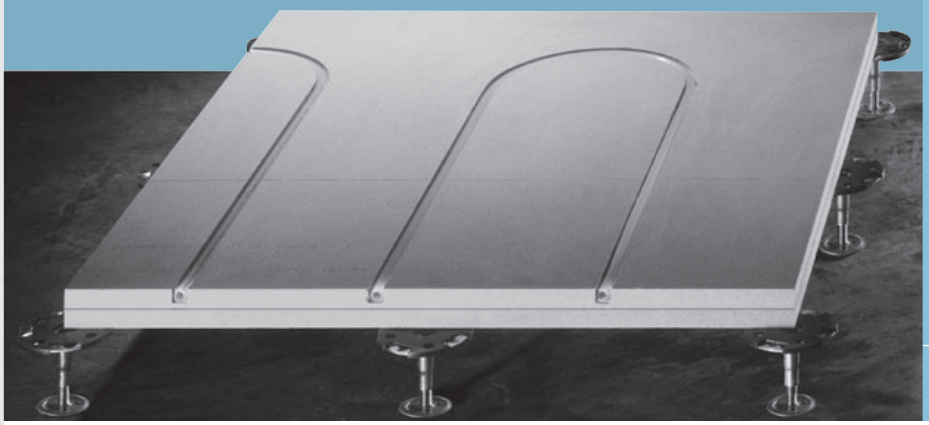
GIFAfloor Klima



Technical information sheet | 04/2011

Integrated hot water heating systems

F183 Knauf Integral *GIFAfloor* FHBplus Klima

Sheet-panelled access floor double-layer with hot water floor heating

F193 Knauf Integral *GIFAfloor* LBSplus Klima

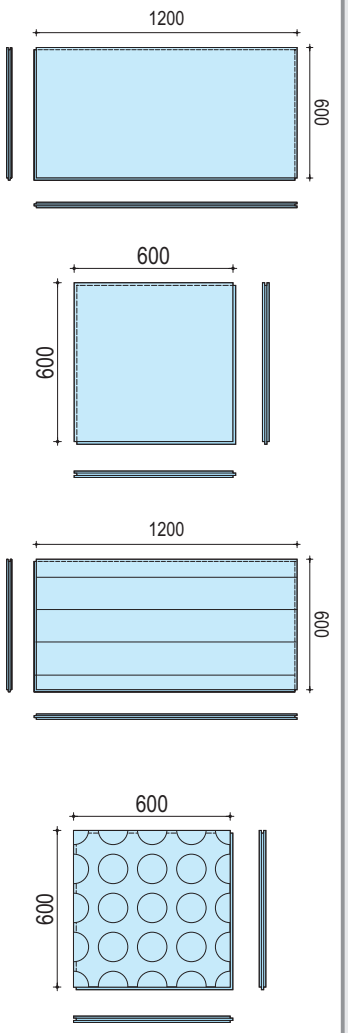
Linear supported floor double-layer with hot water floor heating

F199 Knauf Integral *GIFAfloor* UB Klima

The fast and dry installed pre-fab floor screed with hot water floor heating

GIFAfloor standardized panels

Schemes without scale



Technical data

Name CE marking	Sizes Panel net size mm	Thickness mm	Weights (Density ≥ 1500 kg/m³) Panel c. kg/pc.	 c. kg/m²	Material number	Package-unit pcs./palett
FHB 25	1200x600	25	27.0	37.5	31256	35 pcs./pal.
GF-W1DIR1/1200/600/25-C1/NF						
	600x600	25	13.5	37.5	63565	70 pcs./pal.
GF-W1DIR1/600/600/25-C1/NF						
FHB 28	1200x600	28	30.2	42.0	31545	30 pcs./pal.
GF-W1DIR1/1200/600/28-C1/NF						
	600x600	28	15.1	42.0	50980	60 pcs./pal.
GF-W1DIR1/600/600/28-C1/NF						
FHB 32	1200x600	32	34.6	48.0	31326	25 pcs./pal.
GF-W1DIR1/1200/600/32-C1/NF						
	600x600	32	17.3	48.0	31559	50 pcs./pal.
GF-W1DIR1/600/600/32-C1/NF						
FHB 38	1200x600	38	41.2	57.0	88635	20 pcs./pal.
GF-W1DIR1/1200/600/38-C1/NF						
	600x600	38	20.6	57.0	88636	40 pcs./pal.
GF-W1DIR1/600/600/38-C1/NF						
To be put onto the GIFAfloor FHB panels mentioned above for the embedding of the heating pipes						
LEP 18	1200x600	18	19.5	27.0	99258	50 pcs./pal.
GF-W1DIR1/1200/600/18-C1/SF						
To be put onto the GIFAfloor FHB panels mentioned above for the embedding of the heating pipes						
RP 28	1200x600	28	28.6	39.7	138808	50 pcs./pal.
GF-W1DIR1/1200/600/28-C1/NF						
RP 28	600x600	28	14.3	39.7	138807	60 pcs./pal.
GF-W1DIR1/600/600/28-C1/NF						
RP 32	1200x600	32	33.0	45.8	138810	50 pcs./pal.
GF-W1DIR1/1200/600/32-C1/NF						
RP 32	600x600	32	16.5	45.8	138809	60 pcs./pal.
GF-W1DIR1/600/600/32-C1/NF						
NP 28	600x600	28	14.1	39.2	138805	50 pcs./pal.
GF-W1DIR1/600/600/28-C1/NF						
NP 32	600x600	32	16.3	45.3	138806	50 pcs./pal.
GF-W1DIR1/600/600/32-C1/NF						

* The rill panels and the nubbed panels are made for heating pipes with an external diameter of 14mm and a grid of 150mm.

Design loads for statical predefinitions of floors analogue to DIN 1055-3 (excerpt of F18 p.6 & F19 p.4)

No.	Utilization	Examples	kN
3	Housing and residential rooms	Rooms and corridors in residential buildings, bedrooms in hospitals, hotel rooms including kitchens and bathrooms belonging to them	1.0
4	Offices, working areas, corridors	Corridors in office buildings, offices, practices, ward rooms including corridors belonging to them	2.0
5	Offices, working areas, corridors	Flure in Krankenhäusern, Hotels, Altenheimen, Internaten u.s.w., Küchen und Behandlungsräume einschließlich Operationsräume ohne schweres Gerät	3.0
7	Assembly rooms and areas to convene	Areas with tables, e.g. rooms in schools, cafes, restaurants, dining rooms / halls, reading rooms, receptions	4.0
9	Assembly rooms and areas to convene	Free passable floors, e.g. in museums, exhibition areas ..., entry areas of public buildings and hotels	4.0
13	Sales rooms	Floors of retail shops and department stores	4.0

If higher loads for the project are planned, so those have to be observed for the statical dimensioning of the GIFAfloor system strictly.

Load classes of hollow floors acc. to EN 13213

Load class	1	2	3	4	5	6
Breaking load [kN]	≥ 4	≥ 6	≥ 8	≥ 9	≥ 10	≥ 12
Safety factor	2	2	2	2	2	2

The EN 13213 hollow floors defines the test procedures and classifications of hollow floor systems. Area loads should not be taken as criterion, only the point load is the determining factor.
Test by an intendor 25x25mm (simulation of a point load) until fail of the panel at specimens weakest position.

F183

Allowable bearing capacities (working loads in kN) for GIFAfloor FHBplus Klima

Thickness [mm]	System	Bearing distance [mm]		
		≤600*	≤425**	≤300
43	***GIFAfloor* FHBplus Klima 25+18**	3.0	4.0	4.5
46	***GIFAfloor* FHBplus Klima 28+18**	4.0	4.0	4.5
50	***GIFAfloor* FHBplus Klima 32+18**	5.0	6.0	6.0
56	***GIFAfloor* FHBplus Klima 38+18**	6.0	7.0	7.0

* Edges to be build with Knauf Integral stringers heavy (up to load class 5) / transition profile or with grid of the supports 300mm
** The grid system 425x425mm is generated by additional supprts in the middle of the standardized grid 600x600mm

F193

Allowable bearing capacities (working loads in kN) for GIFAfloor LBSplus Klima*

Tickness [mm]	Row	Bearing distance [mm]**									
		≤300	≤400	≤500	≤600	≤700	≤800	≤900	≤1000	≤1100	≤1200
25 + 18	Edge panel***	4	3	2.5	2	1	1	0.7	0.7	0.5	0.5
	Area panel	4	3.5	3	3	3	2	2	1	1	1
28 + 18	Edge panel***	5	3.5	2.5	2	2	1	1	1	0.7	0.7
	Area panel	5	4.5	4	4	4	3	3	2	2	2
32 + 18	Edge panel***	6	4.5	3.5	3	3	2	2	2	1	1
	Area panel	6	5.5	5	5	5	4	4	3	3	2
38 + 18	Edge panel***	6	5	4.5	4	3.5	3	2.5	2	1.5	1.2
	Area panel	7	7	7	6	6	6	5	4	3.5	2.5

* The working loads are valid for panels without transverse joints (joints parallel to the linear bearing structure) in the zone between the bearing structure. That means joints have to be located on area of support. The values have to be reduced by 50% if there are joints in the zone between the bearing structure. ** It is prohibited to install two successive transverse joints in the FHB panels row within one field between two beams. *** If the support spacing at the edges is ≤ 300 mm or if there is a linear bearing structure at the edge the working loads of the area panels could be used.

