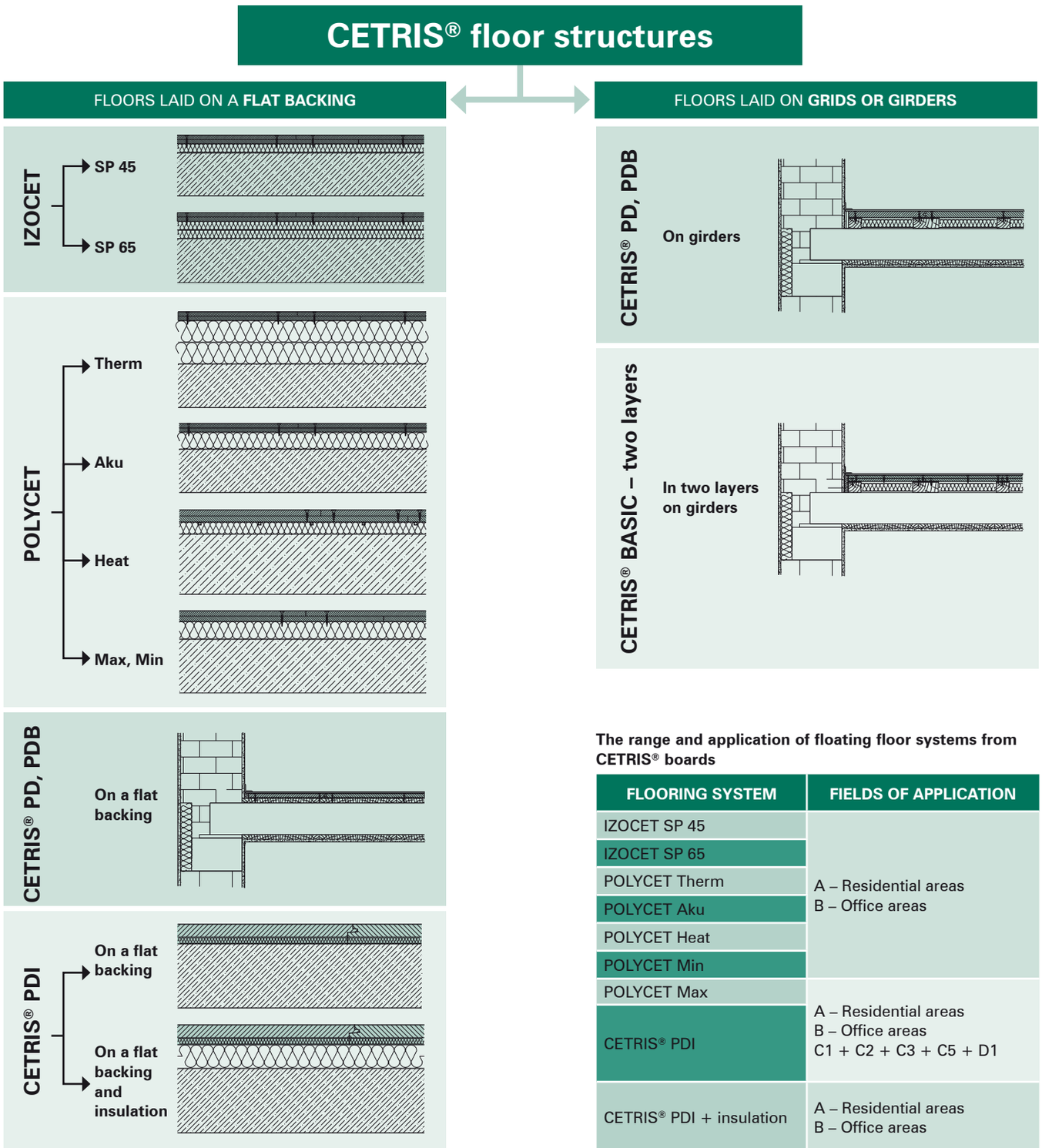
CETRIS® Floor Systems

7

CETRIS®

7.1 Types of CETRIS® Flooring Systems

Floor constructions of CETRIS® cement bonded particleboards may be designed in several basic variants pursuant to the following scheme:



The range and application of floating floor systems from CETRIS® boards

FLOORING SYSTEM	FIELDS OF APPLICATION
IZOCET SP 45	A – Residential areas B – Office areas
IZOCET SP 65	
POLYCET Therm	
POLYCET Aku	
POLYCET Heat	
POLYCET Min	
POLYCET Max	A – Residential areas B – Office areas C1 + C2 + C3 + C5 + D1
CETRIS® PDI	
CETRIS® PDI + insulation	A – Residential areas B – Office areas

The range and application of floating floor systems from CETRIS® boards

FLOORING SYSTEM	FIELDS OF APPLICATION
A. Residential areas and areas for domestic activities	Rooms of residential buildings and houses, bed rooms and rooms in hospitals , hotels and hostels bedrooms and toilets
B. Office areas	
C. Areas where there may be a gathering of people (except areas listed in categories A, B, C)	C1: Areas with tables, etc., e.g. areas in schools, cafes, restaurants, dining halls, reading rooms, receptions.
	C2: Areas with built-in seating, e.g. areas in churches, theaters and cinemas, meeting rooms, lecture or conference rooms, railway waiting rooms.
	C3: Areas without obstacles for the movement of persons, e.g. areas in museums, exhibition halls and in access public areas and office buildings and hotels.
	C4: Areas designed for motional activities such as dance halls, gymnasiums, stages.
	C5: Areas where there may be a high concentration of people, such as buildings for public events like concert halls, sports halls including stands, terraces or access areas.
D. Shopping areas	D1: Areas in small shops.
	D2: Areas in supermarkets, such as areas in warehouses.

CETRIS® Cement bonded particleboards are successfully used as floor boards for refurbishing of old wooden floors, as the load-bearing layer laid over beams or in the light floating floor systems. For their thermal conductivity ($\lambda = 0.35$ W/mK) the boards are applied in combination with various systems of floor heating. In combination with heat insulating materials they form floor constructions with the required insulation properties and fire protection.

Use of CETRIS® boards can improve acoustic and heat insulating parameters of existing floor constructions or create a new floor construction very quickly and cheaply without the need for wet processes. For assurance of quality floor construction it is necessary to observe the manufacturer recommended technological procedures respecting the properties of cement bonded particleboards CETRIS®.

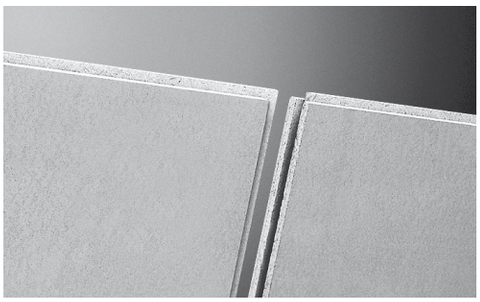
7.2 Applications of CETRIS® Floor Boards

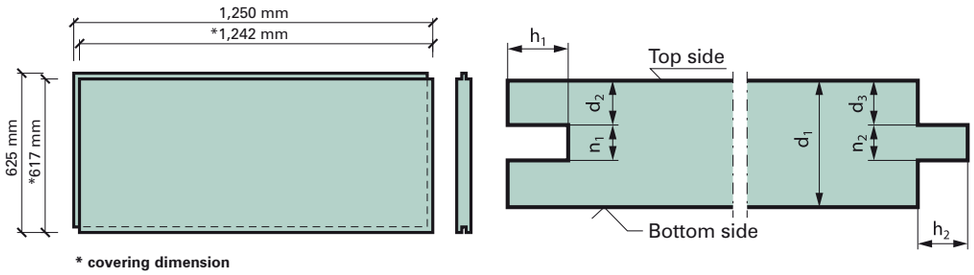
Examples of use of floor systems of CETRIS® cement bonded particleboard:
- New residential and commercial developments
- Building reconstructions and renovations
- Floors in extensions and inserts in lofts
- Buildings
- Offices, classrooms
- Special flooring solutions
- Creating a strong and flexible floor
- Slide protection device of the room
- etc

Advantages of floor systems of CETRIS® cement bonded particleboard:
- Ability to level different elevations
- Possibility of combinations of different floor systems as needed (with different usable load bearing capacities)
- Quick and easy assembly without wet processes
- Excellent acoustic and heat insulation properties
- Low area weight of floor construction
- Floor ready for walking immediately after laying
- Applicability of a wide range of floorings
- High level of fire resistance
- High level of noise reduction

7.3 Types of CETRIS® Floor Boards

7.3.1 CETRIS® PD Floor Boards



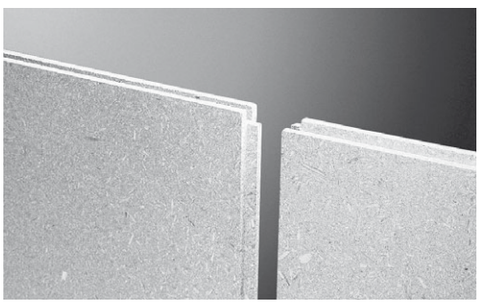


The standard manufacturing dimensions of CETRIS® PD floor boards are 625 × 1,250 mm (0.78 m²) including the tongue.
The cover size of the board is 617 × 1,242 mm (0.77 m²). The standard manufactured thicknesses are 16, 18, 20, 22, 24, 26 and 28 mm. The floor boards are provided with a groove and tongue along the perimeter with the groove depth 10 mm. On request other thicknesses may also be supplied. The bottom side of CETRIS® PD boards are marked with a stamp for laying reasons.

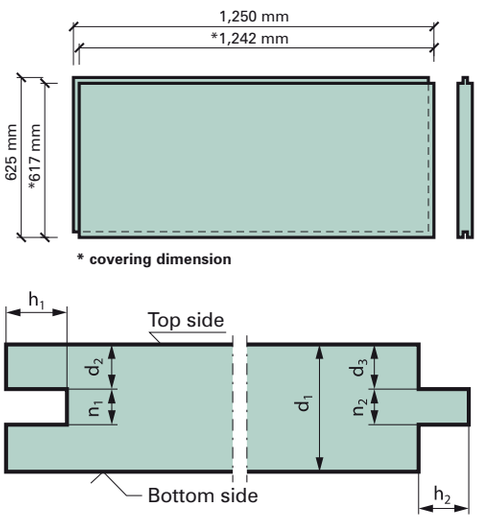
Sizes of groove and tongue of CETRIS® PD boards (all data in mm)

d_1	16	18	20	22	24	26	28
n_2	5.5	5.5	5.5	5.5	7.0	7.0	7.0
n_1	6.0	6.0	6.0	6.0	8.0	8.0	8.0
d_2	5.0	6.0	7.0	8.0	8.0	9.0	10.0
d_3	5.25	6.25	7.25	8.25	8.5	9.5	10.5
h_1	10.0	10.0	10.0	10.0	10.0	10.0	10.0
h_2	8.5	8.5	8.5	8.5	8.5	8.5	8.5

7.3.2 CETRIS® PDB Floor Boards



The standard manufacturing dimensions of CETRIS® PDB floor boards are 625 × 1,250 mm (0.78 m²) including the tongue. The cover size of the board is 617 × 1,242 mm (0.77 m²). The standard manufactured thicknesses are 16, 18, 20, 22, 24, 26 and 28 mm. The floor board is full-area sanded to achieve minimum thickness tolerances (max. ±0.3 mm). The boards are provided with a groove and tongue along the perimeter with the groove depth of 10 mm. Other thicknesses may also be supplied on order. The bottom side of CETRIS® PDB boards is marked with a stamp for laying reasons. CETRIS® PDB floor boards resemble of chipboard with their sanded look, which may tempt using the boards as the walking surface of the floors. It needs to be considered, though, that the CETRIS® PD and CETRIS® PDB boards are designed as construction layers of the floor with the relevant permitted tolerances (length, width) and not as decorative flooring. Therefore complaints concerning board appearance cannot be accepted.



Dimensiones of groove and tongue of CETRIS® PD boards (all data in mm)

d_1	16	18	20	22	24	26	28
n_2	5.5	5.5	5.5	5.5	7.0	7.0	7.0
n_1	6.0	6.0	6.0	6.0	8.0	8.0	8.0
d_2	5.0	6.0	7.0	8.0	8.0	9.0	10.0
d_3	5.25	6.25	7.25	8.25	8.5	9.5	10.5
h_1	10.0	10.0	10.0	10.0	10.0	10.0	10.0
h_2	8.5	8.5	8.5	8.5	8.5	8.5	8.5

Basic data on packaging of CETRIS® PD and CETRIS® PDB floor boards (size 1,250 × 625 mm)

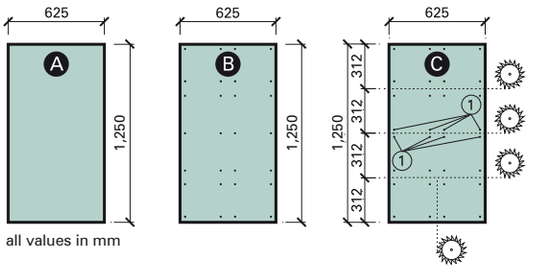
Board thickness mm	Approximate weight kg/m²	Approximate board weight kg/pc	Number of boards per pallet pcs	Board area on pallet m²	Approximate gross weight of the package kg
16	22.7	17.8	50	39.0	895
18	25.6	20.0	45	35.1	906
20	28.4	22.2	40	31.2	895
22	31.5	24.6	35	31.2	868
24	34.3	26.8	35	31.2	946
26	36.9	28.8	30	23.4	865
28	39.8	31.1	30	23.4	932

7.3.3 CETRIS® Floor Boards for Floating (Two-Layer) Floors

IZOCET and POLYCET floor systems are made of CETRIS® boards, thickness 12 mm, standard size 625 × 1,250 mm (0.78 m²), without edge chamfering. The boards are laid in two layers with an overlap of 312 mm, both layers connected with self-cutting screws with sunken heads with blades for counter-sinking and double thread 4.2 × 35 mm. For easier assembly the upper layer of the boards is pre-drilled with holes with a diameter of 4 mm. The screw spacing is specified by static tests of dry floor constructions. The mean number of connecting screws is 30 pc/m².

CETRIS® floor boards, thickness 12 mm, for floating floors

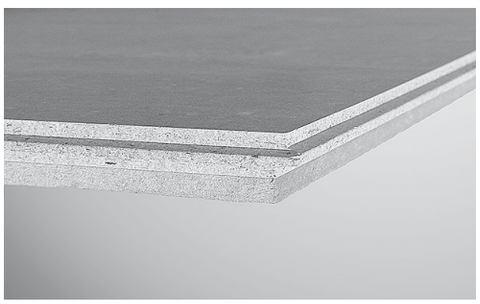
A – Standard size of CETRIS® floor board for bottom layer
B – Standard size of CETRIS® floor board for top layer with predrilled 4 mm holes
C – Adaptation of standard size of CETRIS® floor board for module size
1 – holes made on site



Basic data on packaging of CETRIS® floor boards for IZOCET and POLYCET floor systems
(size 1,250 × 625 mm)

Board thickness mm	Approximate weight kg/m²	Approximate board weight kg/pc	Number of boards per pallet pcs	Board area on pallet m²	Approximate gross weight of the package kg
12 bottom	22.7	17.8	50	39.0	895
12 top	25.6	20.0	45	35.1	906

7.3.4 CETRIS® PDI two-ply panel for dry floor technology

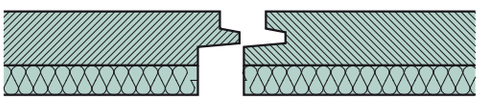


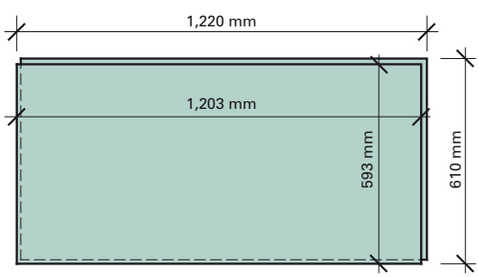
CETRIS® PDI is a two-ply panel used in dry floor technology. It consists of a 22 mm thick cement bonded CETRIS® particleboard glued to 12 mm insulating fibreboard (hardboard). The size is 1,220 × 610 mm (including the tongue) and it is 34 mm thick; it has a tongue and groove along the perimeter, the surface is smooth. The panels should be laid on a level surface area (ceiling structures, cladding). They are great for a quick and exact installation. They also spread spot-load stress over a larger area.

