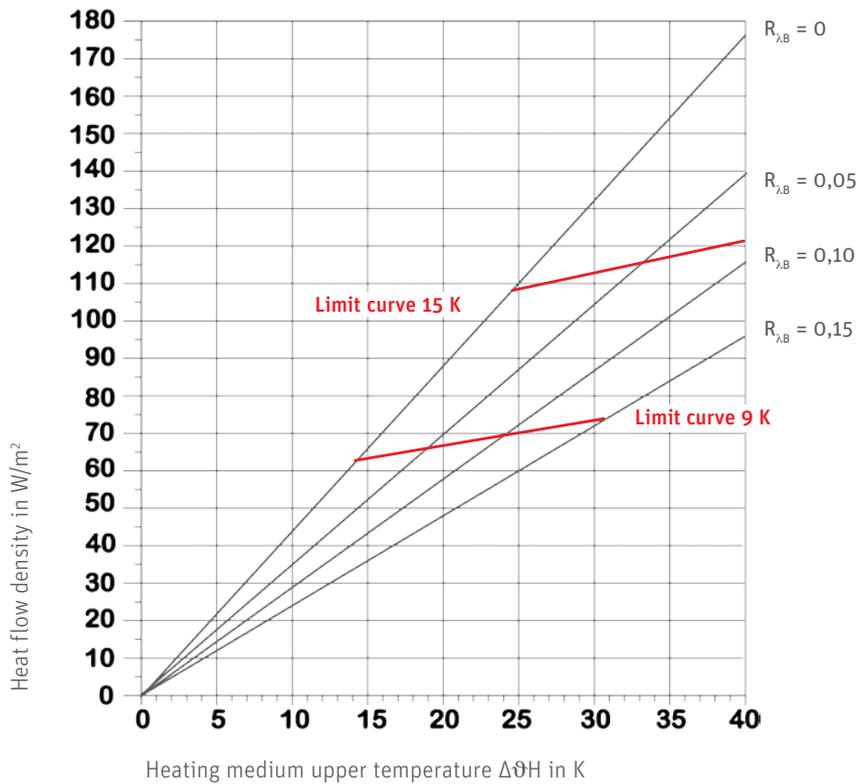
Performance data



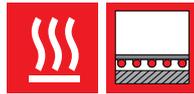
■ Heating, pipe pitch 150 mm, size 17 mm, filling and sealing compound



■ Heating, pipe pitch 225 mm, size 17 mm, filling and sealing compound



Performance data



Thermal resistance of the floor covering $R_{\lambda,B} = 0,00 \text{ m}^2\text{K/W}$

Spread 5 K, max. pressure loss/HKR 250 mbar, filling and sealing compound, size 17 mm = 25 kg/m² - λ - 1,2 W/mK

	Thermal resistance of the floor covering $R_{\lambda,B} = 0,00 \text{ m}^2\text{K/W}$		Heating medium temp. ϑ_H 27,5 °C			Heating medium temp. ϑ_H 30 °C			Heating medium temp. ϑ_H 32,5 °C			Heating medium temp. ϑ_H 35 °C			Heating medium temp. ϑ_H 37,5 °C		
	Installation spacing	System pipe requirement ClimaComfort S5 11 x 1,3 mm	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area
	VA (cm)	L (m/m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)
Inside temperature 15 °C	7,5 15,0 22,5	13,30 6,40 4,40	94 70 55	23,5 21,5 20,2	4,06 6,36 8,52	113 85 66	25,0 22,7 21,2	3,62 5,67 7,59	131 99 77	26,5 23,9 22,1	3,28 5,14 6,88	150 113 88	28,0 25,0 23,0	3,01 4,72 6,32	169 127 99	29,5 26,2 23,9	2,80 4,38 5,86
Inside temperature 18 °C	7,5 15,0 22,5	13,30 6,40 4,40	71 54 42	24,6 23,1 22,1	4,84 7,58 10,15	90 68 53	26,2 24,3 23,0	4,17 6,53 8,75	109 82 64	27,7 25,5 24,0	3,70 5,79 7,76	128 96 75	29,2 26,7 24,9	3,34 5,23 7,01	146 110 86	30,7 27,8 25,8	3,06 4,79 6,42
Inside temperature 20 °C	7,5 15,0 22,5	13,30 6,40 4,40	56 42 33	25,3 24,1 23,3	5,63 8,81 11,80	75 56 44	26,9 25,3 24,3	4,68 7,34 9,82	94 70 55	28,5 26,5 25,2	4,06 6,37 8,52	113 85 66	30,0 27,7 26,2	3,62 5,67 7,59	131 99 77	31,5 28,9 27,1	3,28 5,14 6,88
Inside temperature 22 °C	7,5 15,0 22,5	13,30 6,40 4,40	41 31 24	26,0 25,1 24,5	6,85 10,73 14,37	60 45 35	27,7 26,4 25,5	5,40 8,46 11,32	79 59 46	29,2 27,6 26,5	4,54 7,11 9,52	98 73 57	30,8 28,8 27,4	3,96 6,21 8,31	116 87 68	32,3 30,0 28,4	3,54 5,55 7,43
Inside temperature 24 °C	7,5 15,0 22,5	13,30 6,40 4,40	26 20 15	26,7 26,1 25,6	9,14 14,31 19,16	45 34 26	28,4 27,4 26,7	6,48 10,15 13,60	64 48 38	30,0 28,6 27,7	5,20 8,14 10,89	83 62 49	31,6 29,8 28,7	4,41 6,90 9,25	101 76 60	33,1 31,0 29,6	3,87 6,06 8,12

Thermal resistance of the floor covering $R_{\lambda,B} = 0,05 \text{ m}^2\text{K/W}$

Spread 5 K, max. pressure loss/HKR 250 mbar, filling and sealing compound, size 17 mm = 25 kg/m² - λ - 1,2 W/mK

	Thermal resistance of the floor covering $R_{\lambda,B} = 0,05 \text{ m}^2\text{K/W}$		Heating medium temp. ϑ_H 27,5 °C			Heating medium temp. ϑ_H 30 °C			Heating medium temp. ϑ_H 32,5 °C			Heating medium temp. ϑ_H 35 °C			Heating medium temp. ϑ_H 37,5 °C		
	Installation spacing	System pipe requirement ClimaComfort S5 11 x 1,3 mm	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area
	VA (cm)	L (m/m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)
Inside temperature 15 °C	7,5 15,0 22,5	13,30 6,40 4,40	69 54 43	21,4 20,1 19,2	4,96 7,53 9,93	82 65 52	22,6 21,1 20,0	4,41 6,71 8,84	96 76 61	23,7 22,0 20,7	4,00 6,08 8,01	110 86 69	24,8 22,9 21,5	3,67 5,59 7,36	124 97 78	25,9 23,8 22,2	3,41 5,18 6,83
Inside temperature 18 °C	7,5 15,0 22,5	13,30 6,40 4,40	52 41 33	23,0 22,0 21,3	5,90 8,97 11,82	66 52 42	24,2 23,0 22,1	5,09 7,73 10,19	80 63 50	25,3 23,9 22,8	4,51 6,86 9,03	93 74 59	26,5 24,8 23,6	4,07 6,20 8,16	107 84 68	27,6 25,7 24,3	3,73 5,68 7,48
Inside temperature 20 °C	7,5 15,0 22,5	13,30 6,40 4,40	41 32 26	24,0 23,2 22,6	6,86 10,43 13,74	55 43 35	25,2 24,2 23,4	5,71 8,68 11,44	69 54 43	26,4 25,1 24,2	4,96 7,53 9,93	82 65 52	27,6 26,1 25,0	4,41 6,71 8,84	96 76 61	28,7 27,0 25,7	4,00 6,08 8,01
Inside temperature 22 °C	7,5 15,0 22,5	13,30 6,40 4,40	30 24 19	25,0 24,4 24,0	8,36 12,70 16,74	44 35 28	26,3 25,4 24,8	6,59 10,01 13,19	58 45 36	27,5 26,4 25,6	5,54 8,42 11,09	71 56 45	28,6 27,3 26,4	4,83 7,35 9,68	85 67 54	29,8 28,3 27,1	4,32 6,57 8,66
Inside temperature 24 °C	7,5 15,0 22,5	13,30 6,40 4,40	19 15 12	26,0 25,6 25,3	11,14 16,94 22,32	33 26 21	27,3 26,6 26,2	7,91 12,02 15,84	47 37 30	28,5 27,6 27,0	6,34 9,63 12,69	60 48 38	29,7 28,6 27,8	5,38 8,17 10,77	74 58 47	30,9 29,5 28,5	4,72 7,17 9,45

Performance data



Thermal resistance of the floor covering $R_{\lambda,B} = 0,10 \text{ m}^2\text{K/W}$

Spread 5 K, max. pressure loss/HKR 250 mbar, filling and sealing compound, size 17 mm = 25 kg/m² - λ - 1,2 W/mK