F199

Allowable bearing capacities (working loads in kN) for GIFAfloor UB Klima*

		Interlayer* on an even**, load bearing*** base				
		Knauf Trockenschüttung PA**** (dry spread material)		Fibre bonded		Knauf EPS DEO
				≥175g/m²	≥300g/m²	
***GIFAfloor* System**	**Panel thickness**	**5-10cm**	**2-5cm**	**≤1.0mm**	**≤2.5mm**	**≤40mm**
***GIFAfloor* UB Klima**	**28mm**	1.0	1.5	1.5	2.0	2.0
***GIFAfloor* UB Klima**	**32mm**	1.0	2.0	2.0	3.0	3.0

* Supply of the interlayer by your builders merchant.
** The absolutely eveness of the base has to be secured if necessary it must be levelled by additional treatment.
*** The bearing capacity has to be secured at any place of the utilization, it has to meet at least DIN 1055-3 and the allowable deflection of the base has to be limited to l/500.
**** installation height of the dry spread material Knauf Trockenschüttung PA 2-10cm, for heights higher than c. 5cm to be comprimed.
For the delivery of Knauf Trockenschüttung PA and EPS DEO please ask the local Knauf company.

Raw material and production

GIFAtec is produced by natural gypsum and a portion FGD-gypsum by admixturing of cellulose fibres made of sorted recycled paper and cardboard. The natural gypsum is exploited in an area c. 30 km around the factory in open-cast minings. The natural-chemical identical clean FGD gypsum is calcined with the natural gypsum to stucco. The papers are soaked in big tanks. After processing time they are mixed with processing water and the stucco to a mush. This mush is put on a transport belt, reaching a thickness of c. 2mm by pulling of the surplus water by vacuuming. On the forming cylinder it is wounded up to the needed thickness, roughly cut and after a setting period dryed in a 12-layer dryer. The GIFAtec large-sized panels are been sanded, shaped in a format station to become GIFAfloor panels. After priming the top and back side of the panels they are packed on pallets.
This kind of production of gypsum fibre material ensures the unique homogenious density through the whole thickness of the GIFAfloor panel.

Building biological data / Waste disposal

Since March 2003 Knauf Integral GIFAfloor is recommended by awarding certificate by the institute for building biological testing IBR (Institut für Baubiologie Rosenheim).

The eurofins institute Galten (DK) certificated the suitability for interior installation according German institute for building technology (DIBt) approval criteria by undertaking aptitude tests with Knauf Integral GIFAtec according the new European standards.

For GIFAfloor waste the waste disposal code number is 17 08 02 for building material based on gypsum or no. 17 09 04 for mixed building and demolition waste, not polluted by dangerous materials.

Valuation of the eurofins emission test results

Cancerogene	after 3 and 28 days	not detectable
TVOC**	after 3 and 28 days	below the limit
SVOC***	after 28 days	below the limit
VOC*-value R	after 28 days	below the limit
VOC*-value without NIK-value	after 28 days	below the limit
Formaldehyde	after 28 days	below the limit

* VOC = volatile organic compounds ** TVOC = sum of the volatile organic substances
*** SVOC = sum of the less volatile organic substances

IBR

Institut für **Baubiologie** Rosenheim GmbH

CERTIFICATE OF AWARD

Based on the excellent test results, the Seal of Approval

is hereby awarded to

Knauf Integral KG
D-74589 Satteldorf

for the test items

Knauf Integral GIFAtec / GIFAfloor
gross density classified 1100 / 1500 kg/m³

by the Institut für Baubiologie Rosenheim GmbH.

Reimut Hentschel, Managing Director

Rosenheim, March 2011

The Seal of Approval is awarded for 2 years. In the interest of consumers, follow-up testing of the products must be performed in due time before the Seal of Approval expires. The applicant will have to reapply for these tests.
IBR Institut für **Baubiologie** Rosenheim GmbH D-83022 Rosenheim Heilig-Geist-Str. 54 Phone +49(0)8031 3675-0 Fax -3675-30
Managing Director: Reimut Hentschel Commercial Register: HRB Traunstein 5362 VAT ID: DE 131182830
info@baubiologie-ibr.de www.baubiologie-ibr.de

eurofins

Certificate

On 25th of June 2004 Eurofins Danmark A/S received a sample of a fibre reinforced calcium sulphate panel with edge trim around the panel edges, panel thickness 28 mm, bare finish on top and bottom with the name

GIFAfloor
Knauf Integral KG

The emissions were tested according to the AgBB-scheme and guidelines of the DIBt (AgBB - Committee for Health-related Evaluation of Building Products, DIBt – German Institute for Building Technology). Sampling, testing and evaluation were performed according to EN 13419-1, EN 13419-3, ISO 16000-3, ISO 16000-6, ISO 16000-9, ISO 16000-11, ISO 16017-1 in the latest versions, see the test report no. 211019-71-181.

Evaluation of the test result according to AgBB guidelines:

- Carcinogenic substances were not detectable after 3 and after 28 days.
- The sum of VOC ("TVOC") after 3 days was below the limit of 10.000 µg/m³.
- The sum of VOC ("TVOC") after 28 days was below the limit of 1.000 µg/m³.
- The sum of SVOC after 28 day was below the limit of 100 µg/m³.
- After 28 days the value R was calculated from the detected VOC with single concentrations above 5µg/m³. This value R was below the limit of 1.
- The sum of VOC without LCI-value after 28 days was below the limit of 100 µg/m³.
- Formaldehyde after 28 days was below the limit of 120 µg/m³.

The tested product is suitable for indoor application, according to the AgBB guide line (version July 2004).

25th of August 2005

Inge Bondgaard
Chemical engineer

Thomas Neuhaus
Environmental engineer

Eurofins Danmark A/S
Smedeskovvej 38
DK-8464 Galten /
Denmark

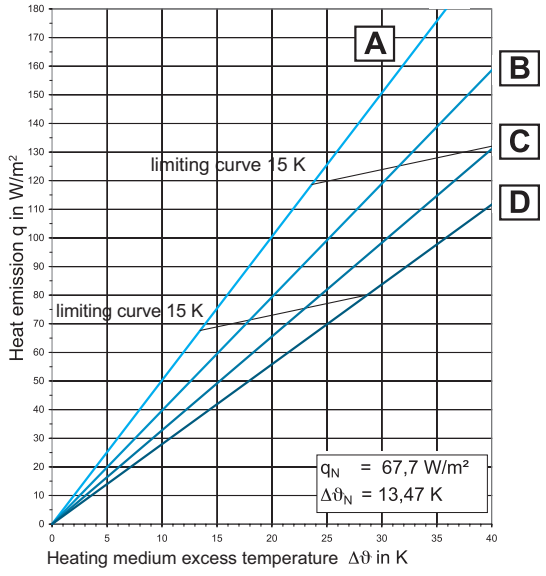
Tel +45 70 22 42 66
Fax +45 70 22 42 55

Building physical material values

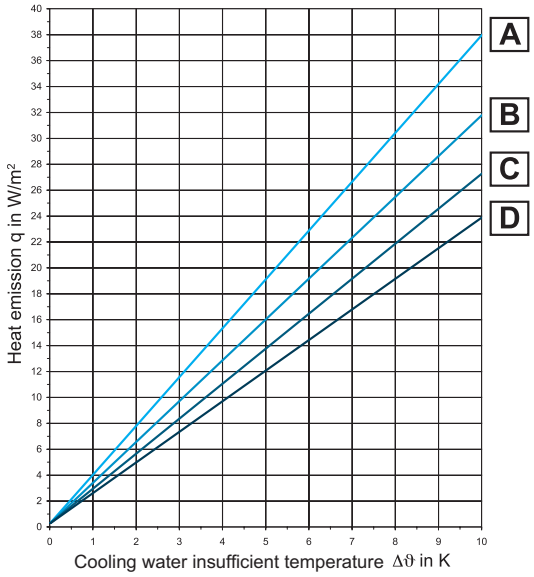
	GIFAfloor FHB / GIFAfloor LEP	
Fire protection		
Building material class according to EN 13501-1	A1	non-combustible
Building material class according to DIN 4102-1	A2	non-combustible
Hygrothermal values		
Conductivity of heat λ_R	0.44	W/(mK)
For floor heating systems λ_{10}	0.30	W/(mK)
Value of vapour diffusion resistance μ	30 / 50	-
Specific heat capacity c	>1000	J/(kgK)
Thermal extension coefficientt α	12.9×10^{-6}	1/K
Expansion / shrinkage by rise / drop in temperature	≤0.02	mm/(mK)
Expansion / shrinkage by changing the rel. air humidity on 30% at 20°C	0.6	mm/m
Hygrothermal installation conditions (stationary)	+10° to +35°C	c. 45-75% r.h.
Hygrothermal using conditions (stationary)	-10° to +35°C	c. 35-75% r.h.
Surface water absorption capacity acc. to EN20535 (acc. Kopp)	<300	g/m²
Strength values		
Surface hardness acc. to Brinell	≥ 40	N/mm²
Pull off bond strength	≥ 1.0	N/mm²
Other		
Surfaces with transport protecting primer to bond dust and for reduction of water absorption capacity	yes	-
Ability of taking vertical dynamic maximum working load acc. to EN 13964 without additional treatment	≥ 100 000	Endurance
Value of vapour diffusion resistance μ of the optional factory-made lamination of aluminum foil on the base side	9.3×10^{6}	practically vapour-tight