CETRIS® PDI panels can be laid directly on the base – a ceiling structure or cladding. The base must be level, supporting and dry. In this way, a new load spreading and insulating layer only 34 mm thick can be made with a high load capacity and resistance against spot stress.

Technical specification

Basic size	1,220 × 610 mm (with tongue), 1,203 × 593 mm (without tongue). Panel size after laying: 0.713 m²
Rough dimensional tolerance	±1.5 mm
Thickness	34 mm
Weight	ca 33.5 kg/m²
Features	Tongue & groove shaped edges
Surface finish	Without surface finish





Packing

Panel thickness	Weight approx.	Approx. weight of the panel	Number of panels on the pad	Size of the panels on the pad	Total approximate weight of panels including the pad
34 mm	33.5 kg/m²	24 kg/pc	30 pcs	22.32 m²	750 kg

7.4 General Principles of Assembly of CETRIS® Floors

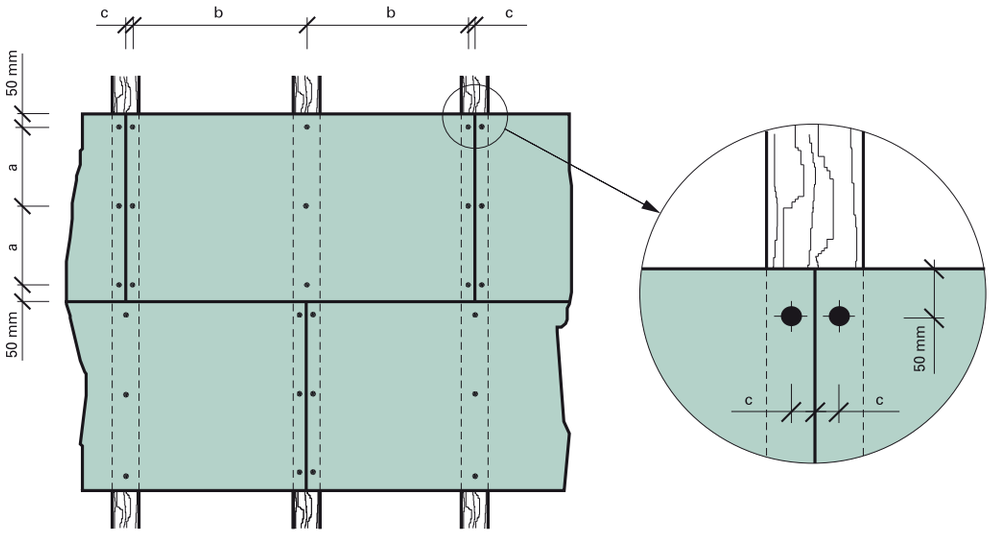
7.4.1 Fixing of CETRIS® Floor Boards

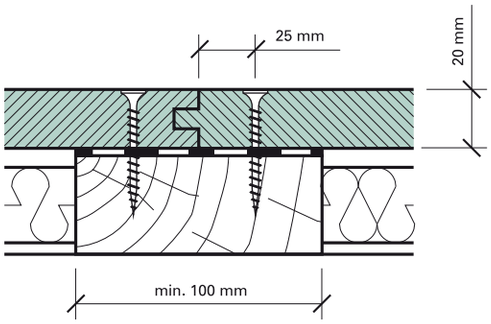
CETRIS® PD and CETRIS® PBD floor boards are fixed to the base by screwing. This is how the individual layers of the floor can be interconnected (IZOCET, POLYCET system). Stapling or manual nailing is not recommended. For screw connections self-cutting screws with sunken heads with blades for countersinking and double thread are recommended (such as VISIMPEX or BÜHNEN). Specification of the screw length is governed by the principle that the length of the screw to reach inside the base should be at least 20 mm (in the case of solid wood) or 10 mm (in the case of steel profiles).

For screwing with other types of screws and in the case of use of screws for anchoring to the steel construction, the holes in the board must be predrilled by 1.2 multiple of the diameter of the screw used. The head countersinking must also be prepared in advance.

The maximum axial distances of the connecting elements are shows in the table. The axial distances of the holes from the board edges are at least 25 mm and maximum 50 mm. The support (beam) must be at least 50 mm wide or at least 80 mm wide under the joint of two CETRIS® boards.

- Self-cutting screws used for plasterboard assembly purposes and nails are not suitable for CETRIS® board connection.
- In the case of floor parts laid over joists, the joints must be supported in at least one direction. In the case of single-direction beams, CETRIS® PD and PDB boards are laid with the longer side perpendicular to the beams.
- In the case of floor parts laid over a plank floor, the boards are laid crosswise to the direction of the original wooden floor.





Type of product Board thickness (mm)	a mm	b mm	c mm
CETRIS® boards for floating floor systems, thickness 12 mm	The upper layer of the board is predrilled by the manufacturer		
CETRIS® PD (PDB) thickness 16, 18, 20, 22, 24 mm	≤ 300	max. 621	25 ≥ c ≥ 50
CETRIS® PD (PDB) thickness 26, 28 mm	≤ 400	max. 621	25 ≥ c ≥ 50

7.4.2 Dilation Joints and CETRIS® Floor Board Laying

One of the properties of products containing wood mass is represented by size changes caused by changed air humidity – expansion and shrinkage. This also applies to CETRIS® boards and must be considered when applying the boards. Floor boards are laid tightly and the dilation is allowed along the walls where a gap of 15 mm is left.

Dilation joints divide the floor area to smaller fields. The dilation joints pass through the floor construction from the surface to the insulation or the load-bearing construction.

The dilation joints must be implemented:

- In the case of large floors exceeding 6 by 6 m
- At the points of change of thickness and type of the floor or a sudden change of the ground plan etc.
- At vertical constructions – walls, pillars
- by door thresholds.

Treatment of dilation joints (floor to wall connections) as part of floor laying:

- By corner pieces of PVC, or carpet
- By wooden edge laths (in the case of wooden flooring)
- By Schlüter® system profiles

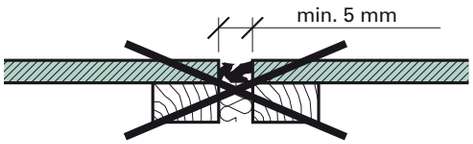
When laying the floor around the threshold always make the dilation joint as well. In the points of contact of the dry floor construction and another floor system (such as a traditional floor) it is recommended to apply the transfer system dilation profile by Schlüter® by every threshold (DILEX-EX, EKE, EDP, BWB, BWS, KS, etc.).

Dilation Joints

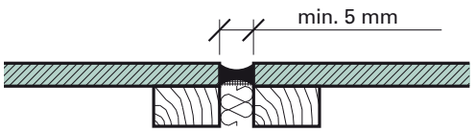
The joint width to depth ratio is 1 : 1, or 2 : 3 in the case of wider joints. The dilation joint must be dry before filling and dust must be removed. Adhesion may be improved by priming of the joint sides with the prescribed primer (or diluted filler). The primer must be absolutely dry before further steps can be taken. The main principle to be observed for correct function of the dilation joint is exclusion of three-side adhesion to the joint which may cause uneven stress of the elastic fill and tearing off the joint sides. This may be prevented by insertion of a slide insert in the joint bottom – polyethylene tape, or rope in the case of deeper joints. The result is adhesion of the elastic matter only to the opposite sides and thus even stress on the fill – the "chewing gum effect".

Dilation joint filling

1) Incorrect: Three-sided adhesion of the filler in the dilation joint

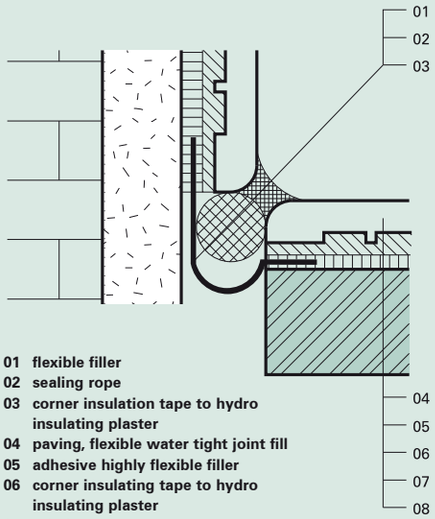


2) Correct: Separation of the filler form the joint bottom with a slide insert



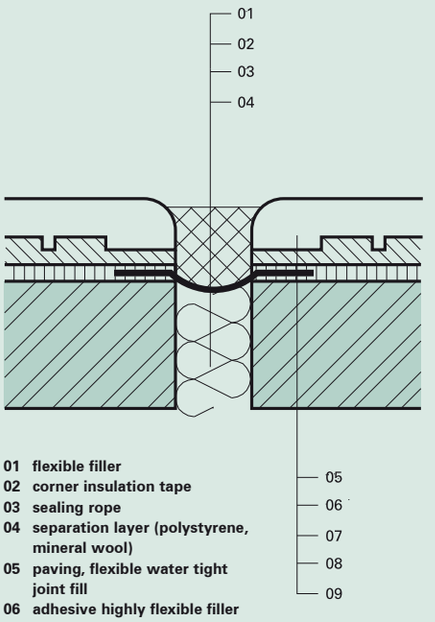
A) Joints filled with elastic mass

A_1 Floor to wall joint



01 flexible filler
02 sealing rope
03 corner insulation tape to hydro insulating plaster
04 paving, flexible water tight joint fill
05 adhesive highly flexible filler
06 corner insulating tape to hydro insulating plaster
07 priming
08 CETRIS® board

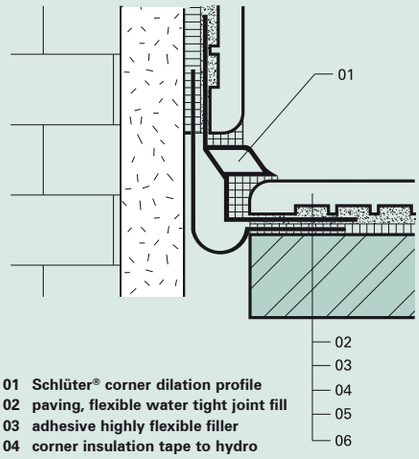
A_2 Floor detail



01 flexible filler
02 corner insulation tape
03 sealing rope
04 separation layer (polystyrene, mineral wool)
05 paving, flexible water tight joint fill
06 adhesive highly flexible filler
07 hydro insulating plaster
08 priming
09 CETRIS® board

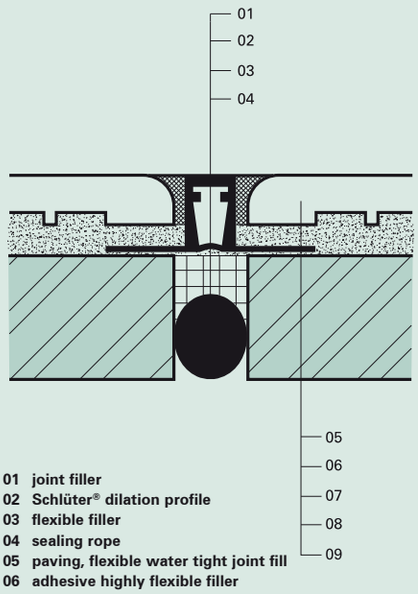
B) Joints filled with special dilation profiles

B_1 Floor to wall joint



01 Schlüter® corner dilation profile
02 paving, flexible water tight joint fill
03 adhesive highly flexible filler
04 corner insulation tape to hydro insulating plaster
05 priming
06 CETRIS® board

B_2 Floor detail



01 joint filler
02 Schlüter® dilation profile
03 flexible filler
04 sealing rope
05 paving, flexible water tight joint fill
06 adhesive highly flexible filler
07 hydro insulating plaster
08 priming
09 CETRIS® board

7.5 Floating Floors of CETRIS® Boards

Floating floor is a floor separated from the other constructions, the ceiling and the walls with an elastic material – the floor is laid in a basin of this material and "floats" in it.
The purpose of the dry floor construction is to create a new floor construction very quickly and cheaply without use of the wet process, at the same time improving acoustic and heat insulating properties of the ceiling construction. Floating floors, unlike other floor types, act favourably on the joint mechanism of the human body.

When designing dry floating constructions the increased elasticity must be considered. That is why these systems are not recommended for spaces with increased humidity (showers, bathrooms, laundries, saunas etc.) where the permitted sag might endanger the function of the hydro insulating layer.

If the floor composition includes materials other than fibreboard insulation boards their properties must be comparable to fibreboard (especially stiffness). Use of insulation boards designed for a heavy floating floor is not permitted.

7.5.1 IZOCET Floating Floor

The IZOCET dry floor construction is classified as a light floating floor (weight of the floating floor up to 75 kg/m^2). The mechanical parameters of the floor have been tested pursuant to EN 13 810-1 Wood-based panels – Floating Floors – Part 1: Performance specifications and Requirements.

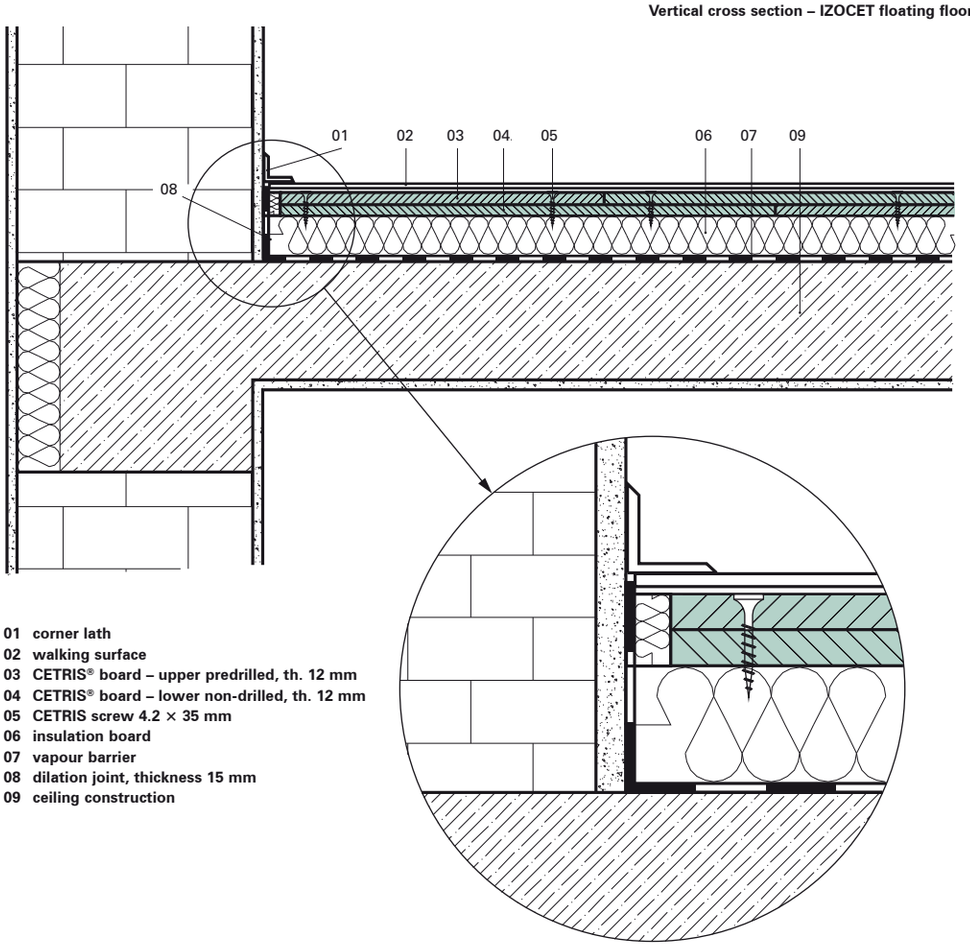
Composition of IZOCET floating floor
A – walking surface – carpet, parquet, PVC, paving
B – load-distribution layer – consists of two CETRIS® boards, thickness 12 mm, screwed together with self-cutting screws 4.2 × 35 mm with sunken heads
C – heat insulating layer – the most important part of the floating floor, assuring increased impact sound transmission loss and airborne sound transmission loss and improved heat insulation. This function is fulfilled by pressed fibreboards
D – edge strips – CETRIS® cement bonded particleboard must be separated from the walls with a material with similar sound insulation properties as the insulation itself

7.5.1.1 Description of IZOCET floor composition

Brand Name
IZOCET SP 45: CETRIS® thickness 12 mm, two layers, insulation board, thickness 19 mm
IZOCET SP 65: CETRIS® thickness 12 mm, two layers, insulation board, thickness 19 mm, two layers

Material specification
- The insulation boards are soft fibreboards (hardboards), thickness 19 mm ±1.0 mm, bulk density 250 kg/m^3 ±30 kg/m^3, supplied size 810 × 1,200 mm,
- The CETRIS® board thickness 12 mm ±1.0 mm, with tensile bending strength min. 9 Nmm^{-2}, size 625 × 1,250 mm. The boards for the upper layer are supplied predrilled (hole diameter 4 mm),
- Self-cutting screws CETRIS 4.2 × 35 mm with double thread and sunken head with blades for countersinking.