	Thermal resistance of the floor covering $R_{\lambda,B} = 0,10 \text{ m}^2\text{K/W}$		Heating medium temp. ϑ_H tv tr 27,5 °C 30 25			Heating medium temp. ϑ_H tv tr 30 °C 32,5 27,5			Heating medium temp. ϑ_H tv tr 32,5 °C 35 30			Heating medium temp. ϑ_H tv tr 35 °C 37,5 32,5			Heating medium temp. ϑ_H tv tr 37,5 °C 40 35		
	Installation spacing	System pipe requirement ClimaComfort S5 11 x 1,3 mm	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area
	VA (cm)	L (m/m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)
Inside temperature 15 °C	7,5 15,0 22,5	13,30 6,40 4,40	54 44 36	20,2 19,3 18,5	5,77 8,61 11,23	65 53 43	21,1 20,0 19,2	5,13 7,66 10,00	76 61 50	22,0 20,8 19,8	4,65 6,95 9,06	87 70 57	22,9 21,5 20,4	4,27 6,38 8,32	98 79 64	23,8 22,3 21,0	3,96 5,92 7,72
Inside temperature 18 °C	7,5 15,0 22,5	13,30 6,40 4,40	41 33 27	22,0 21,3 20,8	6,87 10,25 13,37	52 42 34	23,0 22,1 21,4	5,92 8,83 11,52	63 51 41	23,9 22,9 22,0	5,25 7,83 10,21	74 60 49	24,8 23,6 22,7	4,74 7,08 9,23	85 68 56	25,7 24,4 23,3	4,34 6,49 8,46
Inside temperature 20 °C	7,5 15,0 22,5	13,30 6,40 4,40	33 26 21	23,2 22,7 22,2	7,98 11,91 15,54	43 35 29	24,2 23,5 22,9	6,65 9,92 10,94	54 44 36	25,2 24,3 23,5	5,77 8,61 11,23	65 53 43	26,1 25,0 24,2	5,13 7,66 10,00	76 61 50	27,0 25,8 24,8	4,65 6,95 9,06
Inside temperature 22 °C	7,5 15,0 22,5	13,30 6,40 4,40	24 19 16	24,4 24,0 23,7	9,72 14,51 18,93	35 28 23	25,4 24,8 24,4	7,66 11,43 14,91	46 37 30	26,4 25,6 25,0	6,44 9,62 12,54	56 46 37	27,3 26,4 25,7	5,62 8,39 10,95	67 54 44	28,3 27,2 26,3	5,03 7,51 9,79
Inside temperature 24 °C	7,5 15,0 22,5	13,30 6,40 4,40	15 12 10	25,6 25,3 25,1	12,96 19,35 25,24	26 21 17	26,6 26,2 25,8	9,20 13,73 17,91	37 30 24	27,6 27,0 26,5	7,37 11,00 14,35	48 39 31	28,6 27,8 27,1	6,25 9,34 12,18	59 47 39	29,5 28,6 27,8	5,49 8,20 10,69

Thermal resistance of the floor covering $R_{\lambda,B} = 0,15 \text{ m}^2\text{K/W}$

Spread 5 K, max. pressure loss/HKR 250 mbar, filling and sealing compound, size 17 mm = 25 kg/m² - λ - 1,2 W/mK

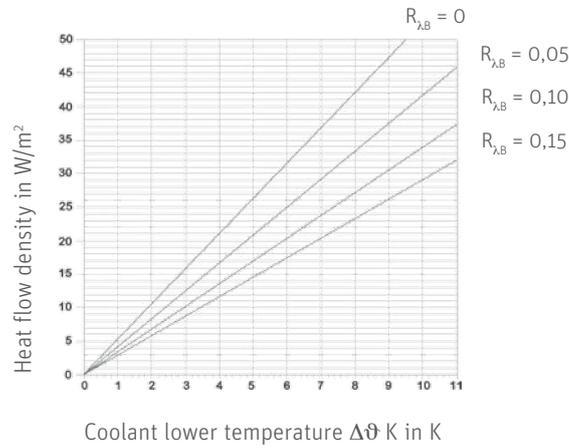
	Thermal resistance of floor covering $R_{\lambda,B} = 0,15 \text{ m}^2\text{K/W}$		Heating medium temp. ϑ_H tv tr 27,5 °C 30 25			Heating medium temp. ϑ_H tv tr 30 °C 32,5 27,5			Heating medium temp. ϑ_H tv tr 32,5 °C 35 30			Heating medium temp. ϑ_H tv tr 35 °C 37,5 32,5			Heating medium temp. ϑ_H tv tr 37,5 °C 40 35		
	Installation spacing	System pipe requirement ClimaComfort S5 11 x 1,3 mm	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area	Max. thermal output	Average surface temp.	Max. heating circuit area
	VA (cm)	L (m/m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)	q (W/m ²)	ϑ_o (°C)	AHKR (m ²)
Inside temperature 15 °C	7,5 15,0 22,5	13,30 6,40 4,40	45 37 30	19,3 18,6 18,1	6,51 9,61 12,44	54 44 37	20,1 19,3 18,6	5,80 8,56 11,08	63 52 43	20,9 19,9 19,1	5,26 7,76 10,05	72 59 49	21,6 20,6 19,7	4,83 7,12 9,23	81 66 55	22,4 21,2 20,2	4,48 6,61 8,56
Inside temperature 18 °C	7,5 15,0 22,5	13,30 6,40 4,40	34 28 23	21,4 20,8 20,4	7,76 11,44 14,82	43 35 29	22,2 21,5 20,9	6,68 9,86 12,77	52 43 35	23,0 22,2 21,5	5,93 8,74 11,32	61 50 41	23,7 22,8 22,0	5,36 7,90 10,23	70 58 47	24,5 23,4 22,6	4,91 7,24 9,38
Inside temperature 20 °C	7,5 15,0 22,5	13,30 6,40 4,40	27 22 18	22,7 22,3 21,9	9,02 13,30 17,22	36 30 24	23,5 23,0 22,5	7,51 11,07 14,34	45 37 30	24,3 23,6 23,1	6,51 9,61 12,44	54 44 37	25,1 24,3 23,6	5,80 8,56 11,08	63 52 43	25,9 24,9 24,1	5,26 7,76 10,05
Inside temperature 22 °C	7,5 15,0 22,5	13,30 6,40 4,40	20 16 13	24,1 23,7 23,4	10,98 16,20 20,98	29 24 19	24,9 24,4 24,0	8,65 12,76 16,53	38 31 26	25,7 25,1 24,6	7,28 10,73 13,90	47 38 32	26,5 25,8 25,2	6,35 9,37 12,14	55 46 38	27,3 26,4 25,7	5,68 8,38 10,85
Inside temperature 24 °C	7,5 15,0 22,5	13,30 6,40 4,40	13 10 9	25,4 25,1 25,0	14,29 21,60 27,98	21 18 15	26,2 25,9 25,6	10,39 15,33 19,85	30 25 21	27,1 26,6 26,1	8,33 12,28 15,91	39 32 27	27,9 27,2 26,7	7,07 10,42 13,50	48 40 33	28,6 27,9 27,3	6,20 9,15 11,85

Performance data

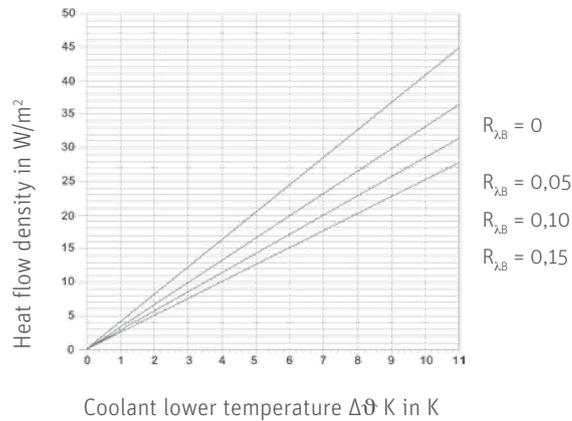


Roth ClimaComfort® Compact System cold flow density, floor applications

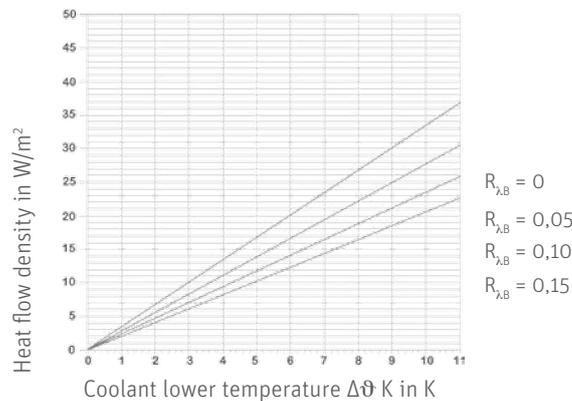
Pipe pitch 75 mm, filling and sealing compound 17 mm, size: floor covering $R_{\lambda,B} = 0$ to $R_{\lambda,B} = 0,15 \text{ m}^2 \text{ K/W}$



Pipe pitch 150 mm, filling and sealing compound 17 mm, size: floor covering $R_{\lambda,B} = 0$ to $R_{\lambda,B} = 0,15 \text{ m}^2 \text{ K/W}$



Pipe pitch 225 mm, filling and sealing compound 17 mm, size: floor covering $R_{\lambda,B} = 0$ to $R_{\lambda,B} = 0,15 \text{ m}^2 \text{ K/W}$



Installation requirements

■ Subsurfaces

The structural requirements and any preparatory measures need to be checked.