Heat flux densities of GIFAfloor FHBplus Klima 32+18

Heat flux density of the floor heating



Cooling output of the floor heating



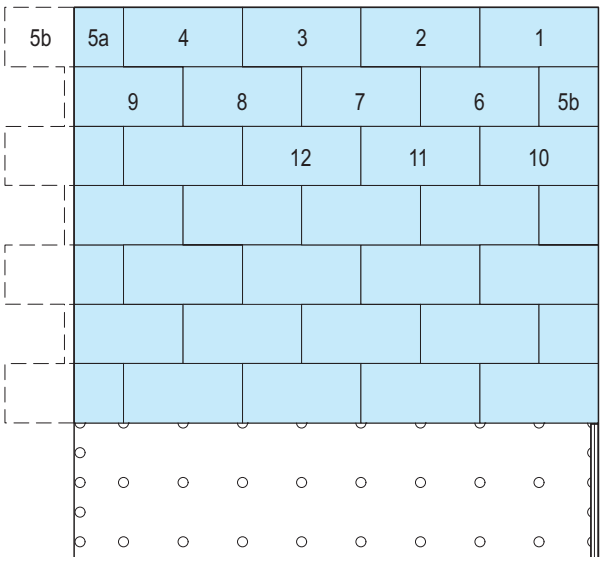
A: $R_{\lambda,B}$ = 0.00 (without floor finishing) **B**: $R_{\lambda,B}$ = 0.05 (with e.g. porcelain stoneware) **C**: $R_{\lambda,B}$ = 0.10 (with e.g. laminate flooring) **D**: $R_{\lambda,B}$ = 0.15 (with e.g. carpet)
The higher the heat transmittance resistance $R_{\lambda,B}$ of the floor finishing, the lower the heat emission q. The indicated values are based on PE-X 14x2mm pipes with a grid of 125mm.

Fire protection

Class	Support height (=clear dimension)	Support thread dimension	Wall thickness sleeve outside Ø	Panel thickness
F 30 AB*	≤ 1150 mm ≤ 1000 mm ≤ 600 mm ≤ 218 mm	M 20 M 20 M 20 M 12	3.0 mm 2.5 mm 1.5 mm 17.5 mm	≥ 22 mm
F 60 AB*	≤ 598 mm ≤ 168 mm	M 20 M 16	2.0 mm 2.0 mm	≥ 32 mm
F 90 „from top to side“	Expert‘s report MPA Dresden „F90 solely from top side“, which means independent of the bearing structure.			≥ 50 mm

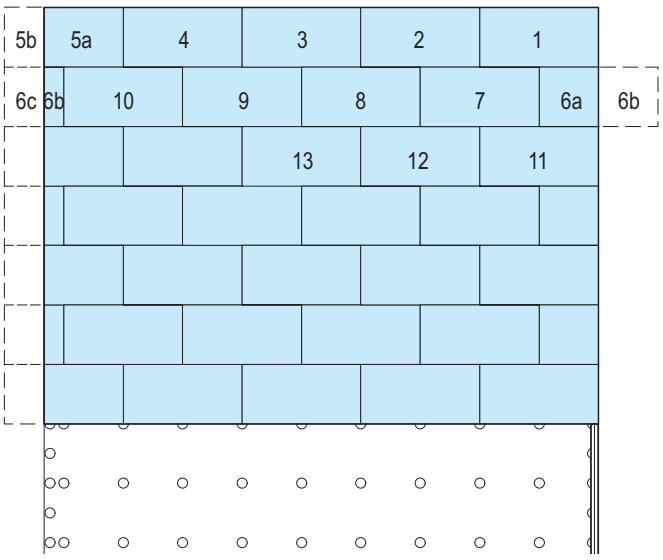
*= The classification is also valid if drywalls (non-loadbearing internal partitions acc. to DIN 4103) are set on the GIFAfloor FHB.
The Knauf Integral GIFAfloor FHB systems with a thickness ≥22mm and a clear height ≤400mm are fulfilling the German building regulations F30 according to DIN 4102.

Example: first layer of F183 on steel supports



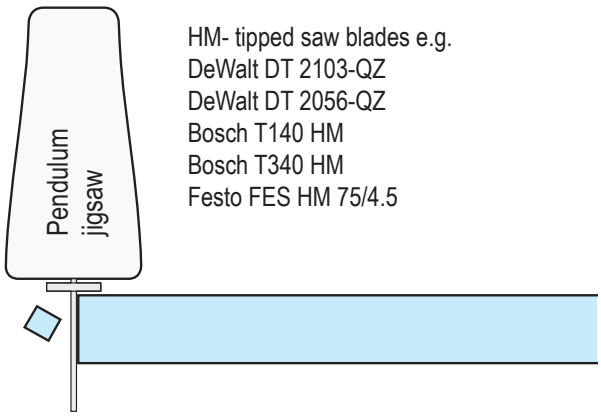
Usage of the remaining part of the cut panel in the next row

Example: first layer of F183 on steel supports



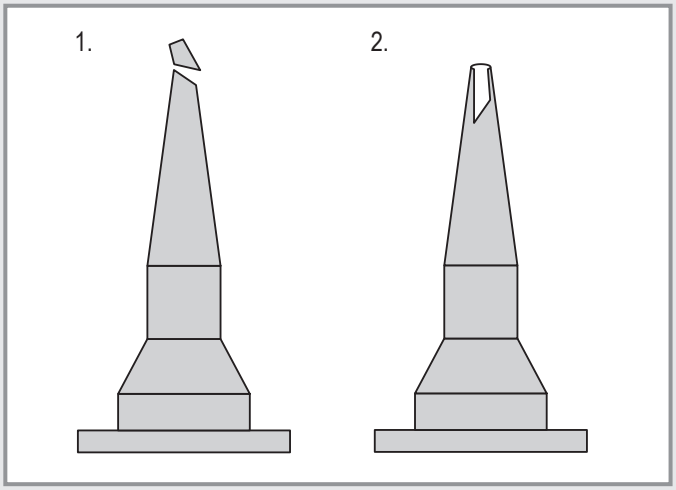
Usage of the remaining part of the cut panel in the same row

Cut tongue of the panels at the wall connection joints



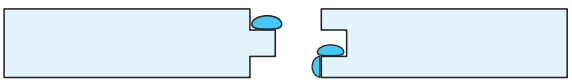
HM- tipped saw blades e.g.
DeWalt DT 2103-QZ
DeWalt DT 2056-QZ
Bosch T140 HM
Bosch T340 HM
Festo FES HM 75/4.5

Example for the cutting of the tip of the nozzle of the Knauf Integral application gun for film tubes

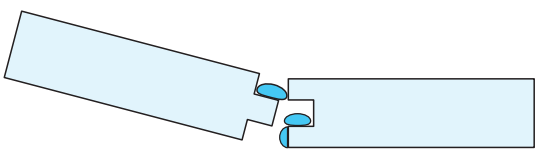


Glueing of the panels

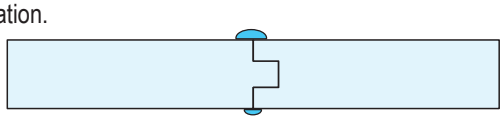
Put Nut- / Feder- Klebstoff (glue for tongue and groove) onto the tongue, onto the front and into the groove.



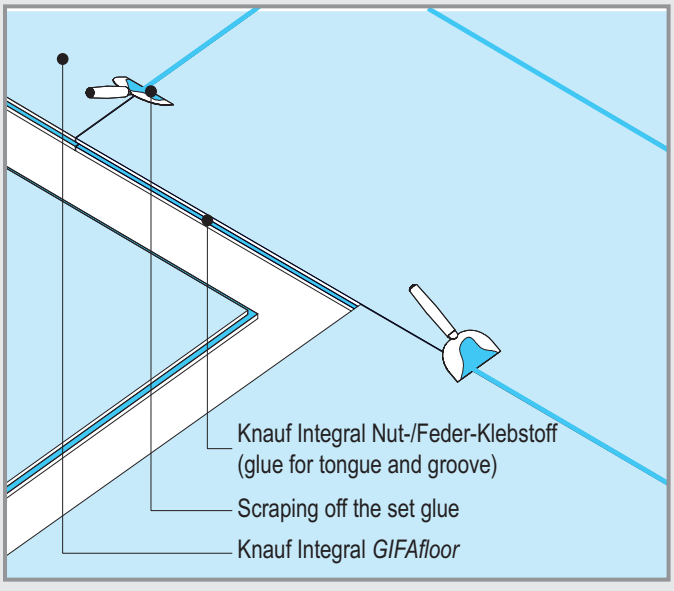
Installation sequence: put the tongue into the groove.



Leaking of the glue from the joints shows sufficient glue application.