Vertical cross section – IZOCET floating floor



01 corner lath
02 walking surface
03 CETRIS® board – upper predrilled, th. 12 mm
04 CETRIS® board – lower non-drilled, th. 12 mm
05 CETRIS screw 4.2 × 35 mm
06 insulation board
07 vapour barrier
08 dilation joint, thickness 15 mm
09 ceiling construction

7.5.1.2 Properties of IZOCET Floor

Load-bearing capacity

The load-bearing capacity of IZOCET flooring has been specified by tests designed for light floor constructions by EN 13 810-1. The individual tests were performed in the acoustic chamber of the testing laboratory of CSI Praha a.s., Zlín office, on a sample size 3.6 × 3.0 m. The floor was always laid over a reinforced concrete ceiling construction.

Loading methods for test purposes:

- **Concentrated load** – object of 130 kg weight acting locally on a circular area with the diameter of 25 mm. The value of limit sag under the load is max. 3 mm.
- **Impact load** – object with the weight of 40 kg falling on the floor from the height of 350 mm. After 10 hits the limit sag value is max. 1.0 mm. The load simulated falling objects, falling persons, dancing, jumping etc.
- **Uniform load**

The achieved results show that all variants of IZOCET flooring are suitable for loads of categories A (residential areas and areas for domestic activities) and B (office space) pursuant to EN 1991-1-1 Euro code 1: Actions on structures – Part 1-1: General actions – Densities, self-weight, imposed loads for buildings. When designing dry floor constructions the permitted sags must be considered and the base load-bearing capacity must be taken into account. The IZOCET dry floor construction is not recommended for spaces with higher standard load demand than prescribed for this type of floor and for permanently wet rooms such as saunas, laundries, showers etc.

Evaluation of tests for category A (residential spaces) and B (office spaces)

PARAMETER NAME AND TEST METHOD	PARAMETER VALUE AND NTD IDENTIFICATION	IZOCET SP45	IZOCET SP 65
Resistance to concentrated load EN 13 810-1	At F_k=1.3 kN sag $d_F \leq 3.0$ mm EN 13 810-1	d_F = 2.7 mm	d_F = 2.0 mm
Resistance to dynamic impact load EN 1195	sag increment $\partial d_F \leq 1.0$ mm	∂d_F= −0.7* mm	∂d_F= 0.0 mm
Resistance to even load EN 12 431	At qK 3,0 kN/m² compression $d_q \leq 2.0$ mm EN 1991-1-1	d_q = 0.26 mm	d_q = 0.43 mm

*** Note: Impact of test object caused compacting of the insulation pad.**

Sound insulation properties

Acoustic properties of IZOCET dry flooring were specified by laboratory methods pursuant to EN ISO 140-3, EN ISO 140-6 over standardised ceiling slab (reinforced concrete ceiling construction, thickness 120 mm).
With regard to quality of impact sound transmission loss the IZOCET floor may be used over load-bearing constructions with area weight of 300 kg/m² or over ceiling constructions without acoustic requirements.

FLOOR COMPOSITION	SOUND TRANSMISSION LOSS INDEX R_W	STANDARDISED NOISE LEVEL INDEX L_{nv}
IZOCET SP 45	58 dB	54 dB
IZOCET SP 65	59 dB	52 dB

Calculated informative sound insulation parameters of IZOCET flooring over wooden ceiling construction:
Airborne sound transmission loss index ..... R_w = 58 dB
Standardised impact sound level index ..... L_{nw} = 62 dB
Reduction of standardised impact sound level ..... ΔL_w = 8 dB

Heat insulating properties

Heat insulating properties of an IZOCET floating floor are characterised by the properties of the fibreboards.

BOARD	HEAT CONDUCTIVITY COEFFICIENT U
Insulation fibreboards	0.05 W/mK
CETRIS®	0.277 W/mK

FLOOR	HEAT RESISTANCE R
IZOCET SP 45	0.49 m²K/W
IZOCET SP 65	0.89 m²K/W

7.5.1.3 Preparation of Base before Floor Laying

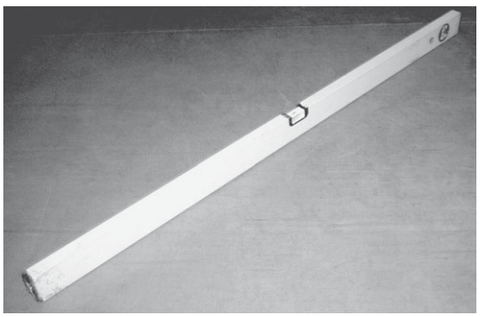
Load-Bearing Base, Requirements and Preparation

To assure the final quality of the floating floor surface for the walking layer laying it is necessary to prepare the load-bearing base well. The load-bearing base may be a massive ceiling construction (reinforced concrete ceiling slab, ceramic ceiling, HURDIS ceiling etc.) or a wooden slab and girder ceiling with plank cover, a joist ceiling, a log ceiling or a concrete foundation slab.

The load-bearing base is expected to be able to transfer the minimum load = the standardised (usable) load + the floor weight in compliance with the requirement for the maximum ceiling construction sag.

The IZOCET floating floor requires a dry load-bearing base with the max. planarity tolerance of 4 mm per 2 m. If the maximum permitted planarity tolerances – of the load-bearing base are not met then it is not possible to subsequently guarantee the maximum permitted sag under the walking surface of the floor. Local tolerances may reach up to 5 mm (for example individual protruding fills, concrete burrs or knags in the wooden base) as there is the possibility of a subsequent levelling of these local irregularities with the insulation layer shaping.

If the sufficient planarity of the base is not present then the base surface must be levelled.

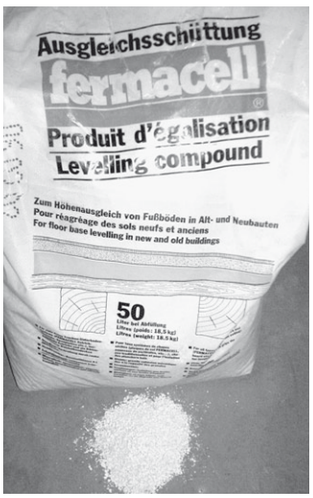


Load-Bearing Surface Levelling

Surface levelling may be done two ways:

1. Wet method – with the help of cement mortar with sand or with a layer of self-levelling plaster pursuant to the instructions of the individual manufacturers

2. Dry sub-base – it is possible to use dry levelling mixes based on crushed porous concrete, pearlite. The minimum height of the sub-base must be 10 mm and maximum 40 mm. The recommended mixes include FERMACELL, BACHL BS Perlit, Liapor, SILIPERL.



Before levelling the surface of wooden log ceiling the quality of load bearing construction should be assessed. Beaten, bent (deviations over 5 mm) or otherwise damaged planks should be replaced first. Cardboard should be laid over the ceiling as protection against drops of the dry sub-base mix through openings after knags and gaps between the planks.

The levelling sub-base is spread according to instructions by the individual manufacturers.

Recommended procedure:

- Specify the required final height of the constructed floor and mark it on the adjacent walls (1 m above the final floor level)
- Pour the sub-base mix along one wall in a strip of about 20 cm width up to the required sub-base height (it is necessary to respect the construction height of the floor system). In the distance equal to the length of the smoothing lath create a parallel sub-base strip.
- Place the levelling laths on the strips and level with a spirit level. For this activity you need a set of smoothing laths (such as wooden prisms). The smoothing lath must be provided with side dents corresponding to the height of the levelling laths.
- Fill the space between the strips with the sub-base mix and use the smoothing lath to level the surface of the sub-base to the required elevation level.

Base Humidity

Maximum permitted mass humidity of the base:

- Wooden base – 12 %
- Silicate base – 6 %

Humidity Insulation

To prevent humidity transport to the heat insulation and acoustic insulation layer, this layer must be separated from the ceiling construction with a hydro-insulating layer. This barrier mainly applies to the load-bearing ceiling construction, which contains residual humidity, or where increased pass of humidity through the ceiling construction is expected. For this purpose clean the surface and cover it with a hydro-insulating foil such as PE foil, thickness 0.2 mm with overlaps between the individual strips at least 200 mm (or glue the foil joints with an adhesive tape). The foil should be drawn up the adjacent vertical constructions above the assumed floor surface level.

When levelling the surface with the self-levelling plaster the humidity insulation is placed over the plaster. In the case of levelling with the sub-base mix the humidity insulation is placed between the load-bearing construction and the sub-base.

When laying the floor over a wooden load-bearing construction, use of PE foil is not recommended to preserve “breathing” of the ceiling. If there are rooms under the ceiling where increased humidity is expected (a bathroom, a kitchen) then it is necessary to prevent humidity transport to the construction or its free evaporation must be assured.

The humidity insulation must be part of the whole ceiling and floor construction.

For the purpose of potential venting of wet constructions, a microventilating layer may be used (such as OLDROYD, TECHNODREN).

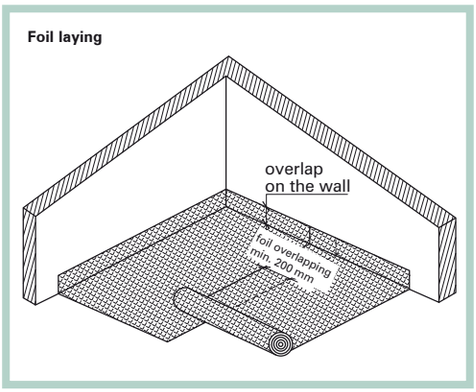
7.5.1.4 IZOCET Floating Floor Laying

1 The IZOCET floating floor is laid as the final construction after completion of the "wet" construction works (partition building, plastering etc.)

2 The IZOCET floating floor is laid over a clean and dry surface.

3 Before the floor construction laying, the floor parts should be acclimatised for the minimum period of 48 hours at the minimum temperature of 18°C and relative air humidity max. 70 %. The acclimatisation approximates the manufacturing humidity of the board to the balanced humidity of the application and reduces the problem of later shape changes.

4 Cover the load-bearing ceiling construction with PE foil, or paper cardboard in the case of a wooden ceiling, or a microventilating layer, with 200 mm overlaps between the strips and overlap up the vertical constructions at least to the height of the floor construction.

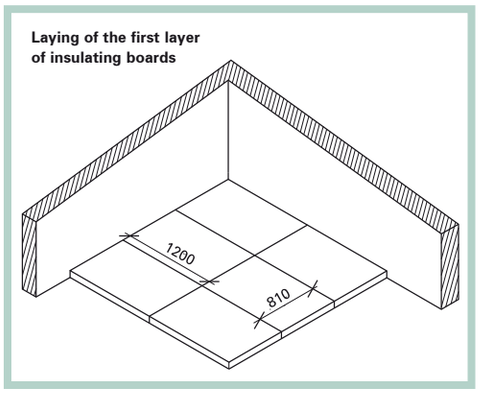


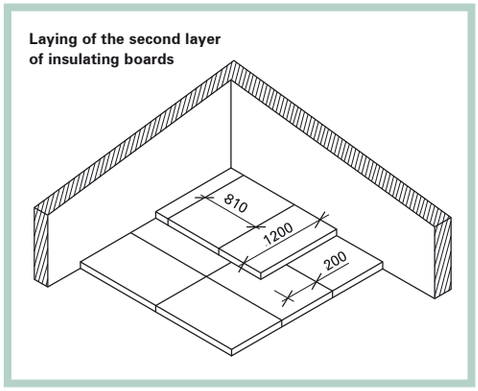
5 If necessary, level the base with a dry sub-base, which is only spread along part of the area.

6 If the floor construction does not comply with the criteria of load-bearing capacity under local load, it is recommended to eliminate the effects of unfavourable distortions by application of base load-distribution elements. These load distributing elements – 100 mm wide planks – are placed between rooms, between individual floor types and where load with concentrated objects higher than the load-bearing capacity of the given floor type is expected.
Where the dry floor construction passes a door threshold the issue of installation of the door frame must be resolved. The floor must be levelled and padded up to the exact height along the door frame length under the central bottom partition. When fixing the door threshold it is necessary to use longer screws to connect the door frame with the base profile. In the case of door threshold it is recommended to always install the base laths on both sides of the threshold under the CETRIS® boards (see the solution of details of the IZOCET floating floor). To assure quality settlement of the door threshold especially over the walking surface of ceramic tiles it is recommended to cover the threshold with silicone filler before the threshold laying.

7 Specify the direction of the upper CETRIS® board layer on which the direction of the bottom boards depends. The individual layers must cross each other. The joints of the insulation boards and the CETRIS® floor boards must not be one above the other.

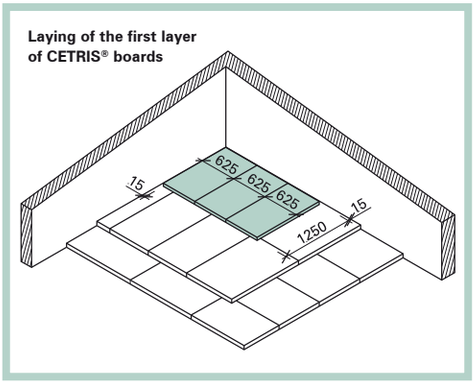
8 The insulation boards are laid tightly along the vertical constructions. The insulation boards are laid without dilation gaps in the surface. When using two layers of insulation boards the upper layer is laid with an overlap of at least 200 mm over the bottom layer.



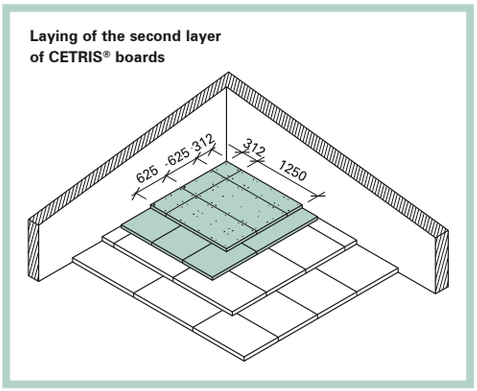


9 Start CETRIS® board laying with a whole board opposite the door. The boards are laid tightly with a cross gap.

10 Create 15 mm wide dilation joints around vertical constructions (walls, pillars etc.).



11 The second layer of CETRIS® boards is laid crosswise in relation to the bottom layer with the overlap by 1/3 of the board, i.e. 312 mm. For easier assembly the upper layer of the CETRIS® boards is predrilled with holes with a diameter of 4 mm.



12 Insert a 5 mm wide strip of mineral wool (such as ORSIL) along the vertical constructions to prevent undesirable filling of the dilation joint by the subsequent works. The strip is cut to the required height after completion of the final surface finish of the floating floor before the flooring laying.

