Concepts

Products

Service

NORIT-Underfloor Heating System

A Underfloor heating system and dry screed in one.

NORIT

A Product of Lindner

Lindner | Building New Solutions

NORIT
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Your partner for innovative solutions.

Lindner GFT GmbH develops, produces and markets a multitude of high-quality standard products when it comes to gypsum fibre and dry lining products. Our ultra modern production facilities operate using methods that are unique worldwide - for maximum quality and reliability.

This is what we can do for you.

- Norit-Underfloor Heating System
- NORIT-Dry Screeds
- NORIT-Levelling Compound
- NORIT-Dry Lining Boards
- NORIT-Industrial Boards
- NORIT-Maintenance Panels
- NORIT-Dry Lining Profiles
- NORIT-Bound Levelling Compound

NORIT-Underfloor Heating System

A Underfloor heating system and dry screed in one.

NORIT-Underfloor Heating is unique in that it combines dry screed with an underfloor heating system. Additional benefits are a low installation height and reduced panel weight.

Your advantages in a nutshell:

- Universal panel with innovative milling layout
- Low installation height and reduced weight
- Floor covering can be laid after 24 hours

Healthy warmth

Convenience and comfort.

Our underfloor heating system can do a lot more than „just“ heat. In summer it is pleasantly cool, spreading gently radiated heat in winter without being dry or stuffy.
We attach a lot of importance to the environment. The NORIT-Underfloor Heating System is ideally suited for alternative energy sources, such as solar energy and heat pumps.
Be it ceramic tiles, natural stone, textile coverings, PVC, linoleum, parquet or cork - no limits to the choice of floor covering so long as they are suitable for the application.
Making it easier to lease your property, as well as increasing its value - you profit with more money for other things.

Boost your feeling of well-being:

- Pleasant room temperature throughout the year
- Environmentally responsible by reducing long term heating costs
- The cosy comfort of even heat emission
- Especially well suited for allergy sufferers because of the reduction in dust
- Full usage of space makes for great freedom in architectural styling
- An easy and clean installation is ensured

NORIT-Underfloor Heating System

See for yourself.

- Simple, fast and flexible installation
- Heating system reacts quickly as heating tube is installed to the floor surface
- Universal panel with innovative milling layout
- Low supply temperature saves energy
- Floor covering can be laid after 24 hours
- An all-in-one system from one source
- No screws necessary, therefore no risk of damaging the heating tube
- Boards are ecologically proven using environmentally friendly materials
- Dry construction reduces the risk of damage to the building caused by moisture
- Using a single-layer system saves in installation time and labour costs

Wide-ranging areas of application:

- Ideal for new buildings as well as renovating old buildings
- For office and administration buildings as well as residential living space
- Also suited for areas of humidity.

The all-in-one system

The individual components.

NORIT-TE Therm
TE-Therm element 1200 x 600 x 30 mm, 23,5 kg/slab, 32,5 kg/m², innovative pipe layout, ducting *fixed* in position (rebated grooves hold the tube in position).

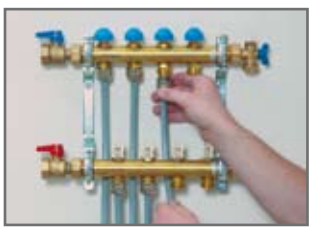
NORIT-TE Adhesive
1 kg of PUR-adhesive for permanent bonding.

NORIT-Wall Connection Foam Tape
With sheeting approx 170 mm, width: 10 mm, height: 80 mm, integrated adhesive strips. Before the NORIT-TE Therm elements are installed, fasten to rising building components.

NORIT-Heating Tube
PB (polybutene), 12 x 1,3 (12 mm outer diameter, 1,3 mm wall thickness), oxygen-tight as per DIN 4726, DIN CERTCO certified, registration number 3V318PB.

NORIT-Filler
Mix approx 11 kg/m², 25 kg (one sack) of Filler with 6 l of water, level with a squeegee; highly fluid, cement-bound, polymer modified spreadable compound, 3 mm thickness, suitable for chair casters fast heat flow provided by *flowtherm* formula.

NORIT-Primer
Supplied as a concentrate, red, with colour chart to check the amount applied; concentrate: 30 g/m² or 150 g/m² of ready mix. Mix primer with water at ratio of 1:4 Apply with pressure sprayer.