Scraping off the set glue

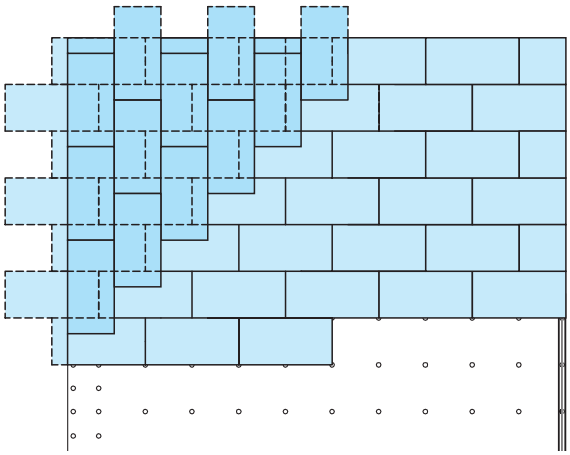


GIFAfloor TI Klima F183, F193

Application an processing of the second layer

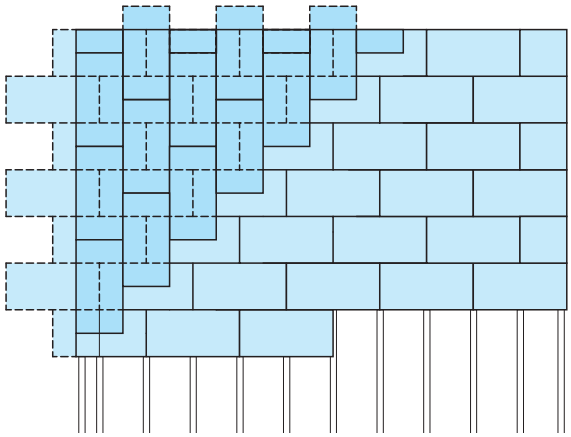
Assembly of the second layer tuned 90° (scheme without scale)

Example F183 on steel supports



Shifting the joints of the second layer at least 20cm

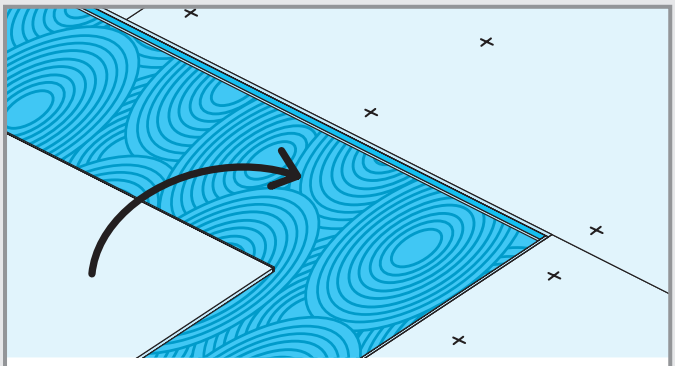
Example F193 on linear bearing profiles



Optimum shifting of the joints 30cm

Section of the notched blade TKB B3 (scale 1:1)

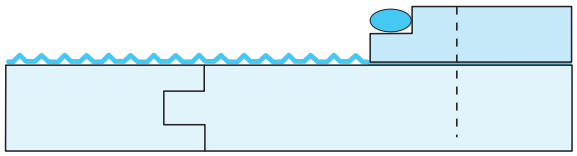
Put the LEP panel into the glue immediately after glue application



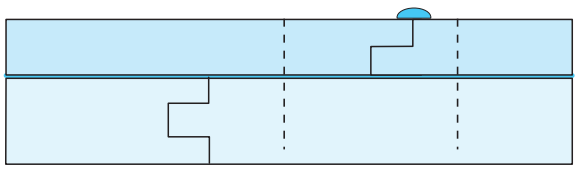
Put Flächenklebstoff (glue for the 2nd layer) onto the first layer holohedral and onto the rabbet. Load it after positioning and nail it with a nailer.

Laying of the second layer (drawings without scale)

Put the glue holohedral onto the area and onto the rabbet



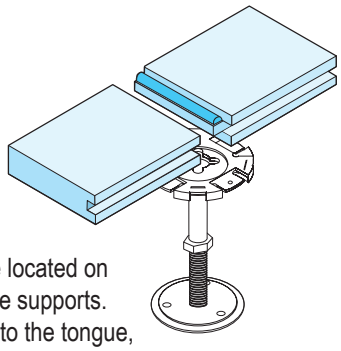
Put the LEP panel into the glue immediately, load + nail it.



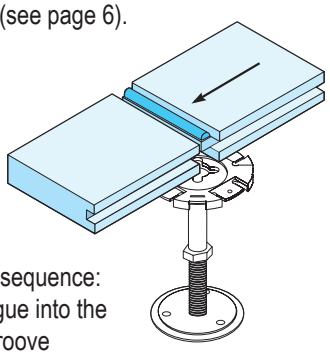
Fixing with compressed air / impulse nailer while standing on the panel

Compressed air nailer for brads: e.g. bradder Paslode FN 1665.1 (operation air pressure: 8.0 bar); brads e.g. Paslode F16x29 or Haubold SKN 16/30 C NK or SKN 16/25 C NK;
gas impulse nailer: e.g. ITW impulse nailer IM65F 16 B-pack 19-64mm; brads e.g. pack F16-25mm (fuelcells + galv. brads)

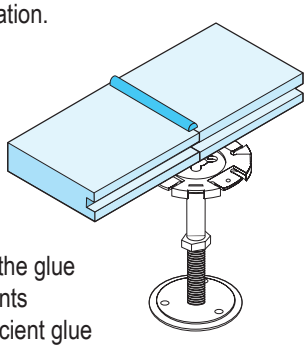
Illustration of F183 on steel supports



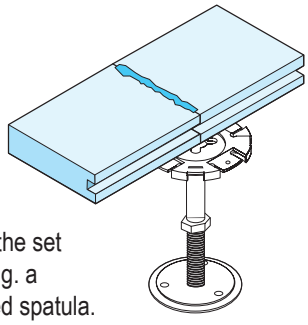
1
Joints to be located on center of the supports. Put glue onto the tongue, onto the front and into the groove (see page 6).



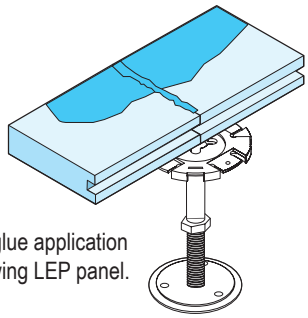
2
Installation sequence: put the tongue into the prepared groove immediately after glue application.



3
Leaking of the glue from the joints shows sufficient glue application.

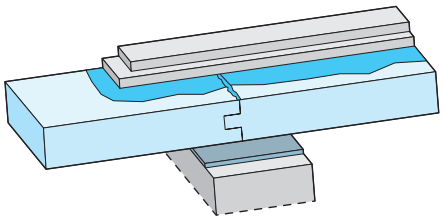


4
Scrape off the set glue with e.g. a sharp-edged spatula.

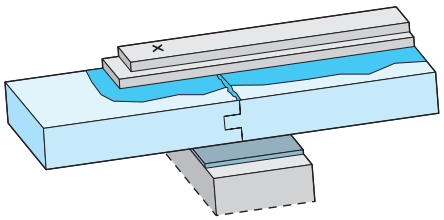


5
Holohedral glue application for the following LEP panel.

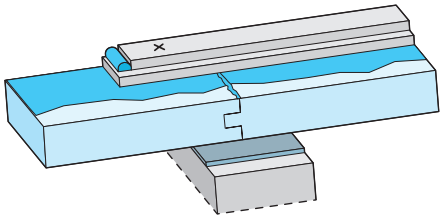
Illustration of F193 on linear bearing structure



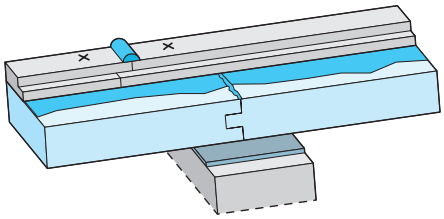
6
Put the LEP panel into the glue immediately after glue application



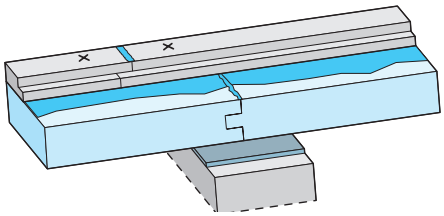
7
The LEP panels respectively DLH panels for the second layer to be fixed immediately after beeing positioned in the applicated glue. For this stand on the panel to be fixed while nailing with compressed air nailer or impulse nailer to press it .