Assessing the load-bearing capacity of the subsurface

A specialist in screeds or floor installations should assess the subsurface and decide on the measures needed to prepare the subsurface properly.

The instructions provided by the manufacturer of the building material should be followed for flooring areas with mixed subsurfaces. It may be necessary to arrange a meeting with the relevant specialist consultant on site. Certain assessment criteria need to be borne in mind in any event:

Floating structures do not make suitable subsurfaces (e.g. loosely laid insulation panels)!

Floor heating with the Roth ClimaComfort® Compact System on mineral-based subsurfaces

It is important to ensure the site involved is fully enclosed before starting on any structural work. Any subsequent moisture (including excessive humidity from outside) must be ruled out and a minimum temperature of 10 °C must be observed.

Subsurfaces must be non-yielding, high-tensile, and able to take a load. They must also be free from dirt, contain no separation layers, and be permanently dry. Appropriate mechanical processes, such as sanding, blasting, milling, or suction, should be used to remove any loose matter which might interfere with bonding. This includes e.g. oil, dust, wax, old coatings, layers of cement or plaster, adhesive residue, or layers of paint. Any cracks should be properly repaired. Any surfaces where rising damp might be a problem should be sealed using suitable products from the relevant manufacturers.

Composite screeds on a cement base or cement screeds on a separation layer must satisfy the requirements under DIN 18560 and rest firmly on the concrete subsurface. The residual moisture of the cement screed must not exceed 2 CM-%.

Floating screeds on a cement base must be at least 45 mm thick and be manufactured in accordance with DIN 18560. The residual moisture of the cement screed must not exceed 2 CM-%.

The calcium sulphate floating screed (anhydrite floating screed) on a separation layer or a layer of insulation must be at least 35 mm thick and comply with DIN 18560. The residual moisture of the calcium sulphate floating screed must not exceed 0,5 CM-%. The surface must be inspected for separation/sinter layers, and these should be removed using a suitable mechanical process like sanding, blasting, or milling. The surface should also be sanded down using a 16 grain size, and a powerful industrial vacuum cleaner used to suck up any residue.

Any concrete/precast concrete components must be at least 3 months old as per DIN 1045 or their residual moisture must not exceed 3%. Any expansion joints must be incorporated.

Floor heating with the Roth ClimaComfort® Compact System on wooden or dry construction elements and mastic asphalt

It is important to check that **timber floor boards** are stable on the sleepers. Floor boards should be screwed tight if necessary. Adequate air space should be left when smoothing over entire wooden floor structures.

V 100 E 1 chipboards and OSB panels must be installed as required under DIN 68771 (CEN/TC 112) 'Sub-floors made from wood chipboards'.

Structural moisture protection must be dimensioned on all surfaces to prevent condensation forming within the floor. This means providing the kind of thermal insulation stipulated under DIN 4108 'Thermal insulation in buildings'.

When laying chipboards and OSB panels on new unfinished floors, a layer acting as a vapour barrier (PVC film at least 0,5 mm thick) must be fitted. This film must be drawn out so it overlaps with any adjacent components to ensure the edges of the panels are also protected.

Panels must always be secured at the joints with adhesive and screwed tight to the supporting subsurface.

Any commercially available gypsum fibreboard or gypsum plasterboard can be used.

Mastic asphalt screed is subject to the conditions set out under DIN 18560 and DIN 18533. Mastic asphalt screed should be given a suitable primer and then sanded down with quartz sand. Any excess quartz sand should be removed.

Any existing expansion joints need to be incorporated. Expansion joints should also be added at the wall connection and in the door areas.

Any interior plasterwork must be finished and allowed to dry out.

Preparing the subsurface

Check the subsurface is even and level out any significant areas of unevenness.

The specifications of the smoothing agent manufacturers should be observed in relation to the maximum areas.

Installation requirements

Layers of insulation

In exceptional cases, the Roth ClimaComfort® Compact System can also be laid on a layer of insulation.

Please see the process instructions provided by manufacturers PCI and Sopro.

This type of floor structure can be used for surface loads of up to 2 kN/m², making it suitable for:

Area of application	Surface load capacity (kN/m ²)	Point load (kN/m ²)
Residential and lounge areas	2,0	2,0
Office space	2,0	2,0
Hotel rooms	2,0	2,0
Bedrooms in hospitals	2,0	2,0
Retail spaces up to 50 m ²	2,0	2,0

Insulation panels must be denser than 30 kg/m³ and resistant to pressure of at least 200 kPa.

Insulation	Compression strength (10% compressive strain) [kPa]	Density by volume [kg/m ³]
Polystyrene rigid foam panels (XPS)	> 250 kPa	> 30 kg/m ³
Polystyrene rigid foam panels (EPS DEO WLG 035)	> 250 kPa	> 30 kg/m ³

The individual layers must be built up as a composite and securely bonded to each other (e.g. with flexible tile adhesive).

Choosing a bonding layer

The type of bonding layer to be used will depend on the material of which the existing subsurface is made. The manufacturer's instructions should be followed when choosing and applying the bonding layer.

- > Any enclosed structural elements (existing windows/doors, component and ambient temperatures not below +5 °C),
- > The functionality of expansion joints
- > and any existing joints need to be incorporated, and additional ones should be created as required in the existing floating screed.

Manifold connection

The Roth manifold with flow rate indicator can be used as a manifold. Depending on what is required, up to 12 heating circuit pipe couplings are available, which can double up with the T connections.

In buildings containing a large number of heating circuits, it is important to ensure that manifolds are kept apart from each other and that there is not an excessive build-up of connection pipes.

Tools

We recommend using the following tools when installing the Roth ClimaComfort® Compact system:

- > Roth pipe scissors
- > Roth pipe cutter
- > Roth knife
- > Spiked roller

Assembly instructions

1. Check the installation requirements
Apply a primer to the subsurface
2. Lay the Roth edge insulating strip



3. The next stage is to lay the system panels
Remove the silicone paper from the adhesive side of the Roth KlimaComfort® Compact System panel.



4. Place the first Roth KlimaComfort® Compact System panel in a corner of the room.



5. Roth KlimaComfort® Compact System panels have specially designed edges so the next panel can be laid adjacent to the previous one with a slight overlap.



Assembly instructions

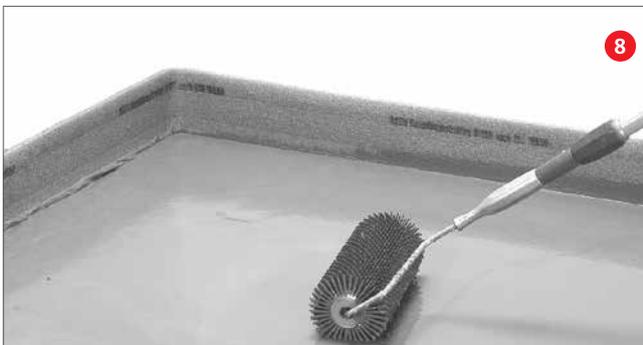


6. Install the pipes

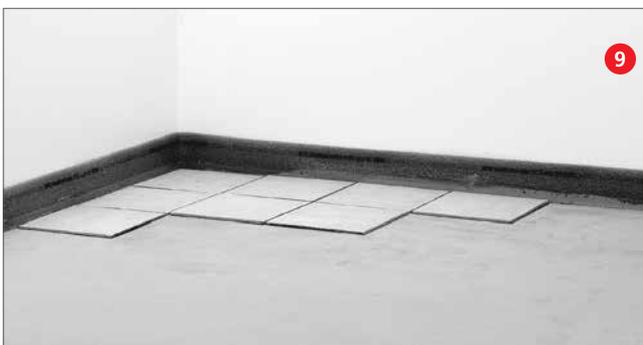
 **Leak test acc. to leak test protocol**



7. Apply the filling and sealing compound



8. Final step (spread and leave to air)



9. Apply the floor covering

Commissioning

■ Pressure test

A water pressure test must be performed in accordance with DIN EN 1264 both before and during application of the filling and sealing compound. A written protocol should be completed for the tests.

 **See leak test protocol**

■ Water quality

Water quality must comply with VDI 2035 and be adjusted so it is low in salt.

■ Functional heating

Depending on the filling and sealing compound chosen, functional heating can begin after a suitable drying time has elapsed. Unless the sealing compound manufacturer specifies other times, functional heating can begin after 3 days.