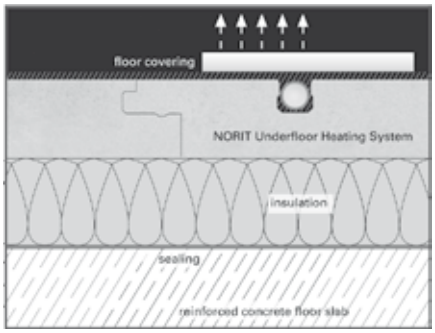


Connection parts
Coupling adaptor for connecting the heating pipe to the distributor, nipple and distributor for multiple heating circuits (available from NORIT)

Wide range of floor constructions

Everything in a nutshell.

Click in heating tube



System structure

Product	Floor construction [1)]	Height in mm	Weight in kg/m² approx	Fire resistance rating tested to DIN 4102-2	Reduction of footfall impact sound AL tested to ISO 140 in dB	Point load allowed in kN
TE Therm		33	44	-	-	6
TE Therm	on WF 10 mm	43	46	-	19	1,5
TE Therm	on MW 10 mm	43	46	-	-	1,5
TE Therm	on EPS 20 mm	53	45	-	-	1,5
TE Therm	on EPS 40 mm	73	45	-	-	1
TE Therm	on XPS 20 mm + EPS DES 20 mm	73	45	-	21	1
TE Therm	on TBP 10 mm	43	57	F30	-	6
TE Therm	on TBP 10 mm + levelling compound 15 mm	58	63	F60	-	1
TE Therm	on TBP 10 mm + WF 15 mm + levelling compound 20 mm	78	69	F90	-	1
TE Therm	on TE 20 + levelling compound 20 mm	73	78	F120	-	2
TE Therm	under TE 20, on EPS 20 mm	73	76	F30	-	3,5

Increasing thickness end/or density does not adversely affect the fire resistance performance. The sound absorbing properties might be improved with slow dynamic rigidity, and the load-bearing capacity might be reduced. The values for load-bearing capacity were determined following DIN 1055-3. Values for other constructions are available on request.

1) Unless otherwise specified, the materials used have the following physical properties:
- WF: Wood fibre. Length/width/thickness 1200/600/10 mm, density 230 kg/m³, thermal conductivity category 070, building material class B2, fire behaviour E, compressive stress for 10% compression: 200 kPa
- MW: Mineral wool. Length/width/thickness 1200/600/10 mm, density 160 kg/m³, thermal conductivity category 040, building material class A1, dynamic rigidity: 75 MN/m³, compressive stress for 10% compression: 20 kPa
- EPS: Expanded polystyrene. Length/width/thickness 1200/600/20 mm, density 17 kg/m³, thermal conductivity category 040, building material class B1, fire behaviour E, compressive stress for 10% compression: 100 kPa
- Granules: NORIT Levelling Granules made of expanded clay; filling density: 450 kg/m³

2) The values for the fire resistance rating only apply to the construction in combination with the ceiling construction.

The advantages are obvious.

The NORIT-Underfloor Heating System offers high heating output at controlled temperatures. This makes the system ideally suited for environmentally friendly use of regenerative energies, such as solar energy, heat pumps, etc.