8
Glue for the next panel, continue as prescribed.



9
Leaking of the glue from the joints shows sufficient glue application

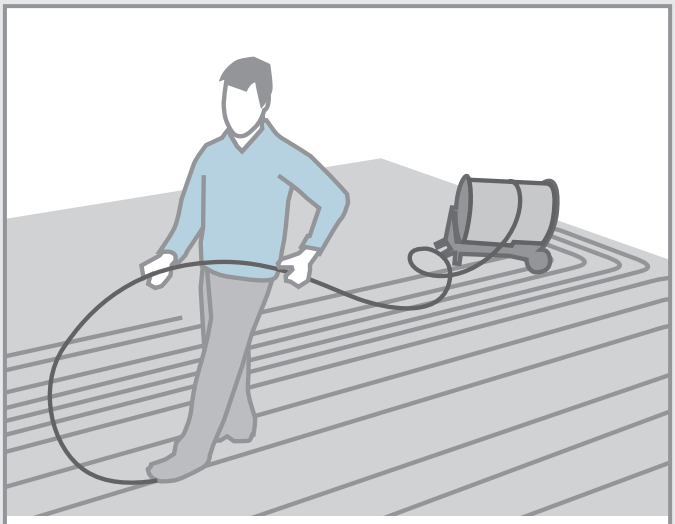


10
Scrape off the set glue with e.g. a sharp-edgd spatula.

Milling of the channels for the heating pipes*

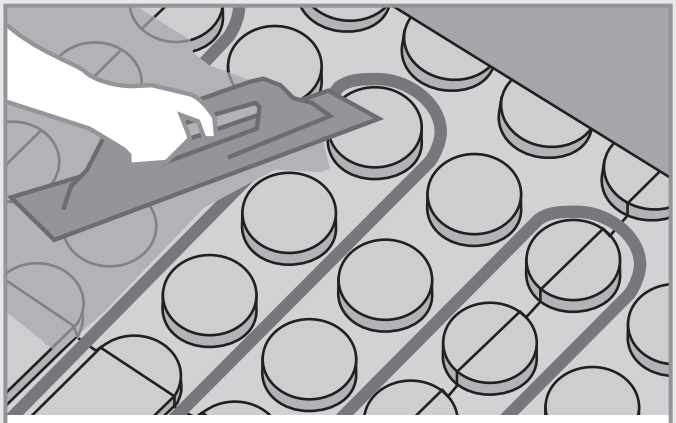
*= GIFAfloor LEP 18 panels could be prefabricated with channels on request.

Installation of the heating pipes



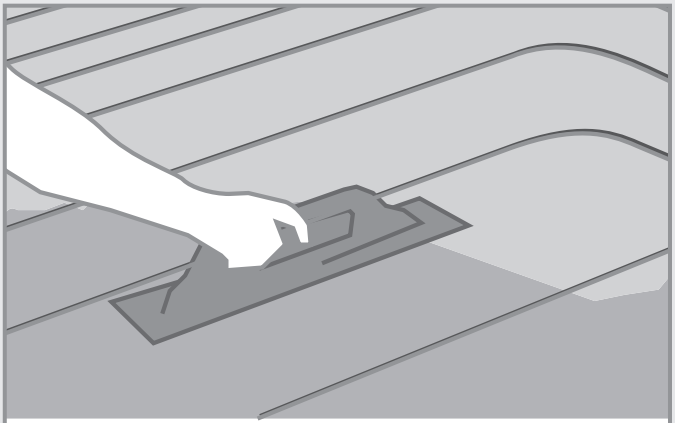
No junction of the heating pipes by using endless pipes from a pipe roller

Basic filling of the unlined channels for pipes of the GIFAfloor RP and GIFAfloor NP panels



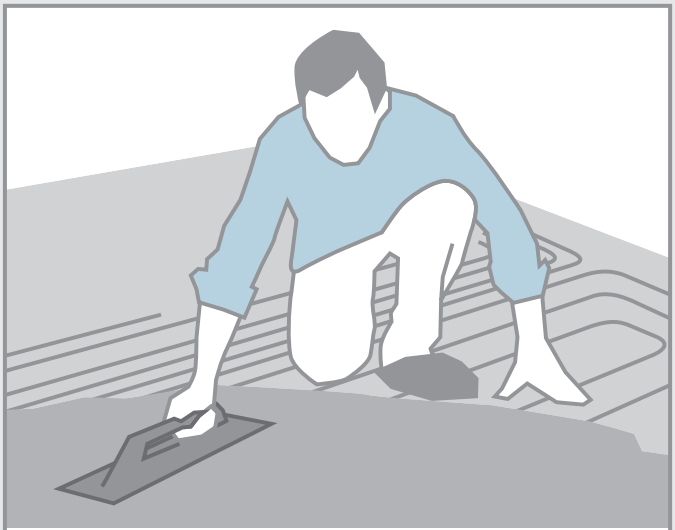
Consumption: Knauf Nivelliерestrich 425 c. 10kg/m² GIFAfloor NP, texture for manual filling of the channels

Basic filling on the heating pipelines



Consumption: Knauf Uniflott c. 0.17kg/m heating pipe for tiles: Knauf Flexkleber 25plus c. 0.1kg/m

Realizing of float coating with Knauf Nivellierspachtel 415

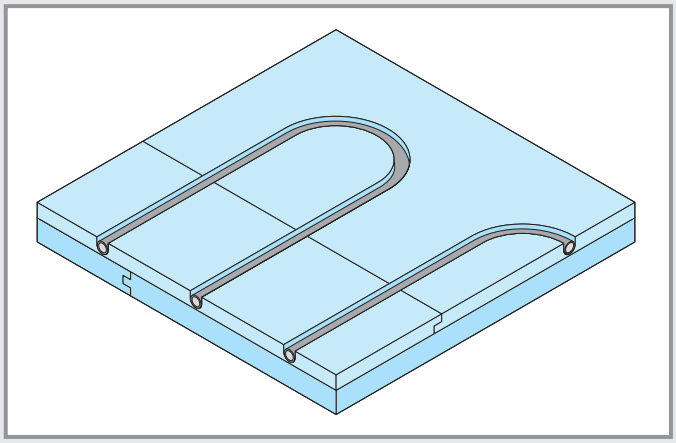


Consumption: Knauf Nivellierspachtel 415 c. 1.6kg/m²/mm coating thickness. For thin floor finishings: two passes of float coat with Knauf Uniflott is required!

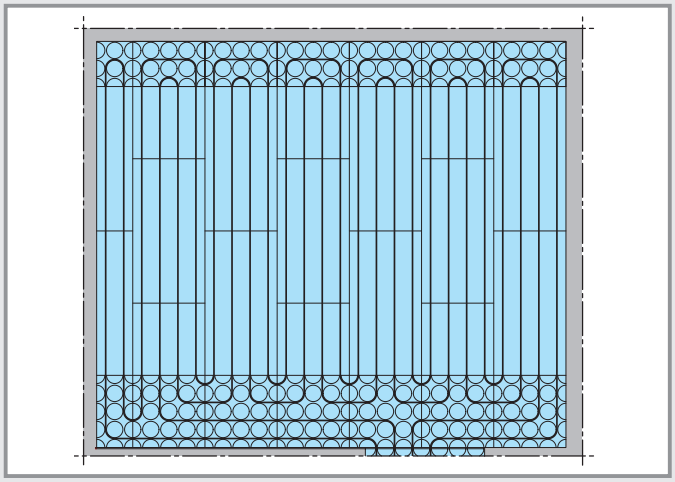
Priming of the laid floor

Prime e.g. with Knauf Estrichgrund by a paint roller. Consumption: c. 200g/m²

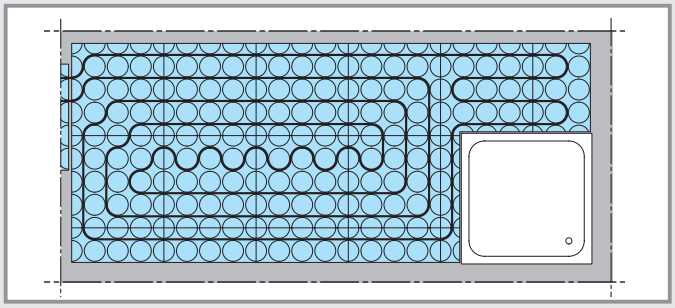
Scheme: positioning of the heating pipes



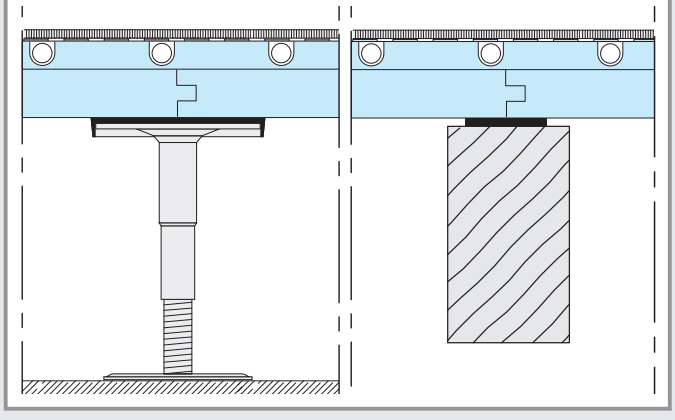
Ground-floor plan: room with rill panels and nubbed panels for meander-formed installation of the heating pipes



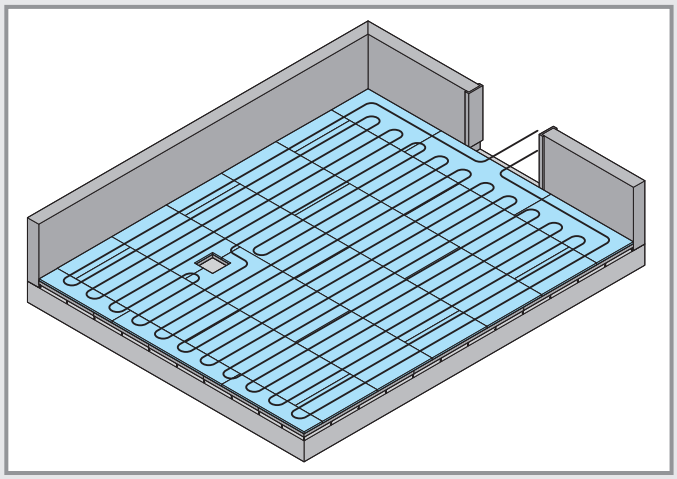
Ground-floor plan: room with nubbed panels for individual configuration of the heating pipes