Functional heating should be performed and documented in accordance with the heating protocol. The manufacturer's instructions should also be followed. **Inlet temperature max. 45 °C.** The use of combined functional heating and curing according to the guidelines on interface coordination for heated floor structures should be checked.

The maximum inlet temperature should be 15 °C above room temperature initially.

■ Curing

Curing is not usually necessary, given that layers of filling and sealing compounds are not very thick. The narrow spacing between the heating pipes makes it almost impossible to use CM measuring to check whether a surface is ready for covering. The 'film test' has proved its worth in these situations.

This involves checking how far drying has gone at the maximum permissible inlet temperature/heat output in accordance with

the instructions provided by the manufacturer of the filling and sealing compounds. The test is performed in heating mode, with a film approx. 50 cm x 50 cm being placed on the filling and sealing compound above the heating element. The edges are masked with adhesive tape. Rooms still need to be left to air thoroughly. The surface is ready for covering if there is no trace of moisture under the film after 24 hours.

■ Floor coverings

In terms of laying the top floor covering, the filling and sealing compound can be covered once the functional heating phase has been performed and the surface is ready for covering. It is not

usually necessary to smooth surfaces over given the fluidity of the materials used.

Processing instructions for the filling and sealing compound

■ Henkel¹

Roth ClimaComfort® Compact System on existing subsurfaces			
Subsurface	Screed	Tiles	Timber floor boards/ Laying panels
1. Prepare the subsurface (following testing)	Sand/vacuum	Thomsit PRO 40	Sand/vacuum
2. Apply a primer to the subsurface	Cerotec CT (for B and C) Thomsit R 777 (for A and D)	Cereflor CF 41 (for B and C) Thomsit R 755/epoxy primer (for A and D)	Cereplan CT 17 (for B) Thomsit R 777 (for A and D)
3. Final step	–	Sand/vacuum	–
4. Lay the ClimaComfort Compact System	Lay the ClimaComfort Compact System		
5. Filling and sealing compound ClimaComfort Compact System	Cereplan CN 73 (for B and C) Thomsit SL 85/DE 95 (for A and D)		Ceresit CN 73 (for B and C) Thomsit SL 85 (for A and D)
Laying floor coverings after functional heating and curing			
A Parquet (suitable for floor heating)	Adhesive: Thomsit P 618/P 625	Adhesive: Thomsit P 618/P 626	Adhesive: Thomsit P 618/P 627
B Ceramic coverings	Adhesive: Ceromit CM 18/CM 12 + Ceroc CC 83 Joint mortar: Cerement CE 37		
C Natural stone	Adhesive: Ceromit CM 15 + Ceroc CC 83 Joint mortar: (tailored to covering)	Adhesive: As specified by manufacturer Joint mortar: As specified by manufacturer	
D Textile/plastic coverings (suitable for floor heating)	Adhesive: Thomsit T 410/TK 199		

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

Processing instructions for the filling and sealing compound

Bostik¹

Roth ClimaComfort® Compact System on existing subsurfaces			
Subsurface	Cement screed	Anhydrite (floating) screed Existing tiled covering	Dry concrete surfaces*
1. Preparing the subsurface (following testing)	Sand/vacuum		
2. Apply a primer to the subsurface	Bostik Nibogrund G 17 2 hours' drying time	Bostik Nibogrund E 30 24 hours' drying time	
3. Lay the ClimaComfort Compact System	Lay the ClimaComfort Compact system		
4. Filling and sealing compound ClimaComfort Compact System	Bostik Niboplan DE min. 3 mm above top edge of pipe; max. 40 mm total height		
* Concrete subsurfaces: With the following parquet coverings, the Bostik Nibogrund E 30 epoxy resin primer must be applied twice to prevent any moisture rising through.			
After functional heating and curing, floor coverings should be laid as follows:			
A Parquet (suitable for floor heating)	NIBOFLOOR PK ELASTIC Mosaics and small-sized elements, B 3 tothing/Pre-finished parquet and long boards, B 5 tothing		
B Ceramic coverings	ARDAL FLOORFLEX Tothing must match the tile type. Fill the joints after 24 hours using ARDAL FLEXFUGE (in wet rooms, bonds must be sealed before the ceramics are laid).		
C Textile coverings	BOSTIK POWER TEX Min. tothing B1 (ensure that the back of the covering is sufficiently moist. If necessary, use larger tothing). Tufted floor coverings should always have B 2 tothing.		

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

Processing instructions for the filling and sealing compound

Roth ClimaComfort® Compact System on wooden or dry construction elements and mastic asphalt				
Subsurface	Mastic asphalt	Chipboards V 100 E 1 OSB panels screwed to timbers	Timber floor boards	Gypsum fibreboards or gypsum plasterboards
1. Prepare the subsurface (following testing)	Sand/vacuum			
2. Apply a primer to the subsurface	Bostik Nibogrund E 30 (renovation work only)	Bostik Nibogrund Elasto Fill		
3. Make the surface even	Bostik Niboplan 300 max. total thickness 5 mm	Bostik Niboplan FA 600 min. 3; max. 15 mm thick		
4. Stick down Ardal insulation panels (isolation)	Ardal flexible mortar and tiled insulation panel			
5. Lay the Clima Comfort Compact System	Lay the ClimaComfort Compact System			
6. Filling and sealing compound ClimaComfort Compact System	Bostik Niboplan DE min. 3 mm above top edge of pipe max. total height 20 mm			
Laying floor coverings in Roth ClimaComfort® Compact System on wooden or dry construction elements and mastic asphalt after heating				
After functional heating and curing, floor coverings should be laid as follows:				
A Parquet (suitable for floor heating)	NIBOFLOOR PK Elastic Mosaics and small-sized elements, B 3 tootingh/Pre-finished parquet and long boards, B 5 tootingh			
B Ceramic coverings	ARDAL FLOORFLEX Tootingh must match the tile type. Fill the joints after 24 hours using ARDAL FLEXFUGE (in wet rooms, bonds must be sealed before the ceramics are laid).			
C Textile coverings	BOSTIK POWER TEX Min. tootingh B1 (ensure that the back of the covering is sufficiently moist. If necessary, use larger tootingh). Tufted floor coverings should always have B 2 tootingh.			

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

Processing instructions for the filling and sealing compound

■ PCI¹

Roth ClimaComfort® Compact System on existing substraces*						
Preparation			Other information			
Make the surface even.			PCI Periplan		DIN 18202, table 3, row 3	
Use PCI Pécidur panels to make the height level.			PCI Pécidur panels - of varying thickness - can be used to level off the subsurface and act as supporting panels.		Primer on: > screed/concrete: PCI Gisogrund. > timber floor boards/chipboards: PCI Wadian. PCI Pécidur panels need to be laid with PCI Nanoflott flex on a clean and dry subsurface capable of bearing a load.	
Subsurface	Preparation		Surface covering			
			Ceramic coverings	Natural stone	Parquet ²	Textile/Plastic
Screed/Concrete		Primer	PCI Gisogrund 404		Pre-coat with VG 2 or PCI Gisogrund 404.	
		Sealing compound	PCI Periplan extra		HSP 34, a smoothing agent for wooden floors, or PCI Periplan extra	
		Adhesive	PCI Nanolight PCI Nanoflott PCI Rapidflott	PCI Carraflex PCI Carraflott NT	Powder parquet adhesive PAR 362	—
		Joint mortar	PCI Flexfug	PCI Carrafug	—	—
Timber floor boards	<ul style="list-style-type: none"> > Loose boards must be screwed down firmly onto the subsurface. > The spaces or joints between the boards must be sealed with suitable sealants such as the PCI Adaptol acrylic sealant. > For levelling off the subsurface: PCI Periplan extra or HSP 34, a smoothing agent for wooden floors. 	Primer	PCI Gisogrund 404		Pre-coat with VG 2 or PCI Gisogrund 404.	
		Sealing compound	PCI Periplan extra		HSP 34, a smoothing agent for wooden floors, or PCI Periplan extra	
		Adhesive	PCI Nanolight PCI Nanoflott PCI Rapidflott	PCI Carraflex	Powder parquet adhesive PAR 362	—
		Joint mortar	PCI Nanofug	PCI Carrafug	—	—
Chipboards/OSB panels	<ul style="list-style-type: none"> > When laying on new unfinished floors, a layer (film) must be applied first to act as a vapour barrier. > Panels must always be secured at the joints with adhesive and screwed tight to the supporting subsurface in a 40 cm by 40 cm grid. > To prevent moisture causing deformities, a primer must be applied before the sealing compound to act as a moisture barrier. 	Primer	PCI Gisogrund 404		Pre-coat with VG 2 or PCI Gisogrund 404.	
		Sealing compound	PCI Periplan extra		HSP 34, a smoothing agent for wooden floors, or PCI Periplan extra	
		Adhesive	PCI Nanolight	PCI Carraflex	Powder parquet adhesive PAR 362	—
		Joint mortar	—	PCI Carrafug	—	—
Dry screed panels		Primer	PCI Gisogrund 404		Pre-coat with VG 2 or PCI Gisogrund 404.	
		Sealing compound	PCI Periplan extra		HSP 34, a smoothing agent for wooden floors, or PCI Periplan extra	
		Adhesive	PCI Nanolight	PCI Carraflex	Powder parquet adhesive PAR 362	—
		Joint mortar	PCI Nanofug	PCI Carrafug	—	—
Tiles		Primer	PCI Gisogrund 404		Pre-coat with VG 2 or PCI Gisogrund 404.	
		Sealing compound	PCI Periplan extra		HSP 34, a smoothing agent for wooden floors, or PCI Periplan extra	
		Adhesive	PCI Nanolight	PCI Carraflex	Powder parquet adhesive PAR 362	—
		Joint mortar	PCI Nanofug	PCI Carrafug	—	—

Processing instructions for the filling and sealing compound

PCI:

Start of functional heating: after 24 hours.