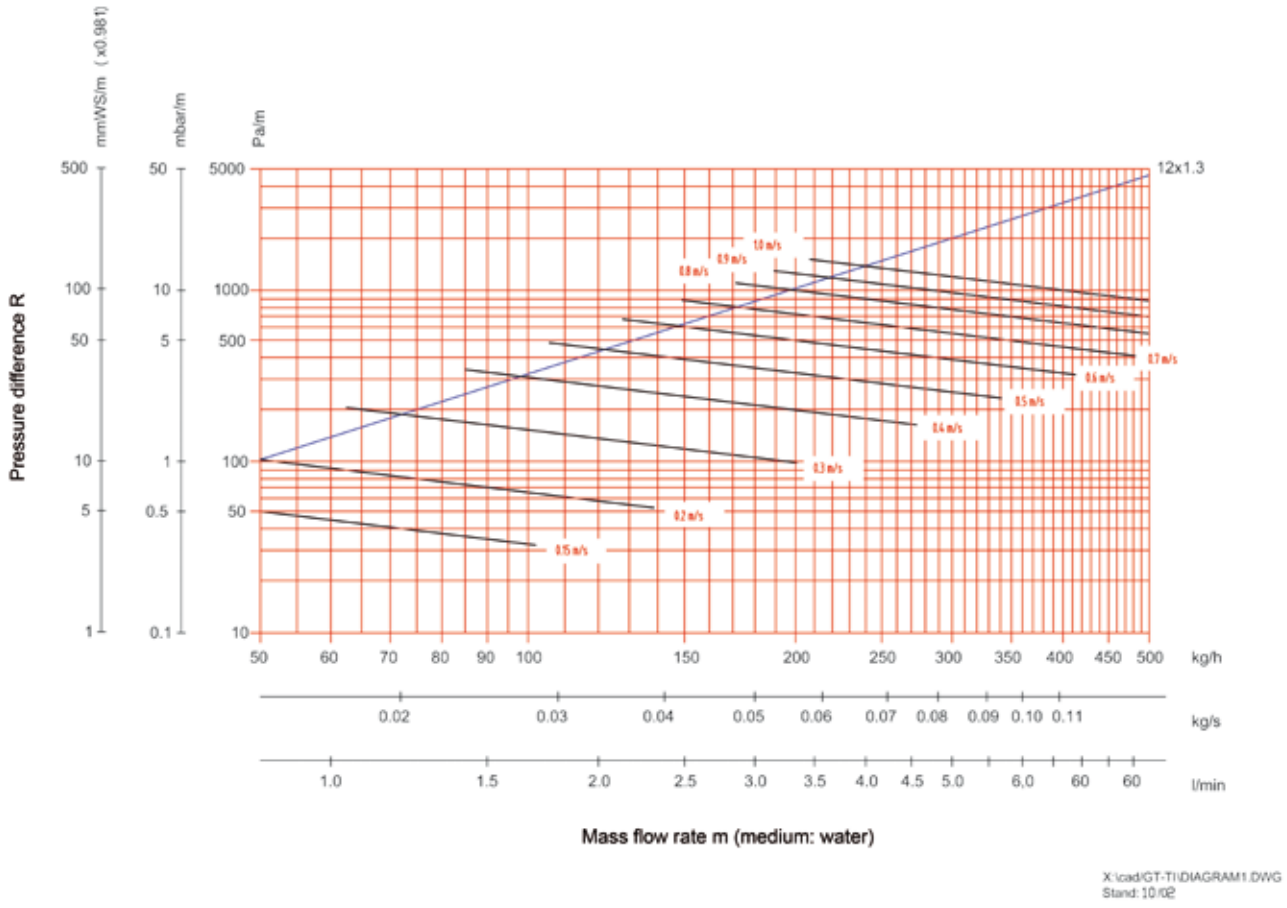
Installation of the heating tubes near the surface and the specially developed flowtherm formula for the NORIT-Filler makes the system very responsive to users requirements.
Its reduced finished floor height and very responsive reduced weight per unit areas makes the NORIT-Underfloor Heating System especially well suited for installation in existing buildings.

In addition to the continuously growing building refurbishment market, this system is also ideally suited for use in new buildings.

The NORIT-Underfloor Heating System simplified installation, without the need for any special tools, provides advantages for contractors who are acting as complete suppliers. This underfloor heating system can thus be provided from one source.

- Never have cold feet again thanks to the cosy warmth from our NORIT-Underfloor Heating System
- The flexible solution for customised structural requirements
- A floor heating system to suit your requirements.

Pressure loss diagram for NORIT Heating Tube



Heating power that´s a delight.

Heat-flow density q in W/m² for installation with 12 cm-grid

Resistance of floor covering 0.00 m²K/W (e.g. ceramic & natural stone)						T_v / T_r in °C		Resistance of floor covering 0.05 m²K/W (e.g. laminate & PVC)					
Room temperature in °C								Room temperature in °C					
16	18	20	22	24	26			16	18	20	22	24	26
227	216	205	194	183	172	60	55	198	188	179	169	160	150
213	201	190	179	168	157	60	50	185	176	166	156	147	137
200	189	178	167	156	145	55	50	174	164	155	145	136	126
185	174	163	152	141	130	55	45	161	152	142	132	123	113
172	161	150	139	128	117	50	45	150	140	131	121	112	102
157	146	135	124	113	102	50	40	137	127	118	108	98	89
145	134	123	112	101	90	45	40	126	117	107	97	88	78
130	118	107	96	85	73	45	35	113	103	93	84	74	64
117	106	95	84	73	62	40	35	102	93	83	73	64	54
102	90	79	68	56	44	40	30	89	79	69	59	49	38
90	79	68	56	45	34	35	30	78	69	59	49	39	29
73	62	50	37	23	-	35	25	64	54	43	33	20	-
62	51	40	28	15	-	30	25	54	44	34	24	13	-
44	31	-	-	-	-	30	20	38	27	-	-	-	-
34	22	-	-	-	-	25	20	29	19	-	-	-	-

Using the charts opposite, the heating power can be determined depending on the forward-flow temperature and return-flow temperature as well as the floor covering.