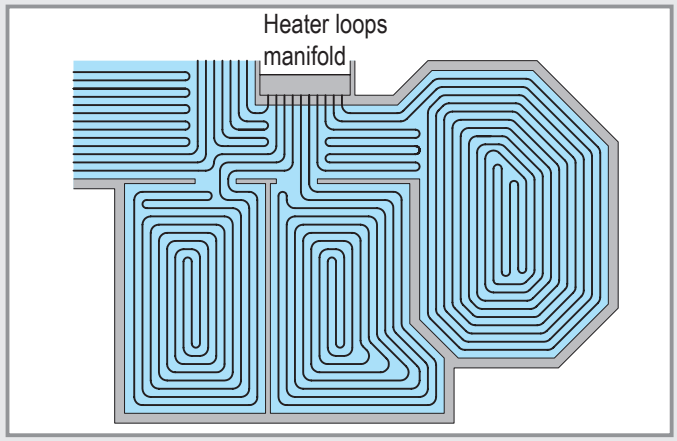
F183/F193-V1 Principle sections: position of the heating pipes



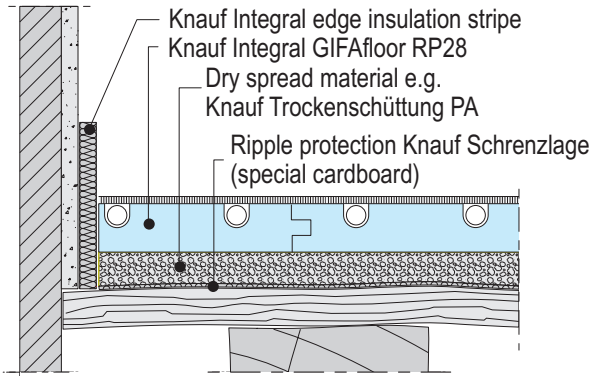
Example: Meander-formed installation of the heating pipes (with access opening)



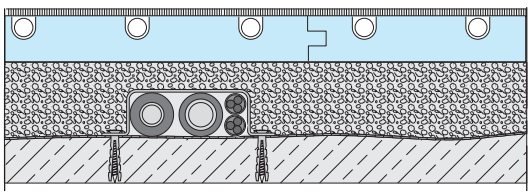
Ground-floor plan: free choice of the configuration of the heating pipes (without scale)



F199-V1 Junction to a wall of GIFAfloor UB Klima on a wooden joist ceiling with dry spread material interlayer



F199-V2 GIFAfloor UB Klima: pipes and cables in the dry spread material to be fixed to the ground



Material	Mat.-no.	Unit	Required quantity*
Knauf Knauf floor screed primer F 431	5355	10 kg pail	c.200g / m²
Knauf Integral steel support glue (PU)	48422	600 g tubular bag (film tube)	c.15g / support
Knauf Integral application gun for film tubes	4657	pc.	as required
Steel supports / Support sheets without naps	see table F18 p.18	pc.	c. 3.9 pcs. / m²
Thread sealer	78362	1000 ml spray bottle	c. 1 Fl. / 500 supports
Insulation sheets round, self-adhesive, 2mm	44135	pc.	additional c. 3.9 pcs. / m²
Insulation sheets cornered, self-adhesive, 2mm	44134	pc.	alternative c. 3.9 pcs. / m²
Knauf Integral stringers light	74336	pc.	if required c. 5.8 pcs. / m²
Knauf Integral stringers heavy	74337	pc.	if required c. 5.8 pcs. / m²
Knauf Integral ZD-diagonal rod	74338	pc.	as required
Knauf Integral support insulation stripes	91287	100m / carton (= 5 rolls)	as required
Knauf Integral edge insulation stripes for GIFAfloor systems	109147	c.13x100x1200mm 50 pcs. / carton	as required as required
Knauf Integral foam insulation stripe self-adhesive sk	74339	5x10m roll / bag 20 bags / carton	as required
GIFAfloor FHB panels	see table p.2	palett	c. 1.39 pcs. / m²
GIFAfloor LEP panels	see table p.2	palett	if required c. 1.39 pcs./m²
Knauf Integral Nut- / Feder- Klebstoff (glue for tongue and groove)	141974	20 pcs. tubular bags à 600ml (~900g) / carton	F181 c. 82m² / carton F182 c. 54m² / carton + glue for 2nd layer
Knauf Integral application gun for film tubes	4675	pc.	as required
Knauf Integral Flächenklebstoff (glue for second layer)	141975	15 kg pail	c. 600g/m²
Coloquick spreader	4696	pc.	as required
Notched blades TKB B3 double sided 28cm for Coloquick spreader	4697	12 pcs. / pack	as required
GIFAfloor access panel	see table p. 2	pc.	as required
Knauf Integral access opening frame 25/34 600x600mm 1200x600mm	BTL aluminum / BTL stainl. steel 30080 / 77801 77798 / 77802	pc.	as required
Sealing foam tape for 25/34 600x600mm 1200x600mm	 77810 77811	pc.	as required
Knauf Integral transition profile 25/34	BTL aluminum / BTL stainl. steel 74345 / 74348	pc.	as required
Joining plate for transition profile 25/34	77807	pc.	as required
Joining plate 90° for transition profile 25/34	77808	pc.	as required
Sealing foam tape for transition profile 25/34	77809	10m roll (5x2mm)	as required
Access opening frame GIFAframe universal uno	139306	pc.	as required
Distance kit uno	139307	pc.	as required
Access opening frame GIFAframe universal duo	139517	pc.	as required
Distance kit duo	139518	pc.	as required
Transition profile universal uno	139308	pc.	as required
End kit uno	139310	pc.	as required
Distance kit uno	139307	pc.	as required
Transition profile universal duo	142264	pc.	as required
End kit duo	142265	pc.	as required
Distance kit duo	139518	pc.	as required

* Specification refers to a room dimension of 10x10m.
Different room dimensions may cause different quantities.

Pos.	Description	Quantity	Unit price	Total price

..... Sheet panelled access floor double-layer type **Knauf Integral F183 GIFAfloor FHBplus Klima** or equivalent, made of adjustable, zinc-coated steel supports fixed to the primed raw floor by steel support glue, support sheets / insulation sheets* to put the **GIFAfloor FHB** panels as a floating layer on them. All corners of the **GIFAfloor FHB** panels are positioned on center of the supports. Panels laid in staggered position, connected by glued tongue and groove system to get big plates.
The **GIFAfloor LEP** panels of the second layer are laid turned 90°, with staggered joints and are glued holohedral with Knauf Integral Flächen-Klebstoff (glue for second layer) or Knauf Integral Nut-/Feder-Klebstoff (glue for tongue and groove) to the first layer and together on the rebate joint. After positioning they are immediately fixed by compression air / impulse nailing, ready for floor covering.
The milling for the heating / cooling pipelines is assembled with the special tool „Floorgrinder“ according the heat demand calculation almost dust-free.
The heating pipes are installed from / to the heater loops manifold into the prepared grooves Before the fixing / filling of the heating pipes they have to be checked for leakage by the heating installer. Priming afterwards.

Technical demands:

Producer:	**Knauf Integral**
Type:	**F183 GIFAfloor FHBplus Klima**
	25+18; 28+18; 32+18; 38+18*
Panel thickness 1st layer/density:	..... mm / 1500 kg/m³
Size of the panels:	1200x600mmNF / 600x600mmNF
Panel thickness 2nd layer/density:	..... mm / 1500 kg/m³
Size of the panels:	1200x600mmSF
Class / breaking load:	... / ≥ .....N
Safety factor:	2
Building material class:	A1 acc. EN 13501-1
Fire protection class:	F 30 AB / F 60 AB*
Structural module of the supports:	600x600mm; 425x425mm; 300x300mm*
	edge regions 300mm or stringers heavy
Structure height:	..... mm
Type of floor covering:	.....
Furnish and install:	.....m² ..... € ..... €

..... Floor system/ramp system Knauf Integral **Knauf Integral F193 *GIFAfloor* LBSplus Klima**, or equivalent, supported by built in situ accuratly levelled linear bearing structure made by wood, iron beams or metal profiles also trapezodial sheet metal, consists of **Knauf Integral support insulation stripes** fixed on the supporting structure and the first layer **GIFAfloor FHB panels** put as a floating system on them. Panels‘ connection of the first layer by glued tongue and groove system with staggered joints to get big plates. Position the front edge joints of the first layer in the middle of the area of the supporting structures preferably to raise the load bearing capacity of the system.
The **GIFAfloor LEP panels** of the second layer are laid turned 90°, with shifted joints glued holohedral with Knauf Integral Flächen-Klebstoff (glue for second layer) or Knauf Integral Nut-/Feder-Klebstoff (glue for tongue and groove) on the rabbet to the first layer. They are fixed immediately after positioning by air compression/impulse nailing. The milling for the heating / cooling pipelines is assembled with the special tool „Floorgrinder“ according the heat demand calculation almost dust-free.
The heating pipes are installed from / to the heater loops manifold into the prepared grooves Before the fixing / filling of the heating pipes they have to be checked for leakage by the heating installer. Priming afterwards.