Information on laying the ClimaComfort Compact System with PCI products

Before the ClimaComfort Compact System can be laid, the load-bearing subsurface must be clean, firm, even, and free of any loose residue, like left-over varnish. The subsurface may need to be sanded down and vacuumed. Any unevenness, cracks, or splits in the subsurface should be filled in using a suitable smoothing or levelling agent. Any interior plasterwork must be finished and allowed to dry out. Any existing expansion joints need to be incorporated. If there are any special requirements in terms of the subsurface or uncertainly regarding requirements, we can

provide support through our field service in collaboration with the manufacturers of the building materials used.

- ¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.
- ² The ClimaComfort Compact System may not be used under parquet for cooling purposes.

■ Knauf ¹

Roth ClimaComfort® Compact System on existing substraces			
Subsurface	Screed	Tiles	Timber floor boards/ Laying panels
1. Preparing the subsurface (following testing)	The subsurface must be able to take a load, have no cracks, and have a firm, clean upper surface. Any cracks must be filled.		
2. Apply a primer to the subsurface	Cement screed: Knauf Estrichgund 1:1 Calcium sulphate screed: 2 x Knauf FE impregnation	2 x Knauf FE impregnation	Apply Knauf Spezialhaftgrund to the subsurface as a primer, smooth over with 2 mm Knauf Faserflex 15 and apply Knauf Estrichgund 1:1 twice as further priming coats.
3. Final step	–	Sand/vacuum	–
4. Lay the ClimaComfort Compact System	Lay the ClimaComfort Compact System		
5. Filling and sealing compound ClimaComfort Compact System	Apply Knauf Nivellierestrich 425; layer thickness: min. 8 mm over Roth ClimaComfort® Compact System panel		
Heating can start after just 2 days. Floating structures are also possible with screeds of 20 mm and above using Knauf Nivellierestrich 425. Lay floor coverings after functional heating and curing			

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

Processing instructions for the filling and sealing compound

■ Kiesel ¹

Roth KlimaComfort® Compact System on screed and existing ceramic coverings				
Surface covering	Tiles	Natural stone	Parquet	Carpet/PVC
Primer	Okatmos® UG 30/Okatmos EG 20			
Smoothing uneven areas	Servoplan S 202 ¹⁾ /Servoplan D 800 ¹⁾			
Primer	If necessary, Okatmos® UG30/Okatmos® EG 20			
Smoothing layer	Servoplan S 202 Servoplan S 444		Servoplan S 444 -	Servoplan S 202 Servoplan S 444
Functional test	Perform the heating process.			
Primer	If necessary, Okatmos® UG30/Okatmos® EG 20			
Isolation	Kiesel Tension Reduction Fleece/Okaphone 4		Okavlies/Okaphone 4	
Adhesive	Servoflex K-Plus SuperTec ²⁾ Servoflex-Trio-SuperTec ²⁾ Servolight ²⁾	ServoStar® 4000 Flex ²⁾ Servoflex-Trio-SuperTec fast white/grey ²⁾	Bakit PPK ³⁾ Bakit EK ³⁾	Okatmos®
Joint mortar	Servoperl-Schnell Servoflex F		-	-

Heating: Start functional heating after 3 days. Duration 4 days (1 day with inlet temperature of 25 °C/3 days with max. inlet temperature)

- 1) If the floor covering is associated with higher requirements than DIN 18202, Table 3, row 3 in terms of evenness tolerances, a further thin layer of finishing/smoothing agent may need to be applied.
- 2) Max. area 25 m²
- 3) Consult Kiesel application experts/Max. surface temperature of parquet is 27 °C

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Processing instructions for the filling and sealing compound

■ Ardex¹

Roth ClimaComfort® Compact System on existing substrates		
Subsurface	Screed	Tiles
1. Prepare the subsurface (following testing)	Sand/vacuum	Sand/vacuum
2. Apply a primer to the subsurface	Ardex P 51 (for A to D)	2x Ardex EP 2000 (for A to D)
3. Final step	–	Sand/vacuum
4. Lay the ClimaComfort Compact System	Lay the ClimaComfort Compact System	
5. Filling and sealing compound Clima Comfort Compact System	Ardex FA 20 (for A to D)	
Laying floor coverings after functional heating and curing		
A Parquet (suitable for floor heating)	Adhesive: Ardex P 410	
B Ceramic coverings	Adhesive: Ardex FB 9 Joint mortar: Ardex BS Flex	
C Natural stone	Adhesive: Ardex S 16 + Ardex E 90 Joint mortar: Ardex MG	
D Textile/plastic coverings (suitable for floor heating)	Adhesive: Ardex Premium U 2200	

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

Processing instructions for the filling and sealing compound

■ Sopro¹

Roth ClimaComfort® Compact System on existing subsurfaces				
Subsurface		Screed/Concrete	Tiles	Timber floor boards/Laying panels
Tiles	Primer	Sopro primer	Sopro bonding primer Sopro special bonding primer	
	Smoothing	Sopro FS 15 plus floor-levelling compound Sopro FS 30 maxi floor-levelling compound Sopro fibre-reinforced self-levelling filler Sopro lightweight floor-levelling compound Sopro Rapidur FE flow screed		
	Adhesive	Sopro`s No. 1 Sopro VarioFlex	Sopro`s No. 1 Sopro Saphir water-repellent tile grout	Sopro`s No. 1 Sopro VarioFlex
	Joint mortar	Sopro flexible tile grout or Sopro Saphir water-repellent tile grout		
Natural stone	Primer	Sopro primer	Sopro bonding primer Sopro special bonding primer	
	Smoothing	Sopro FS 15 plus floor-levelling compound Sopro FS 30 maxi floor-levelling compound Sopro fibre-reinforced self-levelling filler Sopro lightweight floor-levelling compound Sopro Rapidur FE flow screed		
	Adhesive	Sopro fibre-reinforced self-levelling filler Sopro lightweight floor-levelling compound		Sopro VarioFlex adhesive for marble tiles Sopro flexible adhesive for marble tiles
	Joint mortar	–	–	–
Parquet	Primer	Sopro primer	Sopro bonding primer Sopro special bonding primer	
	Smoothing	Sopro FS 15 plus floor-levelling compound Sopro FS 30 maxi floor-levelling compound Sopro fibre-reinforced self-levelling filler Sopro lightweight floor-levelling compound Sopro Rapidur FE flow screed		
	Adhesive	Sopro parquet adhesive D or Sopro parquet adhesive PU (depending on type of parquet)		
	Joint mortar	–	–	–

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

Processing instructions for the filling and sealing compound

Please ensure that the chosen smoothing agent covers the pipes by at least 5 mm. The areas in question should not exceed 25 m². An inlet temperature of 15 °C must be maintained during installation work in the cold seasons of the year. The subsurface for laying must be sufficiently stable. Additional isolation measures may be required, particularly for wooden substrates.

The smoothing agent used may be walked upon after ≥3 hours. Functional heating may begin 2 days after the smoothing agent has been applied. Functional heating takes 2 days.

Tile laying can start again 1 day after functional heating has finished.

The tips and guidelines in the relevant product information provided should be followed when processing the above products. This table cannot cover all the various conditions which might be encountered on site. Please ask for expert advice on a case-by-case basis.