Example 1:
If you want a room temperature of 22 °C, have selected a Tv (forward-flow temperature) of 50 °C and a Tr (return-flow temperature) of 45 °C as well as a laminate floor covering, with 12-grads installation you will obtain heating power of 121 W/m². This value is found in the top chart on the right-hand side in the 4th column on the 5th line. The value obtained is only approved in baths.

Heat-flow density q in W/m² for installation with 12 cm-grid

Resistance of floor covering 0.10 m²K/W (e.g. carpet & thin parquet)						T_v / T_r in °C		Resistance of floor covering 0.15 m²K/W (e.g. parquet & thick carpet)					
Room temperature in °C								Room temperature in °C					
16	18	20	22	24	26			16	18	20	22	24	26
169	161	152	144	136	128	60	55	139	133	126	119	112	106
158	150	141	133	125	117	60	50	130	124	117	110	103	97
148	140	132	124	116	108	55	50	123	116	109	102	96	89
137	129	121	113	104	96	55	45	114	107	100	93	86	80
128	120	112	103	95	87	50	45	106	99	92	86	79	72
117	109	100	92	84	75	50	40	97	90	83	76	69	62
108	99	91	83	75	67	45	40	89	82	75	69	62	55
96	88	80	71	63	54	45	35	80	73	66	59	52	45
87	79	71	63	54	46	40	35	72	65	58	52	45	38
75	67	59	50	41	32	40	30	62	55	49	41	34	27
67	58	50	42	34	25	35	30	55	48	41	35	28	21
54	46	37	28	17	-	35	25	45	38	31	23	14	-
46	38	29	21	11	-	30	25	38	31	24	17	9	-
32	23	-	-	-	-	30	20	27	19	-	-	-	-
25	16	-	-	-	-	25	20	21	13	-	-	-	-

Example 2:
For structural or other reasons, a TE 20 might, also be required with temperature lag of 0,05 m²K/W. When, using a regular PVC floor, you read your values in the top chart on the right-hand side with a resistance of 0,05 m²K/W, add 0,05 m²K/W, and look for the corresponding value of 103 W/m² in the middle chart on the left-hand side for the value 0,10 m²K/W.

Heat-flow density q in W/m² for full installation

Resistance of floor covering 0.00 m²K/W (e.g. ceramic & natural stone)						T_v / T_r in °C		Resistance of floor covering 0.05 m²K/W (e.g. laminate & PVC)					
Room temperature in °C								Room temperature in °C					
16	18	20	22	24	26			16	18	20	22	24	26
269	256	243	230	217	204	60	55	220	209	196	186	177	167
252	239	226	213	200	186	60	50	206	195	184	174	163	152
237	224	211	198	185	172	55	50	193	182	172	161	151	140
219	206	193	180	167	154	55	45	179	168	157	147	136	125
204	191	178	165	152	139	50	45	167	156	145	135	124	113
186	173	160	147	134	120	50	40	152	141	131	120	109	98
172	159	145	132	119	106	45	40	140	129	119	108	97	87
154	140	127	114	100	87	45	35	125	115	104	93	82	71
139	126	113	100	87	73	40	35	113	103	92	81	71	60
120	107	94	80	66	52	40	30	98	87	76	65	54	42
106	93	80	67	54	40	35	30	87	76	65	55	44	33
87	73	59	44	27	-	35	25	71	60	48	36	22	-
73	60	47	33	18	-	30	25	60	49	38	27	15	-
52	36	-	-	-	-	30	20	42	30	-	-	-	-
40	26	-	-	-	-	25	20	33	20	-	-	-	-