* cancel non-applicable items

Pos.	Description	Quantity	Unit price	Total price
	Technical demands: Producer: **Knauf Integral** Type: **F193 *GIFAfloor* LBSplus Klima** 25+18; 28+18; 32+18; 38+18* Panel thickness 1st layer/density: ….mm / 1500kg/m³ Size of the panels: 1200x600mm NF / 600x600mm NF Panel thickness 2nd layer/density: ….mm / 1500kg/m³ Size of the panels: 1200x600mm SF Class / breaking load: ……N acc. EN 13213 Building material class: A1 acc. EN 13501-1 Structural module of the supports: ……mm Trimmers / additional footing in the edge areas: yes /no Type of floor covering: …… Furnish and install:	.....m²	..... €	.....€
.....	Pre-fab floor screed **Knauf Integral F199 GIFAfloor UB Klima** or equivalent, made of an interlayer applied on a load bearing base, on the top side levelled to an even facing, able to take the expected working load and **GIFAfloor FHB panels / GIFAfloor RP panels** and **GIFAfloor NP panels*** laid floating on it, able to carry the heating pipes. Panels' connection by glued tongue and groove system with staggered joints to get big plates. The milling for the heating / cooling pipelines into the **GIFAfloor FHB panels** is assembled with the special tool „Floorgrinder" according the calculation of heat demand almost dust-free.The heating pipes are installed from / to the heater loops manifold into the prepared grooves Before the fixing / filling of the heating pipes they have to be checked for leakage by the heating installer. Priming afterwards. Technical demands: Producer: **Knauf Integral** Type: **F199 *GIFAfloor* UB Klima** Panel thickness: 28 / 32 mm* Panel density: 1500kg/m³ Interlayer: Knauf Trockenschüttung PA (dry spread material), average thickness …… mm* Knauf Dämmstoffe EPS DEO, thickness …… mm* fibrebonded, density / thickness …… g/m² / …… mm* other …… Furnish and install:	.....m²	..... €	.....€
.....	Priming the vacuum-cleaned raw floor to bind remained dust with **Knauf Floor screed primer F431** or equivalent. Furnish and install	.....m²	..... €	.....€
.....	Extra charge. Installation of **Knauf Integral edge insulation stripes / Knauf Integral foam insulation stripes self-adhesive sk*** to separate the sheet-panelled access floor **GIFAfloor** from surrounding building parts. Furnish and install	.....m	..... €	.....€
.....	Extra charge. Installation of separation / extension / movement* joints including the delivery and installation of the required additional supports (grid 300mm o.c.) / stringers heavy*. Furnish and install	.....m	..... €	.....€
.....	Extra charge. Filling of the unlined channels for pipes of the **GIFAfloor RP** and **GIFAfloor NP panels** with **Knauf Nivelliererstrich 425.** Furnish and install	.....m	..... €	.....€
.....	Extra charge. Basic filling on the heating pipelines with **Knauf Uniflott.** Furnish and install	.....m	..... €	.....€
.....	Extra charge. Full area float coating with **Knauf Nivellierspachtel 415.** Furnish and install	.....m²	..... €	.....€

* cancel non-applicable items

F183 *GIFAfloor* FHBplus Klima

Construction and application, surface treatment*

Construction

Knauf Integral GIFAfloor FHB panels are made of Knauf Integral GIFAtec gypsum fibre material in standardized thicknesses of 25, 28, 32 or 38mm. The size of the panels is 1200x600mm with tongue and groove edges to be stuck with Knauf Integral Nut-/ Feder- Klebstoff (glue for tongue and groove).

The GIFAfloor panels are laid floating on the height adjustable steel supports, which have been fixed and levelled to the load bearing raw ceiling. The second layer of the F183 system consists of LEP 18 panels and is glued holohedral to the first layer and nailed immediately after been positioned.

It carries the pipes for floor heating and cooling systems.
In the cavity all mechanical services could be installed and drywalls could be mounted at any place on the GIFAfloor FHBplus Klima systems while observing the load limits.
Joints have to be planned according their width, positioning and construction

Grounding

The ground has to take at least the ultimate loads of the floor system supported by the steel supports.
The ground must be dry and solid and free of seperating agents like e.g. bitumen, oil or colours.

Insulation materials and bituminous sheetings usually are only with a sufficient load-distributing base able to support hollow floor systems.

The raw floor has to be swept and vacuum cleaned thoroughly and to be primed with e.g. Knauf Estrichgrund F 431.
Control joints of the structure of the building have to be placed at the same position of the GIFAfloor FHB.

Installation

Put edge insulation stripes or foam insulation stripes self-adhesive at the connecting building parts.
Mark the positions of the first row of steel supports. Stick the bases of the steel supports with approx. 15g Knauf Integral Stützenkleber (steel support glue PU) to the ground, then adjust them with a laser or with a spirit level with high accuracy measurement precision.
For all edge areas of the GIFAfloor FHBplus Klima F183: steel support center distance ≤70mm.
All edge areas of the GIFAfloor half steel support distance (grid 300mm o.c.) !
Fix the support insulation stripe on the bearing profiles. The floor could be fixed to the GIFAtec1500 frame construction if this is free-standing on a load bearing ground.
Cut at least both tongues of the first panel, put it onto the prepared structure and press against the edge insulation stripes.

Cutting of the GIFAfloor panels with e.g. circular saw with a diamond-tipped saw blade and dust exhaustion system or with e.g. a pendulum jigsaw / assembly band saw with a HM-tipped saw blade. Cut the tongue of the second and the following panels of the first row.
Put Nut- / Feder- Klebstoff (glue for tongue and groove) into the groove of the located panel and onto the tongue of the panel to be laid (see page 6). Put the panels together butt jointed immediately in true alignment.
Second and the following rows of panels to be installed in a staggered position (half of the panel's length).
Glue coming out of the butt joint shows that the quantity of the glue is sufficient and could be scraped off e.g. by using a sharp-edged spatula next day.
The second layer is installed 90° turned with staggered joints and is glued holohedral to the first layer with Knauf Integral Flächenklebstoff (glue for the 2nd layer) and nailed immediately after been positioned.

The edge insulation stripes for the gap behind the last row of GIFAfloor panels have to be insert into the gap at last.
Don't walk on the installed GIFAfloor for c. 12 hours.
The floor system is receptive to the full working load after c. 24 hours (standard time of the glue is fully set). Afterwards the GIFAfloor FHBplus Klima will be milled for the heating pipes to be installed.
For support heights higher than c. 500mm stringers are recommended, for heights higher than c. 800mm or expected lateral forces (e.g. corridors in front of of elevators in hospitals) Knauf Integral ZD diagonal rods are adviced.
The basic filling and the float coating above the heating pipes to be occured after beeing checked for leakage by the heating installer (see page 9 and below).

Treatment of the surface and floor finishing

Control joints, expansion joints, transition joints and connection joints of the GIFAfloor have to be planned and must be adopted to the floor finishing.
GIFAfloor resists the castors of chairs without supplementary treatment.
Prime with Knauf Estrichgrund F431 or with the primer prescribed of the used adhesive system.
The choosen floor covering must be suited for floor heating systems.
Fitted carpet without putty, or if necessary jointing with Knauf Uniflott. Thin elastic floor coverings (e.g. PVC, Linoleum) only with full area mastic compound (self levelling) Knauf Nivellierspachtel 415, minimum thickness 2mm, after beeing dry to be primed.

Ceramic tiles and natural stone to be fixed with flexible tile adhesives. The prescribed installation guides of the manufacturer of the glue system especially the minimum thickness of the glue for the choosen tile size must be observed.
Porcelain stoneware to be fixed by buttering and floating method, herefor put the tiles into the glue sideways while pressing it down.
Fleece or woven prescribed by the manufacturer of the glueing system has to be installed according the installation instructions.
If the allowed deflections of GIFAfloor by expected loads are bigger than the possible deflection of the floor covering, additional steps to reduce those deflections have to be planned. For further limitation of these deflections use thicker panels and/or additional supports.
Protect the GIFAfloor against water e.g. in bathrooms by using a liquid sealant system (e.g. Knauf Flächendicht / Flächendichtband).
Lay parquet flooring as a floating system or thickness of the parquet limited to ≤ 2/3 of the thickness of the GIFAfloor panels. The installation guides of the manufacturer of the parquet and of the glueing system for the choosen type of parquet flooring have to be considered.
Fluid floor coverings like e.g. epoxy resin floors have to be elastified and, depending on the manufacturer, water vapour permeable.
Test the bond strength of the floor finish / glueing system (if necessary by usage of a specimen).

* Further informations: see Knauf Integral detail sheet F18

F193 *GIFAfloor* LBSplus Klima

Construction and application, surface treatment*

Construction

Knauf Integral GIFAfloor FHB panels are made of Knauf Integral GIFAtec gypsum fibre material in standardized thicknesses of 25, 28, 32 or 38mm. The size of the panels is 1200x600mm with tongue and groove edges to be stuck with Knauf Integral Nut-/ Feder- Klebstoff (glue for tongue and groove).