■ Glass¹

Roth ClimaComfort® Compact System on existing substrates		
Subsurface	Screed	Tiles
1. Prepare the subsurface (following testing)	As per the BEB work and information sheets	Sand/vacuum
2. Apply a primer to the subsurface	Glasconal Primer	Glascopox Universal resin
3. Final step	–	Sand/vacuum
4. Lay the Clima Comfort Compact System	Lay the ClimaComfort Compact System	
5. Filling and sealing compound ClimaComfort Compact System	Glasconal NSM min. 3 mm above top edge of pipe	
Laying floor coverings after functional heating and curing		

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

Processing instructions for the filling and sealing compound

■ botament¹

Roth ClimaComfort® Compact System on existing subsurfaces						
Subsurface	Layered structure	Ceramic covering	Natural stone	Parquet	Textile covering	Plastic covering
Cement screed, concrete	Preparation	Clean/remove any loose parts.				
	Primer, subsurface	BOTACT D 11		BOTAFLOOR G 110		
	Sealing compound	BOTACEM M 53 Extra		BOTAFLOOR A 220		
	Primer Sealing compound	BOTACT D 11		—	—	—
	Adhesive	BOTACT M 29 MULTISTAR	MULTISTONE	BOTAFLOOR P 450	BOTAFLOOR T 350	BOTAFLOOR K 550
	Joint mortar	MULTIFUGE MULTIFUGE schmal		—	—	—
Caesium sulphate screed	Preparation	Sand/vacuum				
	Primer Subsurface	BOTACT D 11		BOTAFLOOR G 110		
	Sealing compound	BOTACEM M 53 Extra		BOTAFLOOR A 240		
	Primer Sealing compound	BOTACT D 11		—	—	—
	Adhesive	BOTACT M 29 MULTISTAR	MULTISTONE	BOTAFLOOR P 450	BOTAFLOOR T 350	BOTAFLOOR K 550
	Joint mortar	MULTIFUGE MULTIFUGE schmal		—	—	—
Mastic asphalt screed	Preparation	Clean/remove any loose parts.				
	Primer Subsurface	BOTACT D 15		BOTAFLOOR G 120		
	Sealing compound	BOTACEM M 53 Extra		BOTAFLOOR A 260		
	Primer Sealing compound	BOTACT D 11		—	—	—
	Adhesive	BOTACT M 29 MULTISTAR	MULTISTONE	BOTAFLOOR P 450	BOTAFLOOR T 350	BOTAFLOOR K 550
	Joint mortar	MULTIFUGE MULTIFUGE schmal		—	—	—
Existing tiled covering	Preparation	Clean/Degrease				
	Primer Subsurface	BOTACT D 15		BOTAFLOOR G 120		
	Sealing compound	BOTACEM M 53 Extra		BOTAFLOOR A 220		
	Primer Sealing compound	BOTACT D 11		—	—	—
	Adhesive	BOTACT M 29 MULTISTAR	MULTISTONE	BOTAFLOOR P 450	BOTAFLOOR T 350	BOTAFLOOR K 550
	Joint mortar	MULTIFUGE MULTIFUGE schmal		—	—	—

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

Processing instructions for the filling and sealing compound

Roth ClimaComfort® Compact System on existing substraces						
Subsurface	Layered structure	Ceramic covering	Natural stone	Parquet	Textile covering	Plastic covering
Timber floor boards	Preparation	Clean/remove any loose parts.				
	Primer Subsurface	BOTACT D 15		BOTAFLOR G 120		
	Sealing compound	BOTACEM M 53 Extra		BOTAFLOR A 260		
	Primer Sealing compound	BOTACT D 11		–	–	–
	Adhesive	BOTACT M 29 MULTISTAR	MULTISTONE	BOTAFLOR P 450	BOTAFLOR T 350	BOTAFLOR K 550
	Joint mortar	MULTIFUGE MULTIFUGE schmal		–	–	–
Chipboards OSB panels	Preparation	Clean/screw down tight				
	Primer Subsurface	BOTACT D 15		BOTAFLOR G 120		
	Sealing compound	BOTACEM M 53 Extra		BOTAFLOR A 260		
	Primer Sealing compound	BOTACT D 11		–	–	–
	Adhesive	BOTACT M 29 MULTISTAR	MULTISTONE	BOTAFLOR P 450	BOTAFLOR T 350	BOTAFLOR K 550
	Joint mortar	MULTIFUGE MULTIFUGE schmal		–	–	–

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

Processing instructions for the filling and sealing compound

■ Weber¹

Roth ClimaComfort® Compact System					
Subsurface	Cement screed/ concrete, cement-bonded smoothing agent; anhydrite flow screed, calcium sulphate screed; tiles/natural stone/ precast stone	Mastic asphalt*) sanded down	Mastic asphalt*) smooth	Floor boards/ OSB panels	Chipboards
1. Preparing the subsurface	Sand/vacuum				
2. Apply a primer to the subsurface	weber.floor 4716 bonding primer 1:3 diluted with water	weber.floor 4716 bonding primer 1:1 diluted with water	weber.floor 4712 primer EC 1	weber.floor 4716 bonding primer 1:1 diluted with water	weber.floor 4712 primer EC 1
3. Make the surface even	weber.floor 4031 smoothing screed plus 1 to 10 mm	weber.floor 4095 Alpha smoothing screed plus 2 to 10 mm		weber.floor 4033 fine fibre-reinforced filler plus 3 to 10 mm	
4. Primer for intermediate smoothing, positional requirements	weber.floor 4716 bonding primer 1:3 diluted with water	weber.floor 4716 bonding primer 1:1 diluted with water		weber.floor 4716 bonding primer 1:3 diluted with water	
5. Lay the ClimaComfort Compact System	Lay the ClimaComfort Compact System				
5.1. cement-bonded filling and sealing compound ClimaComfort Compact System	weber.floor 4160 Fast-acting levelling/smoothing agent min. 5 mm above pipe, max. 30 mm total height				
5.2. calcium sulphate-bonded filling and sealing compound ClimaComfort Compact System	weber.floor 4190 Alpha thin screed min. 10 mm above pipe, max. 30 mm total height				
5.3. calcium sulphate-bonded filling and sealing compound ClimaComfort Compact System on hard-wearing insulating underlay (e.g. weber.sys 832 or weber.floor 4955 sound absorption mat)	weber.floor 4190 Alpha thin screed min. 20 mm above pipe, max. 30 mm total height				
<p>Floor coverings should be laid directly after functional heating. This in particular applies to the cement-bonded compound weber.floor 4160 fast-acting levelling/smoothing agent. The information in the heating protocols needs to be observed.</p> <p>With the weber.floor 4160 fast-acting levelling/smoothing agent, functional heating cannot start for 24 hours at the earliest, but with the weber.floor 4190 Alpha thin screed, this is possible after just 6 hours.</p>					
Parquet suitable for floor heating	weber.floor 4830 parquet adhesive MP toothing B3/B11 800-900 g/m ² or weber.floor 4838 parquet adhesive 2-C PU toothing B3/ B11 700-900 g/m ²				
Ceramic coverings	Moisture level 0, A01 and A02 Adhesive mortar: Adhesive mortar: weber.xerm 858 BlueComfort or weber.xerm 864 F Flex fast-acting natural stone adhesive Joint mortar: weber.xerm 877 Flexfuge				
Natural stone	Moisture level 0, A01 and A02 Adhesive mortar: weber.xerm 852 Flex tile adhesive or weber.xerm 864 F Flex fast-acting natural stone adhesive Joint mortar: weber.xerm 875 F for ceramic and natural stone				
Textile coverings	weber.floor 4805 carpet adhesive, toothing B1/B2 approx. 380-440 g/m ² stiff coverings weber.floor 4825 combined adhesive for linoleum/textile, toothing B1/B2 380-480 g/m ²				
Elastic coverings (e.g. linoleum/ PVC) suitable for floor heating	The long period of subsequent activity in the ClimaComfort system means that pipe coverage of 5 mm would create an uneven surface, which would make further smoothing over necessary. weber.floor 4825 combined adhesive for linoleum/textile B1/B2 380-480 g/m ² can be used as linoleum adhesive here. weber.floor 4815 PVC adhesive SE, toothing A1/A2 250-300 g/m ² , can be used for PVC coverings.				

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. The latest data sheets are available at www.Weber.de.

*) The mastic asphalt must be suitable for heated structures.

Processing instructions for the filling and sealing compound

Sakret

Roth ClimaComfort® Compact System on existing subsurfaces *							
Preparation							
Make the surface even.		FAM; NSP plus; HDA					
Greater installation heights		Sakret screeds					
		Impact sound panel TSP 9 + 15 mm					
Subsurface	Preparation	Surface covering					
			Ceramic coverings	Natural stone	Parquet and wood ²	Textile coverings and plastic	
Screed/ Concrete	> Check load-bearing capacity of subsurface	Primer	Sakret universal primer UG Sakret quick-bonding primer SHG, Sakret special primer SG				
		Balancing mass (filling)	Sakret levelling compound for wooden planks HDA extra				
		Adhesive mortar	Sakret FFK	Sakret NKw			
			Sakret FFK plus	Sakret NKws			
			Sakret Fke plus	Sakret TNV			
Joint mortar	Sakret FBM						
	Sakret FFM	Sakret NF					
		Sakret FMe	Sakret TNF				
Timber floor boards	> Loose boards must be screwed down firmly onto the subsurface > Seal large joints > Level subsurface with Sakret HDA	Primer	Sakret primer for anhydrite + wood A&H, Sakret quick-bonding primer SHG, Sakret special primer SG				
		Balancing mass (filling)	Sakret levelling compound for wooden planks HDA extra				
		Adhesive mortar	Sakret FFK	Sakret NKw			
			Sakret FFK plus	Sakret NKws			
			Sakret Fke plus	Sakret TNV			
Joint mortar	Sakret FBM						
	Sakret FFM	Sakret NF					
		Sakret FMe	Sakret TNF				
Chipboards + OSB panels	> When laying on new unfinished concrete floors, a layer acting as a vapour barrier should be fitted > Panels must always be bonded at the joints. Screw tight to the supporting subsurface in a 40 cm by 40 cm grid	Primer	Sakret primer for anhydrite + wood A&H, Sakret quick-bonding primer SHG, Sakret special primer SG				
		Balancing mass (filling)	Sakret levelling compound for wooden planks HDA extra				
		Adhesive mortar	Sakret FFK	Sakret NKw			
			Sakret FFK plus	Sakret NKws			
			Sakret Fke plus	Sakret TNV			
Joint mortar	Sakret FBM						
	Sakret FFM	Sakret NF					
		Sakret FMe	Sakret TNF				

- 1 Primer depending on the type of dry screed, follow manufacturer's instructions.
- 2 The ClimaComfort Compact System should not be used under parquet and wood for cooling.
- * The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. We cannot be held responsible for whether instructions are accurate and up-to-date.