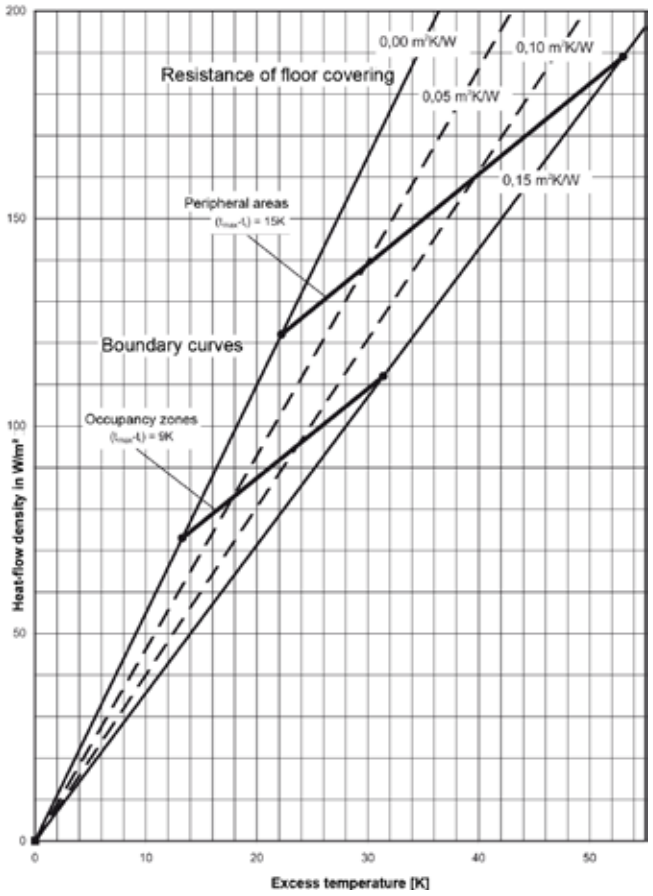
Technical values for baths as well as special building-site requirements are available on request.

T_v: Forward-flow temperature
T_r: Return-flow temperature

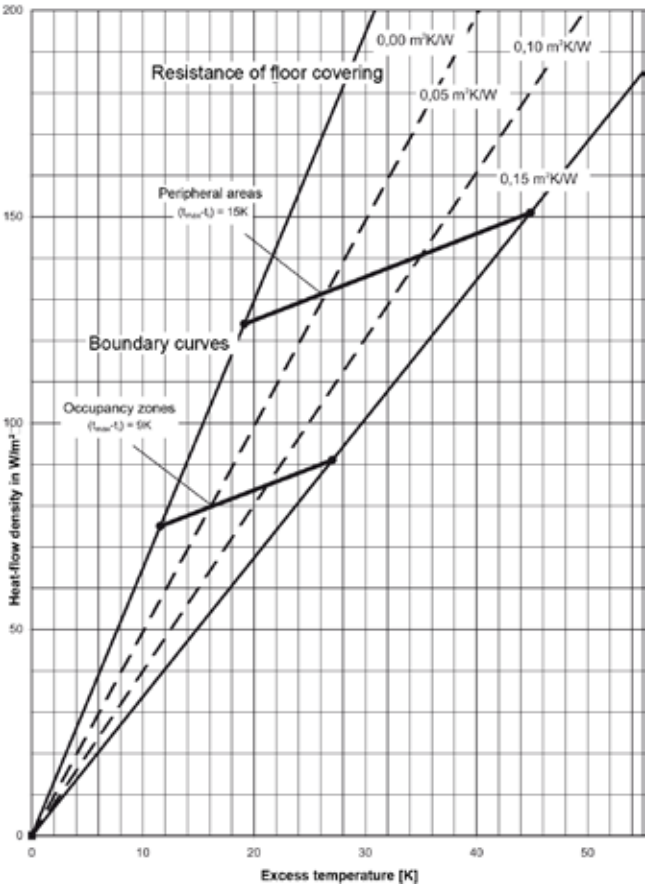
Suitable ranges of use:
Green fields: For all areas (max. 29° C)
Yellow fields: For all peripheral areas (max. 35° C)
Red fields: Not useable according to standard

Always just the right temperature.

Layout with 12-cm grid



Full layout



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We can do it all for you.

Lindner Concepts:

- insulation engineering and industrial service
- clearance of harmful substances
- clean rooms
- airports and airlines
- railways and tunnels
- studios and cinemas
- interior fit-out and furnishings
- cruise liner and ship fit-out
- specialist dry lining
- general contracting
- Public-Private Partnership (PPP)

Lindner Products:

- facades
- ceiling systems
- lights and lighting systems
- partition systems
- doors
- floor systems
- heating and cooling technologies

Lindner Service:

- general planning
- development and design
- delivery
- installation
- maintenance

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