The GIFAfloor panels are laid floating on a suitable load bearing structure.
The second layer of the F193 system consists of LEP 18 panels and is glued holohedral to the first layer and nailed immediately after been positioned.
It carries the pipes for floor heating and cooling systems.

In the cavity all mechanical services could be installed and drywalls could be mounted at any place on the GIFAfloor FHBplus Klima systems while observing the load limits.
Bulges in parallel direction to the structure have to be limited to 25mm.
Joints have to be planned according their width, positioning and construction.

Grounding

The supporting structure has to take at least the ultimate loads of the GIFAfloor system. The structure has to be nivelled exactly to be a flat evenly level. The deflection should be ≤ l/500 for maximum working load.

If steel supports or frames of GIFAtec1500 material are used the raw floor has to be swept and vacuum cleaned thoroughly and to be primed with e.g. Knauf Estrichgrund F 431.

The ground must be dry and solid and free of seperating agents like e.g. bitumen, oil or colours.
Control joints of the structure of the building have to be placed at the same position of the GIFAfloor.

Installation

Put edge insulation stripes or foam insulation stripes self-adhesive at the connecting building parts.
All edge areas of the GIFAfloor have to be supported by additional footing or trimmers to reach it's full load-bearing capacity.
Fix the support insulation stripe on the bearing profiles. The floor could be fixed to the GIFAtec1500 frame construction if this is freestanding on a load bearing ground.
Cut at least both tongues of the first panel, put it onto the prepared structure and press against the edge insulation stripes.
The second layer is installed 90° turned with staggered joints and is glued holohedral to the first layer.

Cutting of the GIFAfloor panels with e.g. circular saw with a diamond-tipped saw blade and dust exhaustion system or with e.g. a pendulum jigsaw / assembly band saw with a HM-tipped saw blade. Cut the tongue of the second and the following panels of the first row.
Put Nut-/ Feder- Klebstoff (glue for tongue and groove) into the groove of the located panel and onto the tongue of the panel to be laid (see page 6). Put the panels together butt jointed immediately in true alignment.
Second and the following rows of panels to be installed in a staggered position (minimum: one third of the panel's length).
Glue coming out of the butt joint shows that the quantity of the glue is sufficient and could be scraped off e.g. by using a sharp-edged spatula next day.

The second layer is installed 90° turned with staggered joints and is glued holohedral to the first layer with Knauf Integral Flächenklebstoff (glue for the 2nd layer) and nailed immediately after been positioned.
The edge insulation stripes for the gap behind the last row of GIFAfloor panels have to be insert into the gap at last.
Don't walk on the installed GIFAfloor for c. 12 hours.
The floor system is receptive to the full working load after c. 24 hours (standard time of the glue is fully set). Afterwards the GIFAfloor LBSplus Klima will be milled for the heating pipes to be installed.
The basic filling and the float coating above the heating pipes to be occured after beeing checked for leakage by the heating installer (see page 9 and below).

Treatment of the surface and floor finishing

Control joints, expansion joints, transition joints and connection joints of the GIFAfloor have to be planned and must be adopted to the floor finishing.
GIFAfloor resists the castors of chairs without supplementary treatment.
Prime with Knauf Estrichgrund F431 or with the primer prescribed of the used adhesive system.
The choosen floor covering must be suited for floor heating systems.
Fitted carpet without putty, or if necessary jointing with Knauf Uniflott. Thin elastic floor coverings (e.g. PVC, Linoleum) only with full area mastic compound (self levelling) Knauf Nivellierspachtel 415, minimum thickness 2mm, after beeing dry to be primed.

Ceramic tiles and natural stone to be fixed with flexible tile adhesives. The prescribed installation guides of the manufacturer of the glue system especially the minimum thickness of the glue for the choosen tile size must be observed. Porcelain stoneware to be fixed by buttering and floating method, herefor put the tiles into the glue sideways while pressing it down.
Fleece or woven prescribed by the manufacturer of the glueing system has to be installed according the installation instructions.
If the allowed deflections of GIFAfloor by expected loads are bigger than the possible deflection of the floor covering, additional steps to reduce those deflections have to be planned. For further limitation of these deflections use thicker panels and/or additional supporting.

Protect the GIFAfloor against water e.g. in bathrooms by using a liquid sealant system (e.g. Knauf Flächendicht / Flächendichtband).
Lay parquet flooring as a floating system or thickness of the parquet limited to ≤ 2/3 of the thickness of the GIFAfloor panels. The installation guides of the manufacturer of the parquet and of the glueing system for the choosen type of parquet flooring have to be considered.
Fluid floor coverings like e.g. epoxy resin floors have to be elastified and, depending on the manufacturer, water vapour permeable.
Test the bond strength of the floor finish / glueing system (if necessary by usage of a specimen).

* Further informations: see Knauf Integral detail sheet F18

F199 *GIFAfloor* UB Klima

Construction, installation and surface treatment

Construction

Knauf Integral GIFAfloor panels are made of Knauf Integral GIFAtec gypsum fibre material in standardized thicknesses of 28 or 32mm. The size of the panels is 1200x600mm with tongue and groove edges to be stuck with Knauf Integral Nut-/ Feder- Klebstoff (glue for tongue and groove).

The GIFAfloor panels are laid floating on a suitable (see page 3), accurately leveled interlayer on a load bearing raw ceiling.

They carry the pipes for floor heating and cooling systems.
Joints have to be planned according their width, positioning and construction.

Grounding

The ground and the interlayer has to take at least the ultimate loads of the floor system.

The ground must be dry and solid and free of unevenesses. In case of unevenesses additional steps have to be realized.

Control joints of the structure of the building have to be placed at the same position of the GIFAfloor UB Klima.

Installation

Put edge insulation stripes or foam insulation stripes self-adhesive at the connecting building parts.
Cut at least both tongues of the first panel, put it onto the prepared structure and press against the edge insulation stripes.
Cutting of the GIFAfloor panels with e.g. circular saw with a diamond- tipped saw blade and dust exhaustion system or with e.g. a pendulum jigsaw / assembly band saw with a HM-tipped saw blade.

Cut the tongue of the second and the following panels of the first row.
Put Nut- / Feder- Klebstoff (glue for tongue and groove) into the groove of the located panel and onto the tongue of the panel to be laid (see page 6). Put the panels together butt jointed immediately in true alignment.
Second and the following rows of panels to be installed in a staggered position (half of the panel's length).

Glue coming out of the butt joint shows that the quantity of the glue is sufficient and could be scraped off e.g. by using a sharp-edged spatula next day.
The edge insulation stripes for the gap behind the last row of GIFAfloor panels have to be insert into the gap at last.
Don't walk on the installed GIFAfloor for c. 12 hours.
The floor system is receptive to the full working load after c. 24 hours (standard time of the glue is fully set).

Treatment of the surface and floor finishing

Control joints, expansion joints, transition joints and connection joints of the GIFAfloor have to be planned and must be adopted to the floor finishing.
GIFAfloor resists the castors of chairs without supplementary treatment.
The choosen floor covering must be suited for floor heating systems.
Prime with Knauf Estrichgrund F431 or with the primer prescribed of the used adhesive system.
Fitted carpet without putty, or if necessary jointing with Knauf Uniflott. Thin elastic floor coverings (e.g. PVC, Linoleum) only with full area mastic compound (self levelling) Knauf Nivellierspachtel 415, minimum thickness 2mm, after beeing dry to be primed.

Ceramic tiles and natural stone to be fixed with flexible tile adhesives preferably on double-layer systems like F183 / F193. The prescribed installation guides of the manufacturer of the glue system especially the minimum thickness of the glue for the choosen tile size must be observed.
Porcelain stoneware to be fixed by buttering and floating method, herefor put the tiles into the glue sideways while pressing it down.
Fleece or woven prescribed by the manufacturer of the glueing system has to be installed according the installation instructions.
If the allowed deflections of GIFAfloor by expected loads are bigger than the possible deflection of the floor covering, additional steps to reduce those deflections have to be planned. For further limitation of these deflections use thicker panels and/or a second layer and/or interlayer with higher rigidy.
Protect the GIFAfloor against water e.g. in bathrooms by using a liquid sealant system (e.g. Knauf Flächendicht / Flächendichtband).
Lay parquet flooring as a floating system or thickness of the parquet limited to ≤ 2/3 of the thickness of the GIFAfloor panels. The installation guides of the manufacturer of the parquet and of the glueing system for the choosen type of parquet flooring have to be considered.
Fluid floor coverings like e.g. epoxy resin floors have to be elastified and, depending on the manufacturer, water vapour permeable.
Test the bond strength of the floor finish / glueing system (if necessary by usage of a specimen).

Knauf Direct
Technical Advisory Service:
Phone: +49 9001 31-1000 *
Fax: +49 1805 31-4000 **

www.knauf-integral.de

Knauf Integral KG Am Bahnhof 16, 74589 Satteldorf

* A rate of 0.39 € per minute will be charged for calls from within the German landline network. Callers whose phone numbers are not registered in the address database of Knauf Gips KG, i.e. private builders or non-patrons, will be charged a rate of 1.69 € per minute. Calls from mobile phones will be charged 1.48 € per minute.
** 0.14 € /Min.

TI Klima/engl./D/04.11/pdf

The constructional and structural properties, and characteristic building physics of Knauf systems can solely be ensured with the exclusive use of Knauf system components, or other products expressly recommended by Knauf.