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Processing instructions for the filling and sealing compound

Sakret

Roth ClimaComfort® Compact System on existing subsurfaces *						
Preparation						
Make the surface even.		FAM; NSP plus; HDA				
Greater installation heights		Sakret screeds				
		Impact sound panel TSP 9 + 15 mm				
Subsurface	Preparation	Surface covering				
			Ceramic coverings	Natural stone	Parquet and wood ²	Textile coverings and plastic
Dry screed	Follow the manufacturer's instructions for laying.	Primer	Sakret universal primer UG ¹			
		Balancing mass (filling)	Sakret levelling compound for wooden planks HDA extra			
		Adhesive mortar	Sakret FFK	Sakret NKw		
			Sakret FFK plus	Sakret NKws		
			Sakret Fke plus	Sakret TNV		
			Sakret FBM			
Joint mortar	Sakret FFM	Sakret NF				
	Sakret FMe	Sakret TNF				
Existing tiles	Remove loose tiles, joints and separation layers such as wax and sand down if necessary	Primer	Sakret quick-bonding primer SHG, Sakret special primer SG			
		Balancing mass (filling)	Sakret levelling compound for wooden planks HDA extra			
		Adhesive mortar	Sakret FFK	Sakret NKw		
			Sakret FFK plus	Sakret NKws		
			Sakret Fke plus	Sakret TNV		
			Sakret FBM			
Joint mortar	Sakret FFM	Sakret NF				
	Sakret FMe	Sakret TNF				

Additional Information on laying ClimaComfort Compact using products from Sakret-Sachsen

The areas in question should not exceed 25 m². The liquid compound can be walked upon after 3 hours with an indoor climate of 20 °C / humidity 65%. Functional heating should last 2 to 3 days. Tiling can start 24 h after the end of heating. Before the ClimaComfort Compact -System can be laid, the load-bearing subsurface must be clean, firm, even, and free of any loose residues such as left-over varnish. The subsurface may need to be sanded down and vacuumed. Any unevenness, cracks, or splits in the subsurface should be filled in or closed up using suitable products. Any interior work must be finished and dried out. Any existing expansion joints need to be incorporated.

If there are any special requirements in terms of the subsurface or uncertainly regarding the requirements, we can provide support through our field service in collaboration with Sakret Sachsen.

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■ WICO

ClimaComfort Compact System on existing substrates			
Subsurface	Dry cement screed	Dry calcium sulphate screed	Load-bearing subsurface of tiles
1. Preparing the subsurface	Smooth, sand, vacuum		
2. Prime	Bonding layer Wico 499 (apply 2x)		Epoxy resin primer containing quartz sand
3. Lay the ClimaComfort Compact System	Observe drying times of primer		
4. Leak test	Before applying filling and sealing compound		
5. Filling and sealing compound	Thin screed Wicoplan 433 DE		
6. Functional heating	See heating protocol		
7. Lay floor coverings	The adhesive must be suitable for floor heating systems		

www.wico.de

¹ The latest instructions from the manufacturer take precedence, including in the event of any discrepancies. The latest data sheets are available at www.Weber.de.

*) The mastic asphalt must be suitable for heated structures.

Leak test protocol

for performing leak testing on radiant heating and cooling systems

acc. to DIN EN 1264 Part 4

Building project: _____

Client: _____

Contractor: _____

The following Roth radiant heating and cooling system has been installed as part of the above-mentioned building project:

System	Pipe type	
<input type="checkbox"/> Roth Original Tacker® System	<input type="checkbox"/> Roth DUOPEX S5®	<input type="checkbox"/> Ø 14
<input type="checkbox"/> Roth Knob System		<input type="checkbox"/> Ø 17
<input type="checkbox"/> Roth ClimaComfort® Dry Construction System		<input type="checkbox"/> Ø 20
<input type="checkbox"/> Roth Pipefix System		<input type="checkbox"/> Ø 25
<input type="checkbox"/> Roth ClimaComfort® Panel System	<input type="checkbox"/> Roth X-PERT S5®+	<input type="checkbox"/> Ø 32
<input type="checkbox"/> Roth ClimaComfort® Compact System		<input type="checkbox"/> Ø 14
<input type="checkbox"/> Roth industrial radiant heating/ non-residential property	<input type="checkbox"/> Roth Alu-Laserflex	<input type="checkbox"/> Ø 16
<input type="checkbox"/> Roth sport and sprung floor heating		<input type="checkbox"/> Ø 17
<input type="checkbox"/> Roth structural temperature control	<input type="checkbox"/> Roth ClimaComfort® S5	<input type="checkbox"/> Ø 20
<input type="checkbox"/> Roth outdoor panel heating	<input type="checkbox"/> Roth PERTEX® S5	<input type="checkbox"/> Ø 14
<input type="checkbox"/> Roth Flipfix Tacker System		<input type="checkbox"/> Ø 16
<input type="checkbox"/> Roth Quick Energy Tacker System		<input type="checkbox"/> Ø 11
		<input type="checkbox"/> Ø 17

The leak test can be performed using water, compressed air or inert gas.

The heating circuits have been checked for leaks before fitting the load-distribution layer. Any apparatus, pressure containers, or fittings not suitable for the pressure test have been removed.

Ambient temperature: _____ °C

Temperature of testing medium: _____ °C

Leak test protocol

Testing medium, compressed air or inert gas:

oil-free compressed air Nitrogen Carbon dioxide

All pipe connections have been visually inspected to check they have been properly executed.

Test pressure: _____ **150 mbar**

Test period (up to pipework volume of 100 l) 120 min

For every additional 100 l _____ + 20 min

Once temperatures have been calibrated and a steady state attained for plastic materials, the test period then commences.

Pipework volume: _____ l **Test period:** _____ min

No drop in pressure has been detected during the test period.

There is no evidence of leaks.

The test criteria have been satisfied.

Load testing at increased pressure

Test pressure $\varnothing \leq 63$ mm: _____ bar (max. 3 bar)

Test period: _____ min (min. 10 min)

Per additional 100 l _____ + 10 min

Once temperatures have been calibrated and a steady state attained for plastic materials, the test period then commences.

No drop in pressure has been detected during the test period.

There is no evidence of leaks.

The test criteria have been satisfied.

Town/City: _____ Date: _____

Developer/Client
Stamp/Signature

Construction Manager/Architect
Stamp/Signature

Heating engineering company/Installer
Stamp/Signature

Leak test protocol

Testing medium, water:

The test pressure must **not be less than 4 bar** and **not more than 6 bar**.

- The fill-up water has been adjusted and filtered acc. to VDI 2035-2. Heating circuits are fully vented.
- The temperature difference between the fill-up water and the environment does not exceed 10 °C.

Main test for smaller installations (e.g. on each floor) or preliminary test for large systems
Test period: 60 min

1. Permissible test pressure

$$P_{\text{test}} = 1,5 \times P_{\text{Operation}} \qquad P_{\text{test}} \text{ pressure applied: } \underline{\hspace{2cm}} \text{ bar}$$

2 x P_{test} in 30 min Test pressure generated twice within 30 min.
 Time intervals between tests 10 min

2. Permissible pressure drop in 30 min

max. 0,6 bar (0,1 bar/5 min)

$$P_{\text{min}} = P_{\text{test}} - 0.6 \text{ bar} \qquad P_{\text{actual}} \geq P_{\text{min}} \text{ (after 30 min): } \underline{\hspace{2cm}} \text{ bar}$$

- There is no evidence of leaks.
- The test criteria have been satisfied.

Main test for large objects (if required)
Test period 120 min

Permissible test pressure: max 0,2 bar

$$P_{\text{min}} = P_{\text{test}} - 0,2 \text{ bar} \qquad P_{\text{actual}} \geq P_{\text{min}} \text{ (after 120 min): } \underline{\hspace{2cm}} \text{ bar}$$

- There is no evidence of leaks.
- The test criteria have been satisfied.