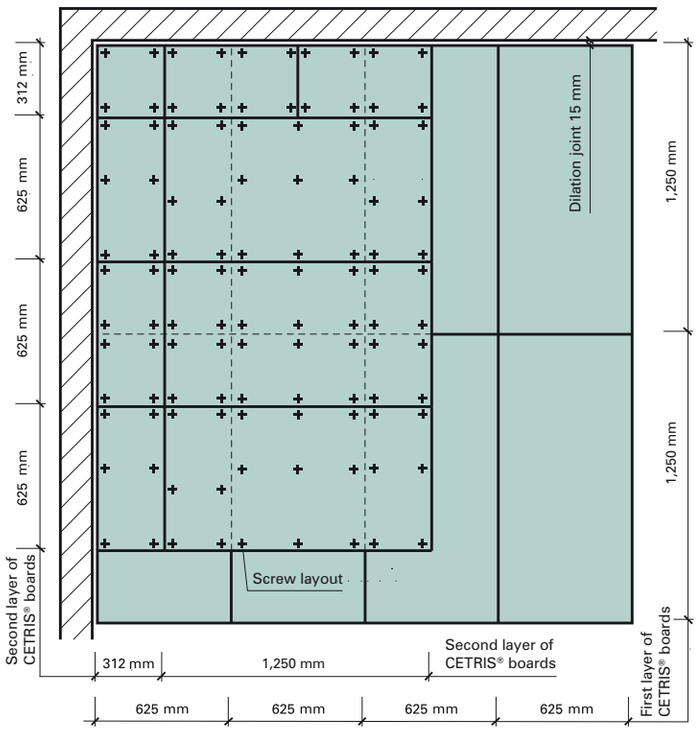
13 The CETRIS® boards must be joined with self-cutting screws with a diameter of 4.2 mm and length 35 mm with sunken heads immediately after laying. The screws are placed in the predrilled holes. In case of additional cutting of the boards, the screws must be placed 25 – 50 mm from the board edge with a maximum spacing between the individual joints of 300 mm. The screws must not pass through the joints of the bottom layer of the CETRIS® boards. The average number of connecting screws per 1 m^2 is 28 pieces.

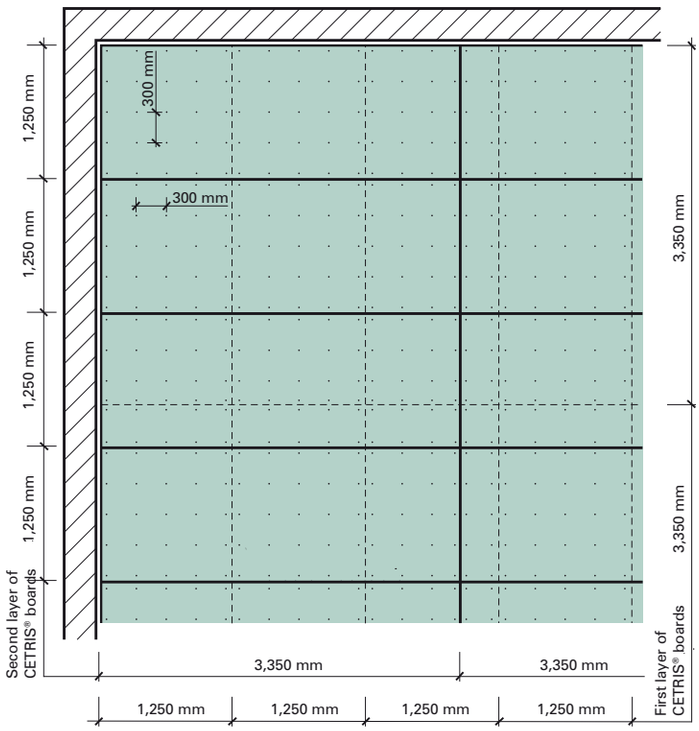
When laying basic formats of CETRIS® board (1,250 × 3,350 mm) about 20 screws per square

meter will be sufficient for screwing the boards together if the following conditions are met:

- min. distance of the screw from the board edge 25 mm
- max. distance of the screws on the board surface 300 mm
- in the point of contact of the bottom board layer double screwing is needed – to both boards of the bottom layer
- the upper board must be predrilled with the hole diameter of 4 mm

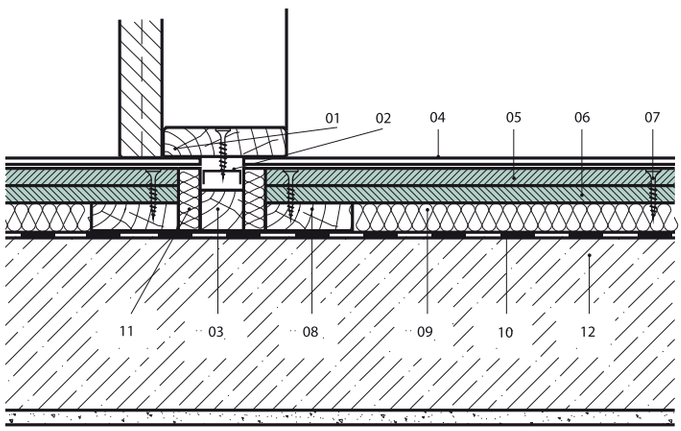
14 It is recommended to use electric screwdrivers for the screwing. When joining CETRIS® boards it is necessary to locally press the boards, ideally with the weight of the worker. This will prevent lifting of the upper board layer and potential deposits of the sawdust from drilling between the joints. Start screwing individual boards from the centre of the board.

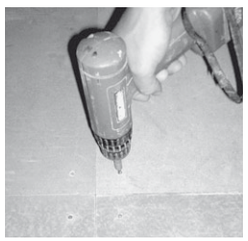




7.5.1.5 Details of IZOCET Floating Floor

Threshold crossing
Vertical cross-section





01 wooden door threshold
02 threshold joint
03 wooden base profile
04 walking surface
05 CETRIS® floor board, th. 12 mm, upper layer, predrilled
06 CETRIS® floor board, th. 12 mm, bottom layer
07 screw 4.2 × 35 mm
08 wooden base lath
09 insulation board
10 vapour barrier
11 dilation joint 15 mm
12 ceiling construction

15 After joining both layers of CETRIS® boards cut the edge strip and the insulation foil in the required height with a knife.

16 The screwed together floor can be walked on immediately. The walking layer of the flooring may be laid immediately, too.

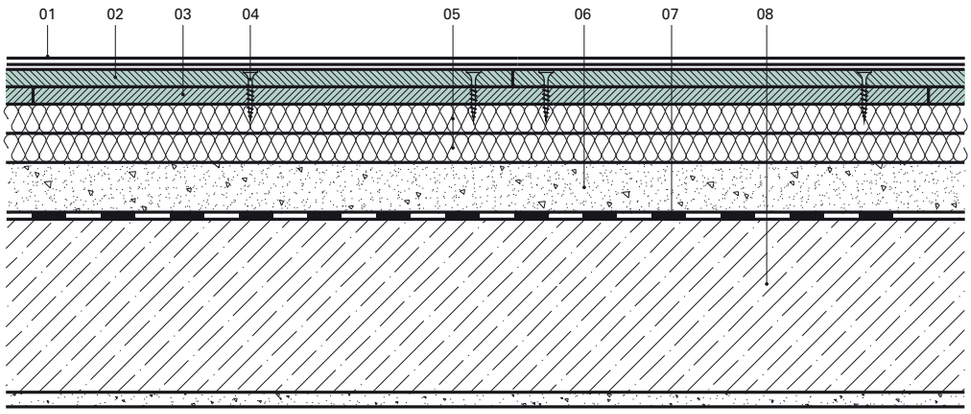
17 When laying large floors it is recommended to lay the insulation and the boards by dilation field. This will reduce the possibility of damage to the insulation by worker traffic.

Note: Drying and continuous acclimatisation of the CETRIS® boards after the floor laying may lead, especially in winter months, to moderate lifting of the free edges (by the walls, in the corners). This effect may be eliminated by local anchoring of the CETRIS® boards to the base (subfloor, ceiling).

All dimensions in mm.

Levelling of uneven base surface, increase of construction height

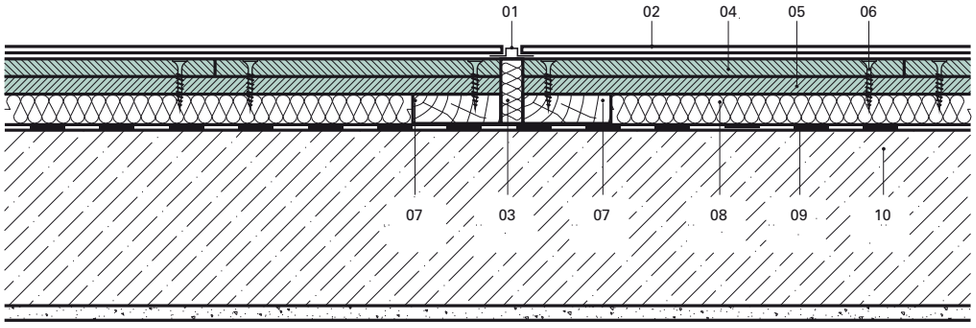
Vertical cross-section



01 walking surface
02 floor board CETRIS®, thickness 12 mm, upper layer, predrilled
03 floor board CETRIS®, thickness 12 mm, bottom layer
04 screw 4.2 × 35 mm
05 insulation board 2 × 19 mm
06 sub-base (Fermacel, BACHL Perlit BS, Silipert) – max. thickness 40 mm
07 vapour barrier
08 ceiling construction

Dilation joint in the middle of the surface

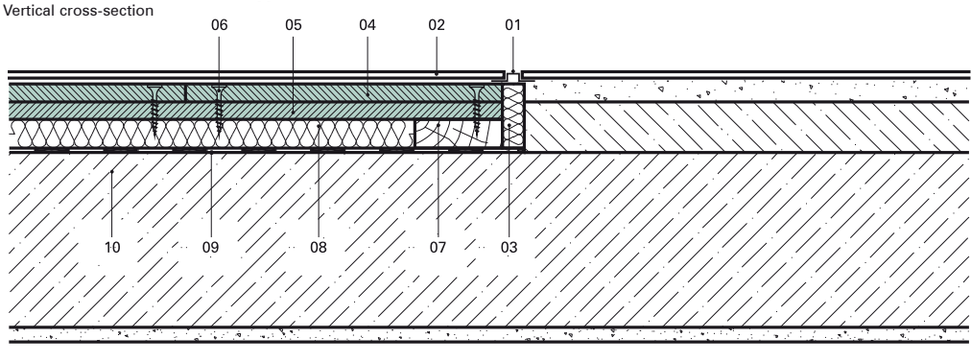
Vertical cross-section



01 dilation profile Schlüter DILEX – BWB
02 walking surface
03 dilation joint thickness 15 mm
04 floor board CETRIS®, th. 12 mm, upper layer, predrilled
05 floor board CETRIS®, th. 12 mm, bottom layer
06 screw 4.2 × 35 mm
07 wooden lath
08 insulation board
09 vapour barrier
10 ceiling construction

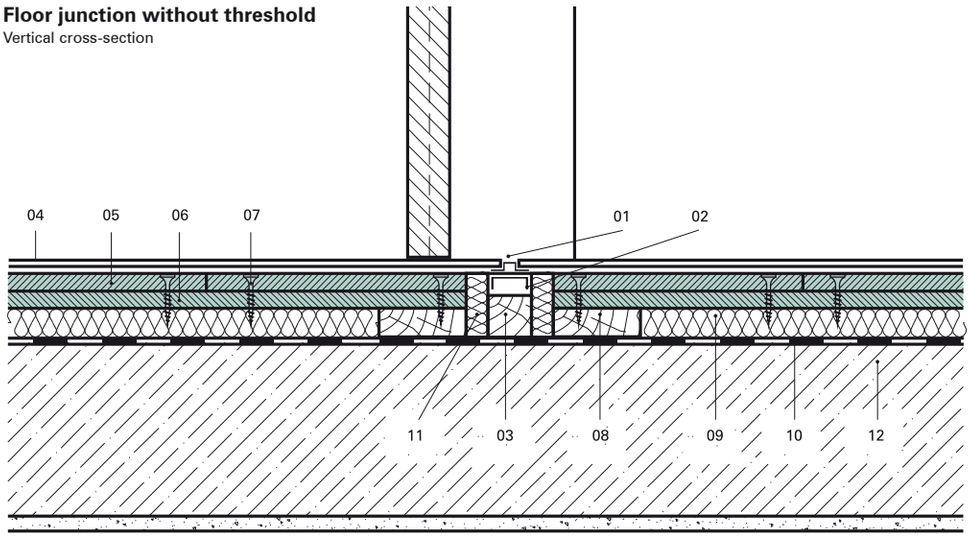
Transfer to another floor type

Vertical cross-section



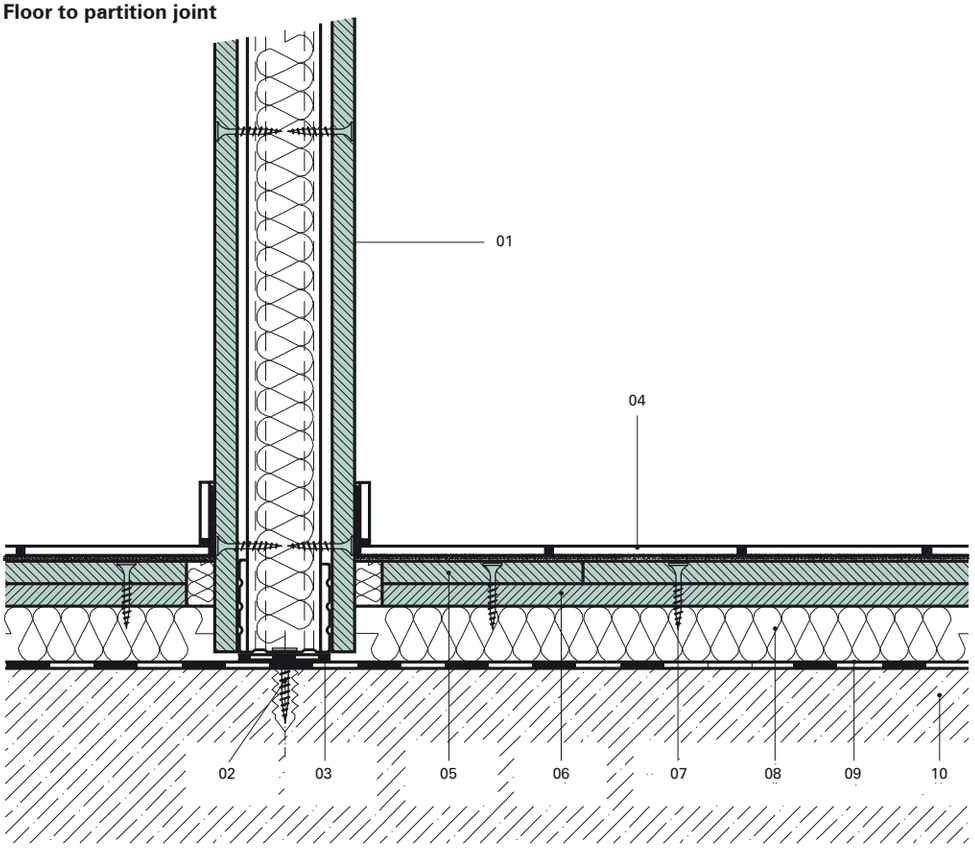
01 dilation profile Schlüter DILEX – BWB
02 walking surface
03 dilation joint thickness 15 mm
04 floor board CETRIS®, th. 12 mm, upper layer, predrilled
05 floor board CETRIS®, th. 12 mm, bottom layer
06 screw 4.2 × 35 mm
07 wooden lath
08 insulation board
09 vapour barrier
10 ceiling construction

Floor junction without threshold
Vertical cross-section



01 dilation profile Schlüter DILEX
02 threshold joint
03 wooden base profile
04 walking surface
05 floor board CETRIS®, th. 12 mm, upper layer, predrilled
06 floor board CETRIS®, th. 12 mm, bottom layer
07 screw 4.2 × 35 mm
08 wooden lath
09 insulation board
10 vapour barrier
11 dilation joint 15 mm
12 ceiling construction

Floor to partition joint



01 partition
02 dowel
03 sealing washer
04 walking surface
05 floor board CETRIS®, th. 12 mm, upper layer, predrilled
06 floor board CETRIS®, th. 12 mm, bottom layer
07 screw 4.2 x 35 mm
08 insulation board
09 vapour barrier
10 ceiling construction

7.5.2 POLYCET Floating Floors

The POLYCET floating floor extends the CETRIS® cement bonded particleboard offer of light floating floors. The composition of the dry floating floor includes insulation boards of elasticised foam polystyrene – in various combinations of types and thicknesses pursuant to the application. The load distributing layer consists of two layers of CETRIS® cement-bonded particleboards. These floors are designed for residential and office spaces. Like in the case of the IZOCET system, POLYCET floor layers must count on increased elasticity. That is why these systems are not recommended in rooms with increased humidity (showers, bathrooms, laundries, saunas etc.) where the permitted sags might threaten the functionality of the hydro insulating layer.
Designs of the composition and implementation of the POLYCET floor must comply with the principles defined in the instruction for assembly. In the case of replacement of the insulation boards based on EPS insulation, boards of a lower class cannot be used.

The POLYCET dry floor construction is a representative of the category of light floating floors (floating floor weights up to 75 kg/m^2). All tests and assessments have been performed by the accredited testing laboratory of the Centrum stavebního inženýrství Praha a.s., [Centre of Civil Engineering, joint-stock company, Prague, Zlín office], on the basis of the requirements of the following standards:

- ČSN 74 45 05 Floors, General Provisions
- EN 13 810-1 Wood-based panels – Floating floors – Part 1: Performance specifications and requirements
- EN ISO 140-3 Acoustics. Measurement of sound insulation in buildings and of building elements. Part 3: Laboratory measurement of airborne sound insulation of building elements (ISO 140-3:1995)
- EN ISO 140-6 Acoustics – Measurement of sound insulation in buildings and of building elements – Part 6: Laboratory measurement of impact sound insulation of floors.
- EN ISO 717-1 Acoustics – Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation
- EN 717-2 Acoustics – Rating of sound insulation in buildings and of building elements – Part 2: Impact sound insulation.

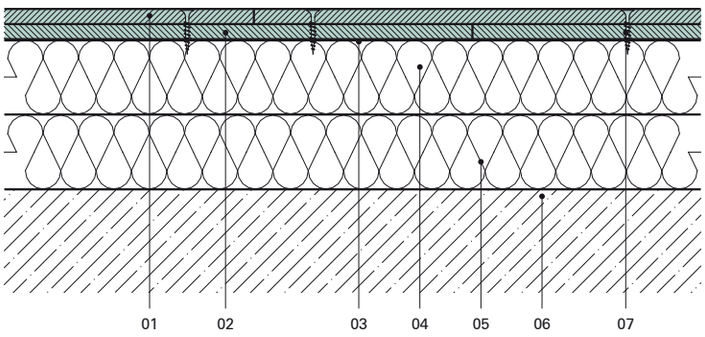
Composition of POLYCET floating floor

- **Walking surface** – may consist of carpet, parquet, PVC, pavement (recommended maximum tile size 200 × 200 mm).
- **Load-distributing layer** – two layers of CETRIS® boards, thickness 12 mm, screwed together with self-cutting screws with sunken heads (or glued with a glue spread across the whole surface).
- **Separation layer** – softened foil of foam polyethylene (elimination of creaking between CETRIS® and EPS). In the case of use of insulation boards with aluminium foil the separation is not necessary.
- **Heat insulating layer** – the most important part of the floating floor, increases impact sound transmission loss, at the same time improving heat insulation. The POLYCET floor includes one or a maximum two layers of insulation of elasticised foam polystyrene EPS, maximum thickness 60 mm
- **Perimeter tapes** – the floating floor must be separated from the walls with a material of similar sound insulation properties as the insulation itself.

7.5.2.1 Description and Variants of POLYCET Floors

POLYCET Therm – light floor with high thermal resistance

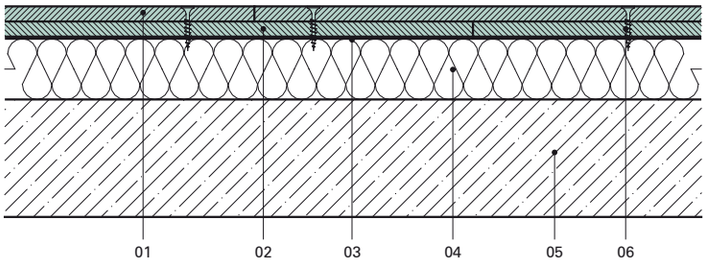
POLYCET Therm flooring is the ideal solution especially for basement floors (laid on the natural ground). Use of two layers of polystyrene insulation boards of EPS 100Z class with the total height of 120 mm results in a high value of thermal resistance, significantly exceeding the minimum required values and corresponding to the recommended values of the heat transfer coefficient pursuant to ČSN 73 0540-2.



01 CETRIS® cement bonded particleboard 12 mm, upper drilled
02 CETRIS® cement bonded particleboard 12 mm, bottom
03 separation layer
04 foam polystyrene EPS 100 Z, thickness 60 mm
05 foam polystyrene EPS 100 Z, thickness 60 mm
06 ceiling construction
07 screw 4.2 × 35 mm

POLYCET Aku – light floor for ceiling constructions between residential units

Even with the low total height of POLYCET Aku flooring, the requirements for impact sound transmission loss pursuant to EN ISO 717-1,2 and ČSN 73 0532 for ceiling constructions in residential houses are met. The function of the acoustic layer is fulfilled by foam polystyrene insulation of EPS T3500 class, which meets the requirements or insulation against structural noise and impact sound.

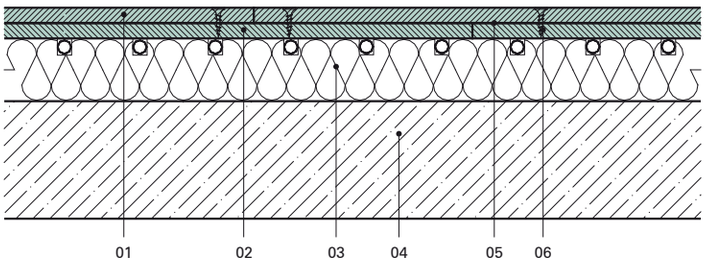


01 CETRIS® cement bonded particleboard 12 mm, upper drilled
02 CETRIS® cement bonded particleboard 12 mm, bottom
03 separation layer
04 foam polystyrene EPS T 3500, thickness 50 mm
05 ceiling construction
06 screw 4.2 × 35 mm

CETRIS®
Floor Systems

POLYCET Heat – light floor with inbuilt floor heating

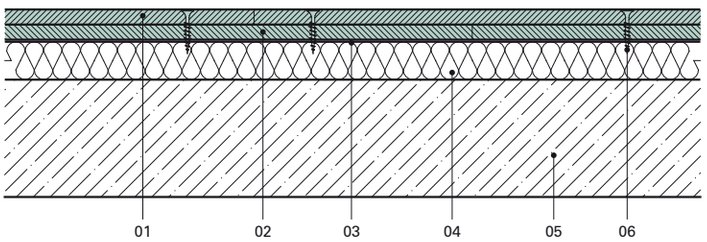
The insulation boards of the POLYCET Heat floor are adapted elements of foam polystyrene of EPS 100S class. These parts are provided with self-closing grooves for pipeline laying and covered across the whole surface with aluminium foil th. 0.09 mm (for ideal heat transfer). On the bottom side of the board there are air grooves. The self-sticking overlaps of the aluminium foil are used for attachment of the adjacent insulation boards. Stiffness of the load-distribution layer of two CETRIS® boards, thickness 12 mm, is reinforced by gluing across the whole surface (Uzin MK-73 glue) and screwing with screws of max. length 25 mm (6 screws per board size 1,250 × 625 mm).



01 CETRIS® cement bonded particleboard 12 mm, upper drilled
02 CETRIS® cement bonded particleboard 12 mm, bottom
03 foam polystyrene EPS 100 S, th. 50 mm with aluminium foil and underfloor heating pipe
04 ceiling construction
05 UZIN MK-73 adhesive (800 – 1,000 g/m²)
06 screw 4.2 × 35 mm

POLYCET Max – light floor with higher imposed load

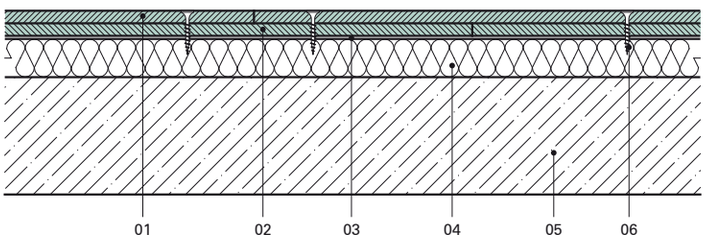
Most of light floating floor is designed for rooms with load category A or B pursuant to EN 1991 - 1-1 Eurocode 1: loads of structures - Part 1-1: General loads - Densities, self-weight and imposed loads for building constructions. The floor POLYCET has been tested pursuant to EN 13810 Wood-based panels - Floating floors - Part 1: Specification utility qualities and requirements for higher load classes - C1-C3, C5 (areas in schools, theaters, office buildings). High mechanical strength is achieved by using the insulation of expanded polystyrene for high pressure loaded floor and roof structures. New for light systems floors with a distribution layer made from two layers of cement bonded particleboards CETRIS® is also a system of mutual connection - nailing modern technology with significantly less time assembly. CETRIS® boards are stapled ("board to board" system) with Haubold staples, or optionally screwed with screws (predrilled upper board).



01 CETRIS® cement bonded particleboard 12 mm, upper drilled
02 CETRIS® cement bonded particleboard 12 mm, bottom
03 separation layer
04 foam polystyrene EPS 200S, thickness 30 mm
05 ceiling construction
06 screw 4,2 × 35 mm, eventually clip Haubold KG 700 CNK

POLYCET Min – lightweight floating low cost floor

The floating floor POLYCET Min is designed for rooms with load category A or B pursuant to EN 1991 - 1-1 Eurocode 1: loads of structures - Part 1-1: General loads - Densities, self-weight and imposed loads for building constructions. The whole composition excels primarily in low cost while maintaining favorable mechanical and acoustic parameters. Two layers of cement bonded particleboards CETRIS® thickness 10 mm, mutually overlapped and screwed together with countersunk head screws (upper board predrilled) are put on polystyrene foam insulation for noise reduction.



01 CETRIS® cement bonded particleboard 10 mm, upper drilled
02 CETRIS® cement bonded particleboard 10 mm, bottom
03 separation layer – foam foil 2 mm thickness
04 foam polystyrene EPS T4000, thickness 30 mm
05 ceiling construction
06 screw 4,2 × 35 mm

Material Specification

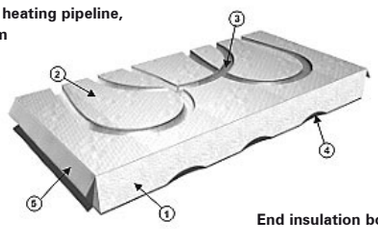
- CETRIS® boards are cement bonded particleboards, thickness 12 ±1 mm, with tensile bend strength min. 9 MPa, size 1,250 × 625 mm. Variants POLYCET Therm and Aku are supplied with predrilled upper layer boards (hole diameter 4 mm). Alternatively the POLYCET Therm and Aku may also use the basic board size 1,250 × 3,350 mm.
- Self-cutting screws 4.2 × 35 mm with double thread and sunken heads with blades for countersinking (for screwing together CETRIS® boards in the POLYCET Therm and Aku variants).
- Self-cutting screws 4.2 × 25 mm with double thread and sunken heads with blades for countersinking (for screwing together CETRIS® boards in the POLYCET Heat variant).
- Insulation foil of expanded foam polyethylene with closed cellular structure, made without use of freon. A separation layer for elimination of creaking and increased impact sound transmission loss.
- Glue UZIN MK 73 for gluing together CETRIS® boards across the whole surface in the POLYCET Heat variant. A solvent type glue based on artificial resin for particleboard, cement, magnesium, heated plasters, cast bitumen and insulation layers UZIN. Very easy to spread and fill, quickly binding, with hard elasticity and high shear strength.
- Insulation boards EPS of elasticised foam polystyrene, type and thickness specified individually for each composition. Insulation layers of lower class or thicker than 60 mm cannot be used. A maximum two layers of insulation boards are permitted.

Survey of used types of EPS in POLYCET floor composition and classification of their properties pursuant to EN 13163

VARIANT OF POLYCET FLOOR SYSTEM	THERM	AKU	HEAT	MAX
Insulation agent type – EPS	EPS 100 Z	EPS T3500	EPS 100 S Stabil for floor heating	EPS 200 S Stabil
Heat conductivity coefficient	0.038 W/m.K	0.045 W/m.K	0.038 W/m.K	0,034 W/m.K
Size	1,000 × 500 mm		2,000 × 1,000 (Bachl) 480 × 960 (Fana)	1 000 × 500 mm
Thickness (for POLYCET system)	10 – 60 mm	15 – 50 mm	20 – 50 mm	10 – 30 mm
Thickness tolerance T	±2 mm			
Length tolerance L for widths <500 mm	±3 mm			
Width tolerance W for widths <500 mm	±3 mm			
Rectangularity S	±5 mm/m			
Planarity P4	±10 mm/m			
Pressure tension CS(10)	100 kPa	•	100 kPa	200 kPa
Stability DS (N)	±0.5 %		±0.2 %	
Dimensional stability DS (70,-)	1 %	•	1 %	
Dimensional stability DLT (1)	5 %	•	5 %	
Dynamic solidity SD	•	10 – 30 MN/m³	•	
Compression factor CP3	•	CP3 – 3 mm	•	
Reaction to fire class pursuant to EN 13 501-1	E			

Insulation boards for floor heating are provided with self-closing grooves for pipeline laying and are covered with aluminium foil across the whole surface. There are air grooves on the bottom side of the board. Self-sticking overlaps are used for attachment of the adjacent insulation boards. The end insulation board allows for turning the direction of the heating pipeline.

01 EPS board
02 aluminium foil
03 self-closing grooves for heating pipeline, diameters 16 and 17 mm
04 air grooves
05 aluminium foil overlaps



End insulation board

Flat insulation board

7.5.2.2 Properties of POLYCET Flooring

Load-bearing capacity
When designing dry floor structures, with permitted deflections should be reckoned, and load ratings of the substrate should be considered. The POLYCET dry floor construction is not recommended for spaces with higher standard load demand than prescribed for this type of floor and for permanently wet rooms such as saunas, laundries, showers etc.

The load-bearing capacity of POLYCET flooring has been specified by tests designed for light floor constructions by EN 13 810-1. The individual tests were performed in the acoustic chamber of the testing laboratory of CSI Praha a.s., Zlín office, on sample size 3.6 × 3.0 m. The floor was always laid over a reinforced concrete ceiling construction.

Loading methods for test purposes:
- **Concentrated load** – object of 130 kg weight acting locally on a circular area with the diameter of 25 mm. The value of limit sag under the load is max. 3 mm.
- **Impact load** – object with the weight of 40 kg falling on the floor from the height of 350 mm. After 10 hits the limit sag value is max. 1.0 mm. The load simulated falling objects, falling persons, dancing, jumping etc.

The achieved results show that all variants of POLYCET flooring are suitable for loads of **category A** (residential areas and areas for domestic activities) and **category B** (office space) pursuant to EN 1991-1-1 Euro code 1: Actions on structures – Part 1-1: General actions – Densities, self-weight, imposed loads for buildings. When designing dry floor constructions, the permitted sags must be considered and the base load-bearing capacity must be taken into account.

Evaluation of tests for category A (residential spaces) and category B (office spaces)

PARAMETER NAME AND TEST METHOD	PARAMETER VALUE AND NTD IDENTIFICATION	POLYCET THERM	POLYCET AKU	POLYCET HEAT	POLYCET MIN
Resistance to concentrated load EN 13 810-1	At F_k =1.3 kN sag d_F ≤3.0 mm EN 13 810-1	d_F = 1.7 mm	d_F = 1.9 mm	d_F = 1.9 mm	d_F = 2.58 mm
Resistance to dynamic impact load EN 1195	Sag increment ∂d_F ≤1.0 mm	d_F = 0.1 mm	d_F = 0.0 mm	d_F = 0.2 mm	∂d_F = 0.15 mm
Resistance to uniform load EN 12 431	At qK 3.0 kN/m² compression d_q ≤2.0 mm EN 1991-1-1	d_F = 0.9 mm	d_F = 0.8 mm	d_F = 1.0 mm	d_F = 0.48 mm

Variant of the **POLYCET Max** floor is designed for higher category load pursuant to EN 1991-1-1:
C1 – areas with tables - eg. in schools, cafés, restaurants, canteens, etc.
C2 – areas with integrated seats – eg. areas in churches, theaters, cinemas, meeting rooms, waiting rooms, etc.
C5 – areas, can be overcrowded, eg. buildings for public events like concert halls.