Suitable measures need to be taken if there is a risk of frost. These include using antifreeze and temperature equalisation of the building. When the system starts normal operation, any antifreeze can be drained and disposed of in accordance with national occupational health and safety requirements. The system then needs to be flushed through 3 times with clean water.

Town/City: _____ Date: _____

 Developer/Client
 Stamp/Signature

 Construction Manager/Architect
 Stamp/Signature

 Heating engineering company/Installer
 Stamp/Signature

Functional heating/cooling protocol

Heating protocol

for Roth ClimaComfort® Compact System

(to be completed by the heating engineering company and enclosed with the contract documentation)

Client/Building project: _____

Construction Manager/Architect: _____

Heating company: _____

Floor installer: _____

ClimaComfort Compact System _____ m² – installed on _____

Filling and sealing compound applied on _____

Manufacturer:

Bostik Glass ARDEX Henkel PCI Knauf Kiesel Sopro Weber botament Sakret WICO

Proposed thickness of the selected smoothing layer min. mm _____

Primer applied on _____

Smoothing layer applied on _____

Outside temp. at start of heating approx. _____ °C

Start of functional heating on at _____ °C (for min. 1 day)

Max. design temperature from at _____ °C (for min. 1 day)

The max. design temp. was maintained for _____ days without any reduction at night.

The heated surface was free of covers or building materials Yes No

Start of functional heating on at _____ Inlet temperature _____ °C outside temperature _____ °C

Functional heating confirmed as per data sheet overleaf:

Town/City: _____ Date: _____

Developer/Client
Stamp/Signature

Construction Manager/Architect
Stamp/Signature

Heating engineering company
Stamp/Signature

Standards and directives

The following laws, directives, guidelines, and standards need to be taken into account when planning and creating a heating installation:

- German Energy Conservation Act (Energieeinsparungsgesetz - EnEG)
- German Energy Saving Ordinance (Energieeinsparverordnung - EnEV)
- German Heating Costs Ordinance (Heizkostenverordnung - HeizkostenV)
- The individual administrative instructions of the various German states regarding the EnEG

Standards, guidelines, and German Contract Procedures for Building Works (Verdingungsordnung für Bauleistungen - VOB)

- DIN 1045 Plain, reinforced and prestressed concrete structures
- DIN 1961 German Contract Procedures (VOB) - Part B: General terms of contract relating to the execution of construction work
- DIN 4102 Fire behaviour of building materials and building components
- DIN 4108 Thermal insulation in buildings
- DIN 4109 Sound insulation in buildings
- DIN 4726 Warm water surface heating systems and radiator connecting systems – Plastics piping systems and multilayer piping systems
- DIN 16833 Polyethylene pipes of raised temperature resistance
- DIN 18195 Water-proofing of buildings
- DIN 18202 Tolerances in building construction - Structures
- DIN 18336 German Contract Procedures for Building Works (VOB), Waterproofing
- DIN 18352 German Contract Procedures for Building Works (VOB), Wall and floor tiling
- DIN 18353 German Contract Procedures for Building Works (VOB) Laying of floor screed
- DIN 18356 German Contract Procedures for Building Works (VOB), Laying of parquet flooring
- DIN 18533 Water-proofing of components in contact with the ground
- DIN 18560 Floor screeds in building construction
- DIN 18365 German Contract Procedures for Building Works (VOB), Flooring work
- DIN 18380 German Contract Procedures for Building Works (VOB), Installation of central heating systems and hot water supply systems
- DIN EN 1264 Water-based surface embedded heating and cooling systems
- DIN EN 1991-1-1 Actions on structures
- DIN EN 1991-1-1/NA Actions on structures – Nationally determined parameters
- DIN EN 12828 Design of water-based heating systems
- DIN EN 12831 Heating systems in buildings – Method for calculation of the design heat load
- DIN EN 13162 to DIN EN 13171 Factory-made thermal insulation products for buildings
- DIN EN 13163 Thermal insulation products for buildings
- DIN EN 13813 Screed material and floor screeds - Screed materials – Properties and requirements
- DIN EN ISO 15875 Plastics piping systems for hot and cold water installations
- Techn. data sheet regarding interface coordination for heated floor structures
- VDI 2035 Part 2 Prevention of damage in water heating installations - Water-side corrosion.

Guarantee

The guarantees and warranty conditions apply to the Roth ClimaComfort® Compact System in accordance with the warranty certificates enclosed with the products.

GUARANTEE DOCUMENT

Roth Radiant Heating and Cooling Systems Roth Pipe Installation Systems

1. Within 10 years from installation, yet no longer than 10 1/2 years after delivery of the system components, we will provide free product replacement of our choice, or repair and compensate for damage to the system components delivered by us if they are attributable to material defects or manufacturing faults.
Excluded from this are mechanical moving parts and products as well as electrical and electrically driven parts and products for which we provide the above-mentioned warranty within a period of 12 months from installation in cases of material defects or manufacturing faults.
2. Requirements for this guarantee are:
 - a. only system components belonging to the respective Roth radiant heating and cooling system/ pipe installation system are used and fitted,
 - b. documented compliance with the planning, installation and operating instructions valid at the time of installation,
 - c. compliance with the standards and directives valid for these works and the applicable adjoining works in connection with the respective Roth radiant heating and cooling system/Roth pipe installation system,
 - d. that the installation company and the companies building and fitting out the works are all recognised and approved specialist companies and these companies have provided confirmation on this certificate with their name and signature,
 - e. the immediate return of a copy of the completely filled out warranty certificate to us,
 - f. to immediately report damage and at the same time send the warranty certificate to us,
 - g. to raise the claim within the warranty period.

We are insured against claims from this commitment by an extended public and product liability insurance policy with an insured sum of **Euro 5.000.000** for personal injury and material damage for each insured event. The statutory consumer protection regulations remain unaffected by this warranty.

The above guarantee concerns:

Building _____

Client _____

Radiant heating and cooling systems

- | | | |
|---|--|--|
| <input type="checkbox"/> Roth Original-Tacker® System | <input type="checkbox"/> Roth ClimaComfort® Panel System | <input type="checkbox"/> Roth sport and sprung floor heating |
| <input type="checkbox"/> Roth Flipfix Tacker System | <input type="checkbox"/> Roth ClimaComfort® Compact System | <input type="checkbox"/> Roth Isocore concrete core activation |
| <input type="checkbox"/> Roth Quick Energy Tacker System | <input type="checkbox"/> Roth Pipefix System | |
| <input type="checkbox"/> Roth Knob System | <input type="checkbox"/> Roth industrial radiant heating | |
| <input type="checkbox"/> Roth ClimaComfort® Dry Construction System | <input type="checkbox"/> Roth outdoor panel heating | |

Pipe Installation Systems

- Roth radiator connecting system
 Roth drinking water system

The system components belonging to the respective Roth radiant heating and cooling system or to the respective Roth pipe installation system were fully supplied and fitted on the day of installation.

Radiant heating and cooling system: _____ m² installed area

Radiator connecting system: _____ number of radiator connections

Drinking water system: _____ number of point of use connections

Specialist heating company: _____

Installation/fit-out works: Signature Stamp Installation date

Signature Stamp Completion date

Commissioning: Signature Stamp Completion date

Signature Stamp Commissioning date



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Our strengths

Your benefits

Innovation

- > Early identification of market requirements
- > In-house materials research and development
- > In-house engineering

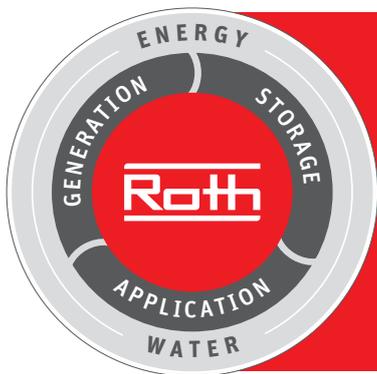
Service

- > Extensive field network of qualified sales professionals
- > Hotline and project planning service
- > Factory training courses, planning and product seminars
- > Fast availability of all Roth brand product ranges throughout Europe
- > Comprehensive warranty and extended liability agreements

Products

- > Complete range of easy-to-install product systems
- > Manufacturing expertise for the complete product range within the Roth Industries group of companies
- > All products and product systems are certified in accordance with DIN EN ISO 9001:2008

A large, stylized white Roth logo is centered on a dark background. The logo features the word "Roth" in a bold, sans-serif font, with a horizontal line above and below the text. The background of the entire page is a dark, textured grey.



Roth Energy and Sanitary Systems

Generation

- > Solar systems
- > Heat pump systems
- > Solar heat pump systems

Storage

- Storage systems for
- > Domestic and heating water
 - > Combustibles and biofuels
 - > Rainwater and waste water

Application

- > Radiant heating and cooling systems
- > Pipe installation systems
- > Shower systems

Roth

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