Evaluation of the utility category C1 to C3 and C5

PARAMETER NAME AND TEST METHOD	THE VALUE OF THE PARAMETER AND IDENTIFICATION OF NTD	POLYCET MAX
Resistance to the concentrated load EN 13 810-1	When F_k = 2.6 kN deflection d_F ≤3.0 mm EN 13 810-1	d_F = 2.96 mm
Resistance to dynamic load EN 1195	Increase od deflection ∂d_F ≤ 1.0 mm	∂d_F = −0.35 mm
Resistance to evenly load EN 12 431	When qK 5.0 kN/m² compression d_q ≤2.0 mm EN 1991-1-1	d_F = 0.38 mm

Sound insulation properties
The acoustic properties of POLYCET dry flooring were specified by laboratory methods pursuant to EN ISO 140-3, EN ISO 140-6 over a standardised ceiling slab (reinforced concrete ceiling construction, thickness 140 mm). Values were also calculated for the variant with a light log ceiling.

Horizontal constructions are assessed with regard to sound transmission through the air (airborne sound transmission loss) and with regard to impact noise resulting from dynamic load by mechanical impacts (impact sound transmission loss).

Airborne sound transmission loss is the ability of a construction to acoustically insulate two spaces from noise spread through the air. The evaluation parameter is weighed airborne sound transmission loss $\mathbf{R'_w}$ or laboratory airborne sound transmission loss $\mathbf{R_w}$. An increasing value of sound transmission loss means better acoustic insulation.

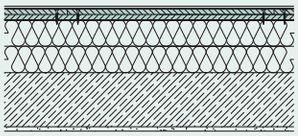
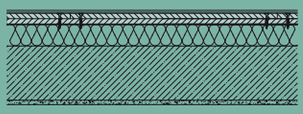
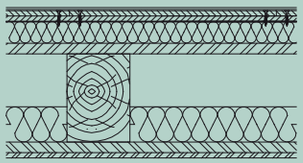
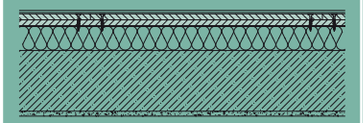
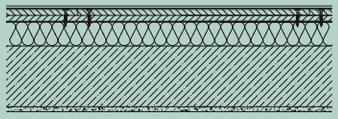
The following equation applies:

$R'_w = R_w - C$ (dB)
Where C…. is the correction depending on sound transfer by side constructions.

Impact sound transmission loss expresses the ability of a construction to absorb sound energy resulting from mechanical impact on the construction. The evaluation parameter is the weighed impact sound level $\mathbf{L'_{nw}}$ or laboratory impact sound level $\mathbf{L_{nw}}$. The higher the value the lower the impact sound transmission loss between two spaces.

The impact sound level reduction – $\mathbf{\Delta L_w}$ – represents improved sound transmission loss, expressed as the difference between the level of impact sound of just the ceiling construction (without acoustic insulation) and the level of impact sound of the ceiling with acoustic insulation, with application of the correction factor (depends on the ceiling construction type).

Regarding the quality of impact sound transmission loss, the POLYCET floor may be used on load-bearing constructions with area weights higher than 300 kg/m² or on ceiling constructions without acoustic requirements. For these reasons it is recommended to improve acoustic properties of the floor laid over a wooden log ceiling by additional loading of the ceiling construction – for example with concrete tiles of minimum thickness 40 mm.

CONSTRUCTION SCHEME	FLOOR COMPOSITION	AIRBORNE SOUND TRANSMISSION LOSS INDEX R_W	STANDARDIZED IMPACT SOUND LEVEL INDEX L_W	REDUCTION OF STANDARDIZED IMPACT SOUND LEVEL ΔL_W
	**POLYCET Therm** • 2× CETRIS® 12 mm • foam polystyrene EPS 100Z th. 2 × 60 mm • reinforced concrete ceiling slab 140 mm	58 dB	54 dB	25 dB
	**POLYCET Aku** • 2× CETRIS® 12 mm • foam polystyrene EPS T3500 thickness 50 mm • reinforced concrete ceiling slab 140 mm	59 dB	52 dB	22 dB
	**POLYCET Aku** • 2× CETRIS® 12 mm • foam polystyrene EPS T3500 thickness 50 mm • timber ceiling	58 dB calculated value	63 dB calculated value	7 dB calculated value
	**POLYCET Min** • top board CETRIS® 10 mm • bottom board CETRIS® 10 mm • foam polystyrene EPS T4000 thickness 30 mm • reinforced concrete ceiling slab 140 mm	54 dB	57 dB	23 dB
	**POLYCET Max** • top board CETRIS® 12 mm • bottom board: CETRIS® 12 mm • foam polystyrene EPS 200S thickness 30 mm • reinforced concrete ceiling slab 140 mm	55 dB	58 dB	22 dB

In terms of quality of impact sound reduction POLYCET floor can be applied on bearing structures of areal weitght more than 300 kg/m^2 or on ceiling constructions without acoustic requirements.

For these reasons, it is recommended to improve the acoustic properties of the floor placed on wooden beam ceiling by additional loading of deck ceiling – for example, with concrete tiles thickness min. 40 mm.

Required values of sound insulation of ceiling construction pursuant to ČSN 73 0532 and EN ISO 717-1.2

	SOUND INSULATION REQUIREMENTS	
	R'_W	L'_{BW}
Residential houses – one living room in a multi-room apartment		
All other rooms of the same apartment unless functional parts of the protected space	47 dB	63 dB
Residential houses – apartment		
All rooms of other apartments	53 (52) dB	55 (58) dB
Common spaces (staircases, corridors etc.)	52 dB	55 dB
Common unused spaces (such as lofts)	47 dB	63 dB
Passages, subways	57 dB	53 dB
Passages, subways for car traffic, garages	57 dB	48 dB
Workplaces with La, max. < 85 dB with operation till 10 pm	57 dB	53 dB
Semi-detached and terraced family houses		
Rooms in neighbouring house	57 dB	48 dB
Hotels and accommodation facilities – bedroom space, guest rooms		
Rooms of other guests	52 dB	58 dB
Common spaces (staircases, corridors etc.)	52 dB	58 dB
Restaurants, special spaces and services with operation till 10 pm	57 dB	53 dB
Hospitals, sanatoria – wards, doctors' offices		
Wards, surgeries	52 dB	58 dB
Auxiliary spaces	52 dB	58 dB
Schools and educational institutions – classrooms		
Classrooms	52 dB	58 dB
Common spaces	52 dB	58 dB
Offices and studies		
Offices and studies	47 dB	63 dB
Studies with increased demand for noise protection	52 dB	58 dB

Heat insulation properties
The heat insulation properties of POLYCET flooring are mainly determined by properties of the EPS insulation boards.

TYPE OF INSULATING AGENT – EPS	EPS 100 Z	EPS T3500	EPS 100 S STABILE FOR FLOOR HEATING
Heat conductivity coefficient (W/m.K)	0.038	0.045	0.038

Improvement of thermal resistance of ceiling construction by POLYCET flooring

FLOOR	LOAD-DISTRIBUTING LAYER	INSULATION		THERMAL RESISTANCE IMPROVEMENT R ($Wm^{-2}K^{-1}$)
		Type (class)	**Thickness** (mm)	
POLYCET Therm	CETRIS® board 2 × 12 mm	EPS 100Z	60+60 mm	3.24
POLYCET Therm			60 mm	1.62
POLYCET Aku		EPS T3500	30 mm	0.75
POLYCET Aku			50 mm	1.19
POLYCET Heat		EPS 100S	50 mm	1.40
POLYCET Heat			60+60 mm	3.24
POLYCET Max		EPS 200S	30 mm	0.97
POLYCET Min	CETRIS® board 2 × 10 mm	EPS T4000	30 mm	0.84

Required and recommended values of heat transfer coefficient and heat insulation thickness pursuant to ČSN 73 0540-2

CONSTRUCTION TYPE	HEAT TRANSFER COEFFICIENT U (W/m^2K)		CORRESPONDING THICKNESS OF HEAT INSULATION (mm)	
	Required value	Recommended value	Required value	Recommended value
Ceiling under unheated loft	0.30	0.20	120	180
Ceiling from heated to unheated room	0.60	0.40	60	90
Ceiling above unheated room	0.30	0.20	120	180
Floor on natural ground (foundation slab) within 1 m from soil and ambient air interface	0.38	0.25	100	150
Floor on natural ground (foundation slab) in a distance exceeding 1 m	0.60	0.40	60	90
Floor with floor heating	0.30	0.20	120	180
Ceiling between spaces with temperature difference up to 10° C inclusive	1.05	0.70	40	50
Ceiling between spaces with temperature difference up to 5° C inclusive	2.20	1.45	20	30

7.5.2.3 Base Preparation for Floor Laying

Load-bearing base, requirements and preparation
For assurance of the final quality of the surface of the floating floor for the walking surface it is necessary to prepare the load-bearing base well. The load-bearing base may be a massive ceiling construction (a reinforced concrete slab, ceramic ceiling etc.) or a timber ceiling with planks, a wooden log ceiling or a concrete foundation slab.
The load-bearing base is expected to be able to transfer the minimum load equal to the standard (usable) load plus the weight of the floor with the requirement of the maximum sag of the ceiling construction in compliance with the given requirements.
The POLYCET floating floor requires a dry load-bearing base with a planarity tolerance of 4 mm per 2 m. If the acceptable values of planarity tolerance are not complied with, the acceptable tolerances of planarity under the walking surface of the floor cannot be guaranteed either. Local irregularities may reach up to 5 mm (such as individually protruding fills, concrete burrs or knags in the wooden base) thanks to the possibility of additional levelling by the insulation layer. Insufficiently flat surfaces must be levelled.

Load-bearing base levelling
Surface levelling may be done by two ways:
1. **Wet method** – with the help of cement mortar with sand or with a layer of self-levelling plaster pursuant to the instructions of the individual manufacturers
2. **Dry sub-base** – it is possible to use dry levelling mixes based on crushed porous concrete, pearlite. The minimum height of the sub-base must be 10 mm and maximum 40 mm. The recommended mixes include FERMACELL, BACHL BS Perlit, SILIPERL.

Before levelling the surface of wooden log ceiling the quality of load bearing construction should be assessed. Beaten, bent (deviations over 5 mm) or otherwise damaged planks should be replaced first. Cardboard should be laid over the ceiling as protection against drops of the dry sub-base mix through openings after knags and gaps between the planks.
The levelling sub-base is spread according to instructions by the individual manufacturers.

Recommended procedure
Specify the required final height of the constructed floor and mark it on the adjacent walls (1 m above the final floor level).
Pour the sub-base mix along one wall in a strip of about 20 cm width up to the required sub-base height (it is necessary to respect the construction height of the floor system). In the distance equal to the length of the smoothing lath create a parallel sub-base strip.
Place the levelling laths on the strips and level with a spirit level. For this activity you need a set of smoothing laths (such as wooden prisms). The smoothing lath must be provided with side dents corresponding to the height of the levelling laths.
Fill the space between the strips with the sub-base mix and use the smoothing lath to level the surface of the sub-base to the required elevation level.

Base Humidity
Maximum permitted mass humidity of the base:
- Wooden base – 12 %
- Silicate base – 6%

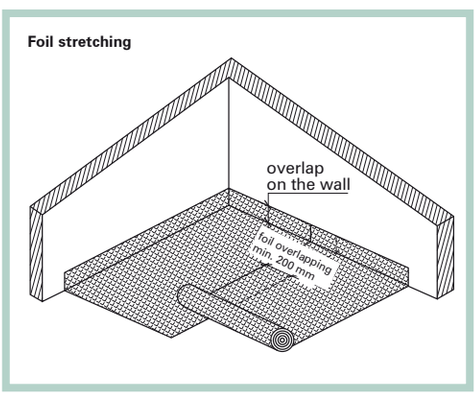
Humidity Insulation
To prevent humidity transport to the heat insulation and acoustic insulation layer, the layer must be separated from the ceiling construction with a hydro-insulating layer. This barrier mainly applies to the load-bearing ceiling construction, which contains residual humidity, or where increased pass of humidity through the ceiling construction is expected. For this purpose, clean the surface and cover it with a hydro-insulating foil such as PE foil, thickness 0.2 mm with overlaps between the individual strips at least 200 mm (or glue the foil joints with an adhesive tape). The foil should be drawn up the adjacent vertical constructions above the assumed floor surface level.
When levelling the surface with the self-levelling plaster the humidity insulation is placed over the plaster. In the case of levelling with the sub-base mix the humidity insulation is placed between the load-bearing construction and the sub-base.
When laying the floor over a wooden load-bearing construction, use of PE foil is not recommended to preserve "breathing" of the ceiling. If there are rooms under the ceiling where increased humidity is expected (a bathroom, a kitchen) then it is necessary to prevent humidity transport to the construction or its free evaporation must be assured.
The humidity insulation must be part of the whole ceiling and floor construction.
For the purpose of potential venting of wet constructions a microventilating layer may be used (such as OLDROYD, TECHNODREN) or a PE foil.

7.5.2.4 POLYCET Floating Floor Laying

1 The POLYCET floating floor is laid as the final construction after completion of the "wet" construction works (partition building, plastering etc.)

2 The POLYCET floating floor is laid over a clean and dry surface.

3 Before laying the floor construction the floor parts should be acclimatised for a minimum period of 48 hours at the minimum temperature of 18° C and relative air humidity max. 70 %. The acclimatisation approximates the manufacturing humidity of the board to the balanced humidity of the application and reduces the problem of later shape changes.

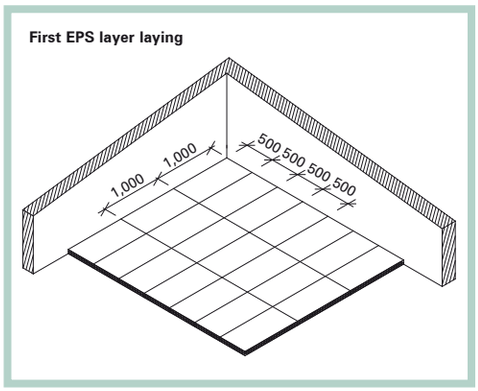


4 If the sub-base contains high residual humidity, or in the case of risk of increased infiltration of humidity through the ceiling construction, cover the load-bearing ceiling construction with PE foil with 200 mm overlaps between the strips and overlapping the vertical constructions at least to the height of the floor construction.

5 If necessary, level the base with a dry sub-base, which is only spread along part of the area.

6 Specify the direction of the upper CETRIS® board layer on which the direction of the bottom boards depends. The individual layers must cross each other. The joints of the insulation boards and the CETRIS® floor boards must not be one above the other.

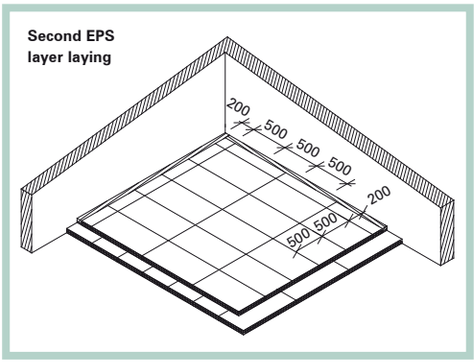
7 The insulation boards of elastified foam polystyrene (EPS) are laid tightly along the vertical constructions. The insulation boards are laid without dilation gaps in the surface. When using two layers of insulation boards, the upper layer is laid with an overlap of at least 200 mm over the bottom layer. Where the dry floor construction passes a door threshold the issue of installation of the door frame must be resolved. The floor must be levelled and padded up to the exact height along the door frame length under the central bottom partition. When fixing the door threshold it is necessary to use longer screws to connect the door frame with the base profile. In the case of a door threshold it is recommended to always install the base laths on both sides of the threshold under the CETRIS® boards. The recommended size of the base boards is 80 by 30 mm and completion up to the total insulation height with cut EPS boards of adequate thickness (see detail drawing). The effect of reduction of impact sound absorption is negligible due to local use. The solution with the base lath is also recommended in the case of the floor dilation across the surface (area larger than 6 by 6 m), floor transfers etc.



To assure quality settlement of the door threshold, especially over the walking surface of ceramic tiles, it is recommended to cover the threshold with silicone filler before the threshold laying.

8 When using two layers of EPS boards the second layer is laid with a min. overlap of 200 mm. Regarding the height of the insulation, it is recommended to eliminate the effect of the unfavourable deformations by using load-distributing elements as the base.

The best floor reinforcement are planks 80 by 30 mm with the thickness completed with EPS boards up to the total height of the insulation base. These "reinforcements" are placed between rooms, between individual floor types, along the room perimeter and



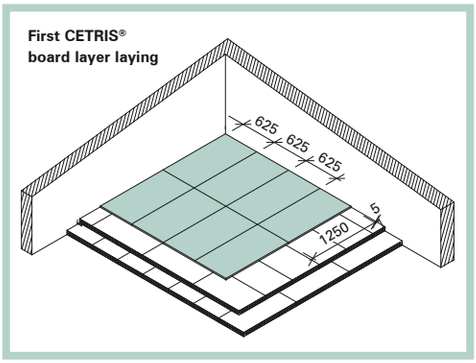
where load with concentrated objects larger than permitted for the given floor type is expected. In the case of the POLYCET Heat, insulation boards are used with grooves for floor heating insertion. A straight insulation board is used across the floor area – with longitudinal grooves. An end piece is placed along the walls where heating pipeline direction change is expected.

Thanks to the new technology the end piece is covered with aluminium foil all over, for heat loss minimisation. The universal groove layout allows for combinations of spans of the heating pipelines – both 125 and 250 mm. Assembly is identical with standard technological procedures for floor heating. The new technology allows for overlaps of lengthwise joints between the pieces with self-sticking aluminium overlaps.

The floor heating pipeline laying follows the laying of the insulation boards.

Before laying of the load-distributing layer, functionality and tightness of the floor heating pipeline must be checked!

Before the load-distribution layer of CETRIS® boards is laid it is recommended to lay separation foil to prevent the floor creaking – a softened PE foil (such as Mirelon), thickness 2 mm. In the case of the POLYCET HEAT floor where insulation boards with aluminium foil are used, the separation is not needed.

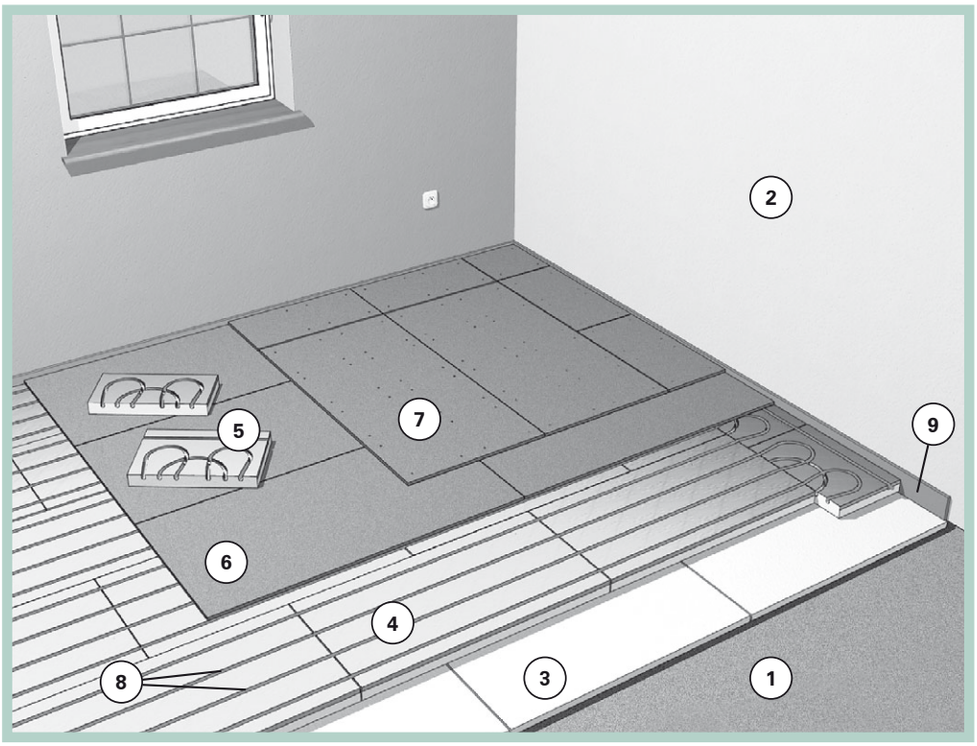


9 Start CETRIS® board laying with a whole board opposite the door. The boards are laid tightly with a cross gap.

10 Create dilation joints around vertical constructions (walls, pillars etc.) with the width of 15 mm. Place a 15 mm wide mineral wool or polystyrene strip in the dilation joints along vertical constructions to prevent clogging of the dilation joint in the course of subsequent works.

Cut the strip to the needed height after completion of the final surface finish of the floating floor before flooring laying.

Structure of POLYCET HEAT floor system



01 ceiling
02 wall
03 base insulation
04 straight insulation board
05 end insulation board
06 bottom layer – CETRIS® board th. 12 mm
07 upper layer – CETRIS® board th. 12 mm
08 heating pipeline
09 dilation

Further procedures of floor laying depend on the variant of POLYCET floor!

Variants of POLYCET THERM, AKU, MAX and MIN

11 The second layer of CETRIS® boards is laid crosswise in relation to the bottom layer with the overlap by 1/3 of the board, i.e. 312 mm. For easier assembly the upper layer of the CETRIS® boards is predrilled with holes with a diameter of 4 mm.

12 The CETRIS® boards must be joined with self-cutting screws with a diameter of 4.2 mm and length 35 mm with sunken heads immediately after laying. The screws are placed in the predrilled holes. In case of additional cutting of the boards, the screws must be placed 25 – 50 mm from the board edge with the maximum spacing between the individual joints 300 mm. The screws must not pass through the joints of the bottom layer of the CETRIS® boards. The average number of connecting screws per 1 m² is 30 pieces.

13 It is recommended to use electric screwdrivers for the screwing. When joining CETRIS® boards it is necessary to locally press the boards down, ideally with the weight of the worker. This will prevent lifting of the upper board layer and potential deposits of the sawdust from drilling between the joints. Start screwing individual boards from the centre of the board.

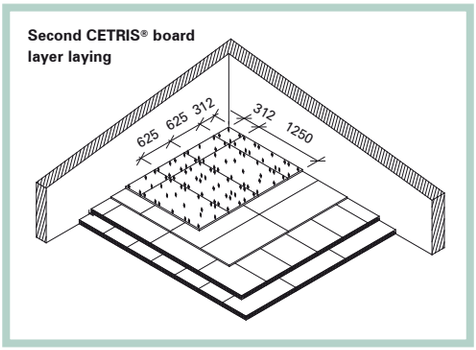
When laying standard sizes of CETRIS® board (3,350 by 1,250 mm) about 20 screws per 1 m2 is sufficient for screwing the boards together if the following conditions are met:

- Minimum distance of each screw from the board edge is 25 mm
- Maximum spacing of the screws in the board surface is 300 mm
- In the points of contact of the bottom boards double screwing is necessary – the upper board must be screwed to both bottom boards
- The upper boards must be predrilled with 4 mm holes

14 After joining both layers of CETRIS® boards cut the edge strip and the insulation foil in the required height with a knife.

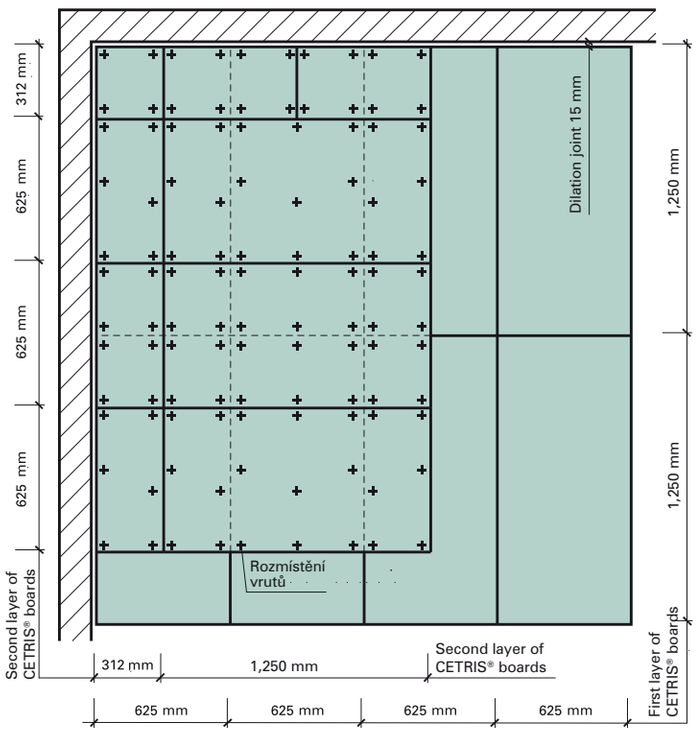
15 The screwed together floor can be walked on immediately. The walking layer of the flooring may be laid immediately, too.

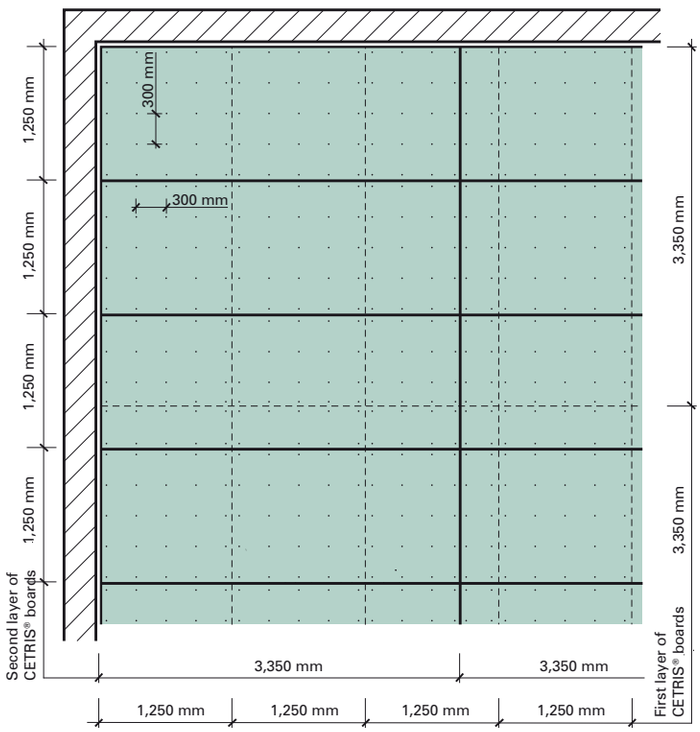
16 When laying large floors it is recommended to lay the insulation and the boards by dilation field. This will reduce the possibility of damage to the insulation by worker traffic.



Note: Drying and continuous acclimatisation of the CETRIS® boards after floor laying may lead, especially in winter months, to moderate lifting of the free edges (by the walls, in the corners). This effect may be eliminated by local anchoring of the CETRIS® boards to the base (subfloor, ceiling).

CETRIS® board laying in POLYCET THERM, POLYCET AKU, MAX and MIN





Variant of POLYCET HEAT

Before laying the second layer of CETRIS® boards apply the glue UZIN MK 73 to the upper side of the bottom layer of the CETRIS® boards. The face of the bottom layer of CETRIS® boards must be dry and clean – without substances reducing adhesion. The glue must be applied evenly across the layer surface with a notched spatula with the notch height of B3. The recommended glue dose is 0.8 – 1.0 kg/m².

UZIN MK 73 floor glue

11 Lay the second layer of CETRIS® boards to the glue. The second layer of CETRIS® boards is laid crosswise in relation to the bottom layer with the overlap by 1/3 of the board, i.e. 312 mm.

12 Immediately after laying, the upper board layer must be locally screwed together with the bottom layer of CETRIS® boards. In the case of the CETRIS® board size 1,250 × 625 mm it is necessary to place the screws in the corners and in the middle of the longer edge – i.e. 6 screws per board. It is recommended to pre-drill the upper boards with a drilled hole diameter of 4 mm and use self-cutting screws with the diameter of 4.2 mm and length 25 mm with sunken heads. Place the screws in the predrilled holes. The screws are to be placed 25 – 50 mm from the board edge. The screws must not pass through the joints of the bottom layer of CETRIS® boards. It is not recommended to lay the standard size CETRIS® boards in the case of POLYCET Heat variant because of fast drying of the glue.

13 It is recommended to use electric screwdrivers for the screwing. When joining CETRIS® boards it is necessary to locally press the boards down, ideally with the weight of the worker. This will prevent lifting of the upper board layer and potential deposits of the sawdust from drilling between the joints.

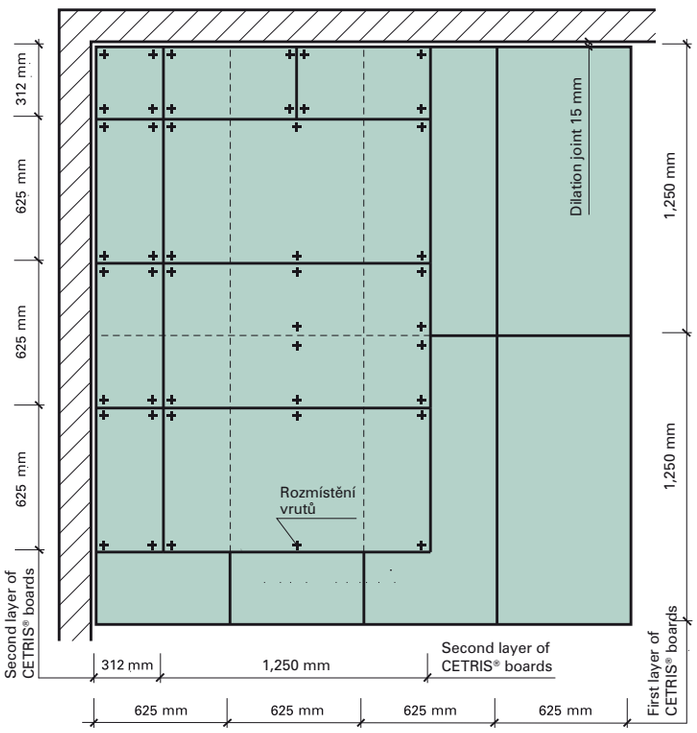
14 After joining both layers of CETRIS® boards cut the edge strip and the insulation foil in the required height with a knife.

15 As the CETRIS® board layers are glued together, the POLYCET Heat floor is not ready for foot traffic immediately after laying. You can walk along this floor type and apply the walking surface no sooner than after 48 hours from assembly.

16 When laying large floors it is recommended to lay the insulation and the boards by dilation field. This will reduce the possibility of damage to the insulation by worker traffic.

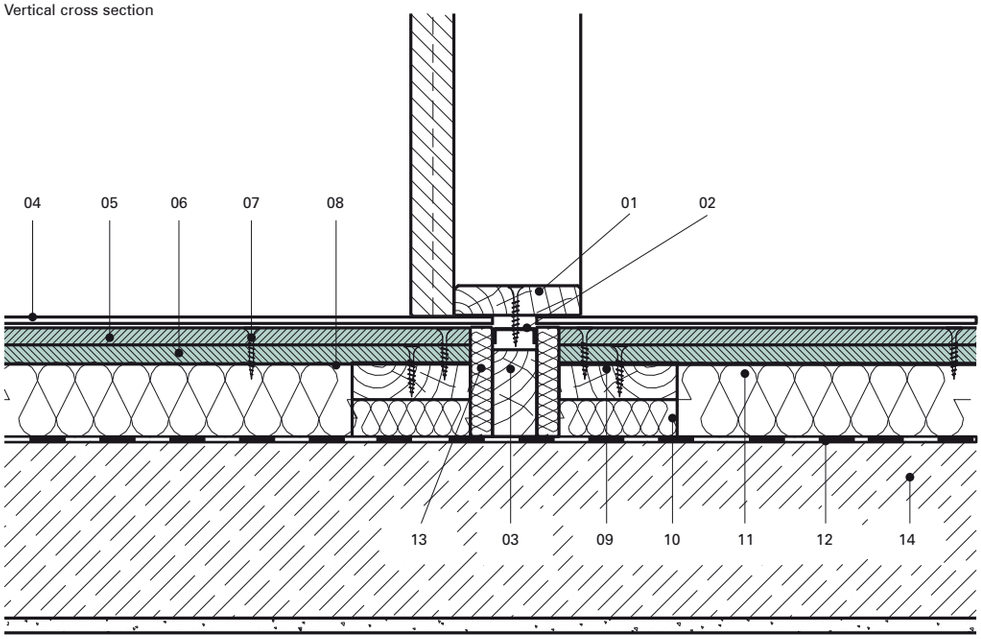
Note: Drying and continuous acclimatisation of the CETRIS® boards after the floor laying may lead, especially in winter months, to moderate lifting of the free edges (by the walls, in the corners). This effect may be eliminated by local anchoring of the CETRIS® boards to the base (subfloor, ceiling).

CETRIS® board laying in POLYCET Heat system



Threshold transfer of POLYCET floor

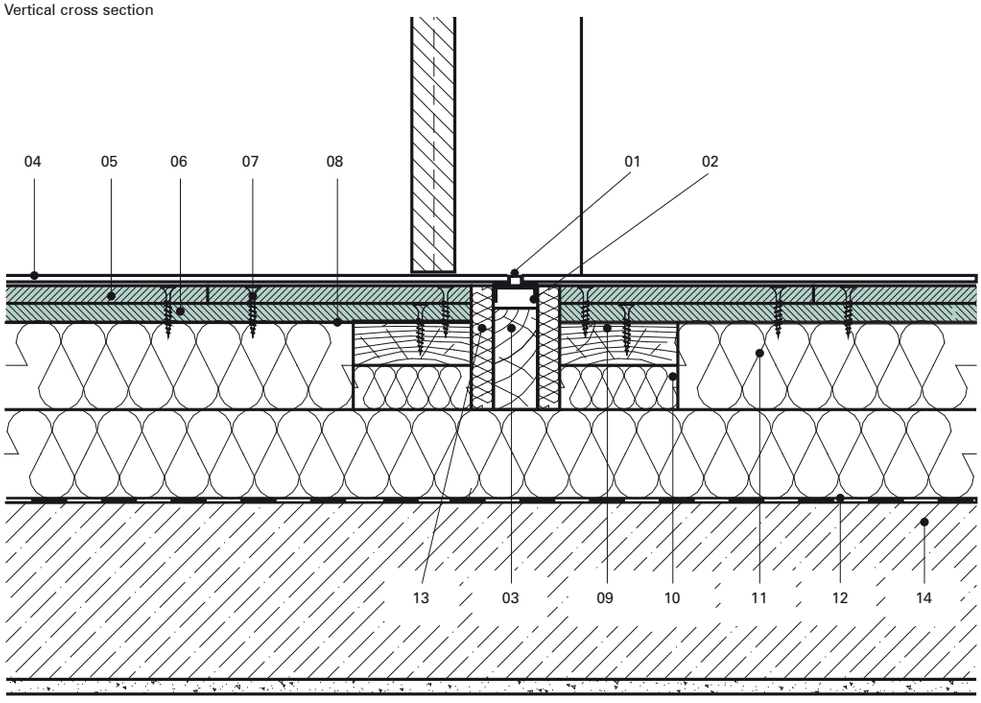
Vertical cross section



01 wooden door threshold
02 threshold joint
03 wooden base threshold profile
04 walking surface
05 CETRIS® 12 mm, upper layer
06 CETRIS® 12 mm, bottom layer
07 screw 4.2 × 35 mm
08 separation layer – foam foil, thickness 2 mm
09 wooden base lath 80 × 30 mm
10 EPS insulation
11 EPS insulation board (type 100Z or 100 S or T3500)
12 vapour barrier
13 dilation (15 mm)
14 ceiling

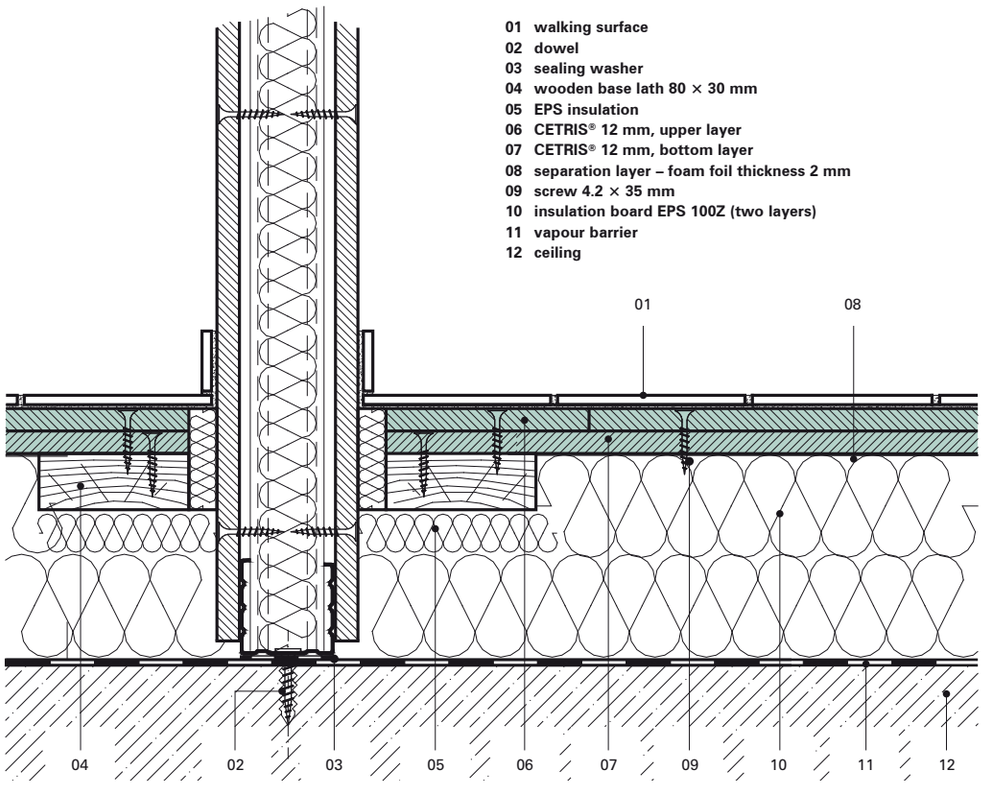
Transfer of POLYCET floor without threshold

Vertical cross section



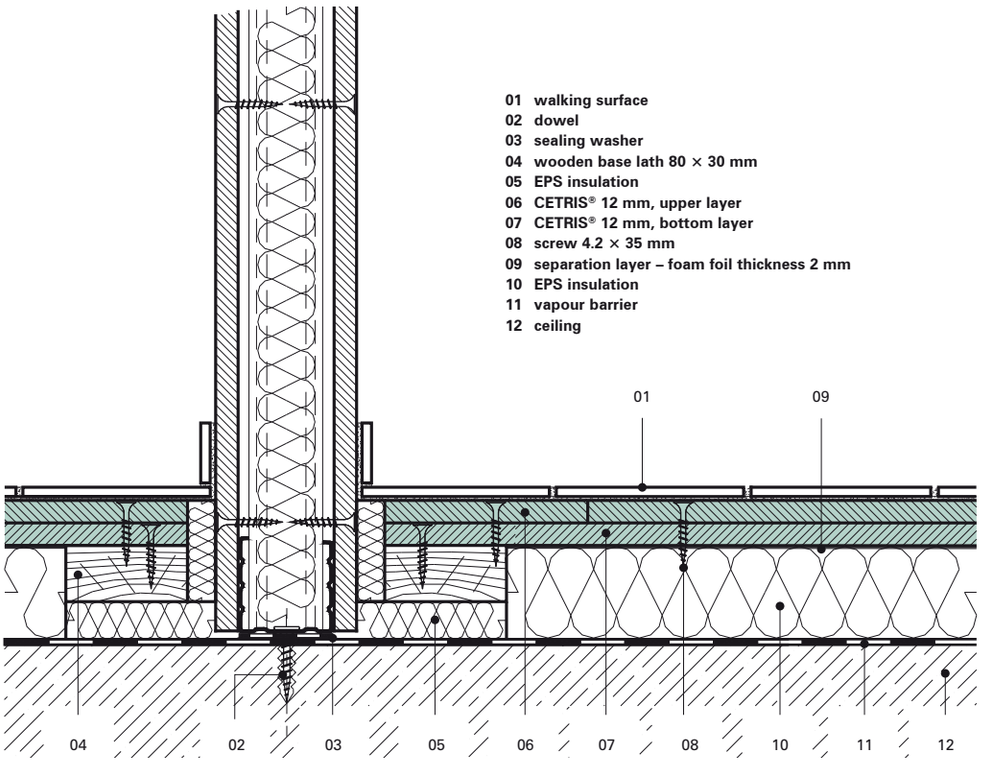
01 dilation profile Schlűter DILEX
02 threshold joint
03 wooden base threshold profile
04 walking surface
05 CETRIS® 12 mm, upper layer
06 CETRIS® 12 mm, bottom layer
07 screw 4.2 × 35 mm
08 separation layer – foam foil, thickness 2 mm
09 wooden base lath 80 × 30 mm
10 EPS insulation
11 EPS insulation board type 100Z or 100 S (two layers)
12 vapour barrier
13 dilation (15 mm)
14 ceiling

Connection of POLYCET Therm floor to partition
Vertical cross section



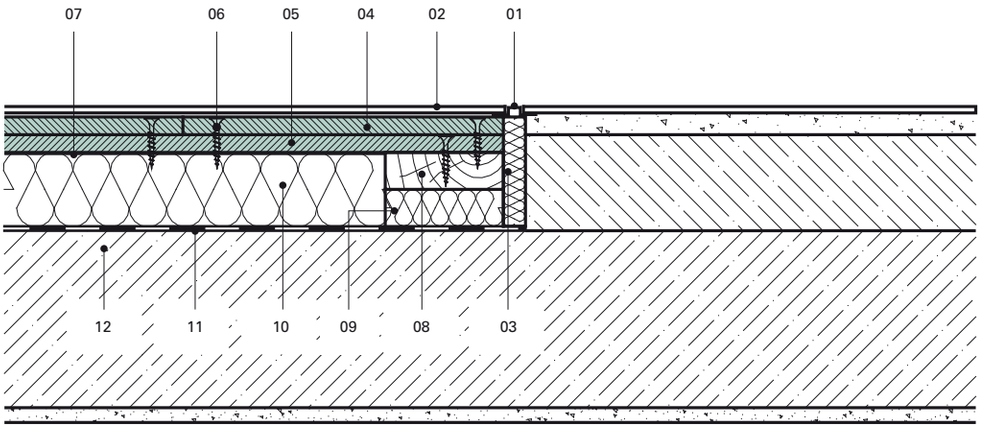
01 walking surface
02 dowel
03 sealing washer
04 wooden base lath 80 × 30 mm
05 EPS insulation
06 CETRIS® 12 mm, upper layer
07 CETRIS® 12 mm, bottom layer
08 separation layer – foam foil thickness 2 mm
09 screw 4.2 × 35 mm
10 insulation board EPS 100Z (two layers)
11 vapour barrier
12 ceiling

Connection of POLYCET Aku floor to partition
Vertical cross section



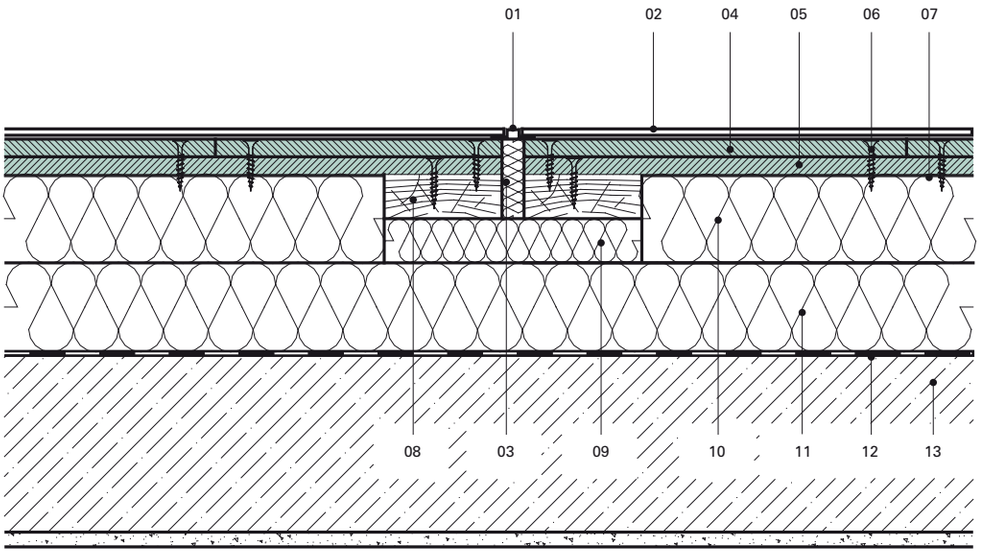
01 walking surface
02 dowel
03 sealing washer
04 wooden base lath 80 × 30 mm
05 EPS insulation
06 CETRIS® 12 mm, upper layer
07 CETRIS® 12 mm, bottom layer
08 screw 4.2 × 35 mm
09 separation layer – foam foil thickness 2 mm
10 EPS insulation
11 vapour barrier
12 ceiling

Transfer to another floor type
Vertical cross section



01 dilation profile Schlűter DILEX
02 walking surface
03 dilation (15 mm)
04 CETRIS® 12 mm, upper layer
05 CETRIS® 12 mm, bottom layer
06 screw 4.2 × 35 mm
07 separation layer – foam foil thickness 2 mm
08 wooden base lath 80 × 30 mm
09 EPS insulation
10 insulation board EPS T3500
11 vapour barrier
12 ceiling

Dilation joint in the surface
Vertical cross section

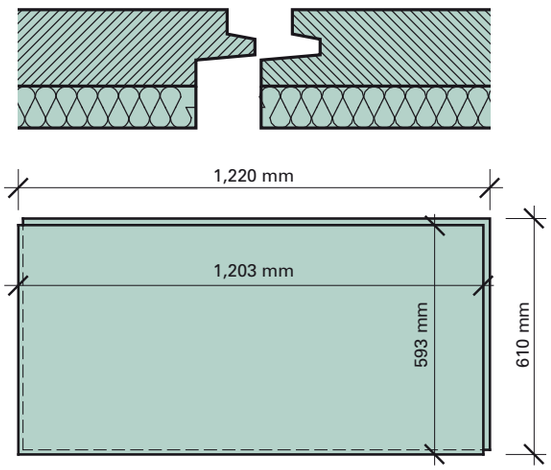


01 dilation profile Schlűter DILEX
02 walking surface
03 dilation (15 mm)
04 CETRIS® 12 mm, upper layer
05 CETRIS® 12 mm, bottom layer
06 screw 4.2 × 35 mm
07 separation layer – foam foil thickness 2 mm
08 wooden base lath 80 × 30 mm
09 EPS insulation
10 insulation board EPS 100Z
11 insulation board EPS 100Z
12 vapour barrier
13 ceiling

7.5.3 Floor panel CETRIS® PDI

CETRIS® PDI is a two-ply panel used in dry floor technology. It consists of a 22 mm thick cement bonded CETRIS® particleboard glued to 12 mm insulating fibreboard (hardboard). The size is 1,220 × 610 mm (including the tongue) and it is 34 mm thick; it has a tongue and groove along the perimeter, the surface is smooth. The panels should be laid on a level surface area (ceiling structures, cladding). They are great for a quick and exact installation. They also spread spot-load stress over a larger area.

Basic size	1,220 × 610 mm (with tongue), 1,203 × 593 mm (without tongue). Panel size after laying: 0.713 m²
Rough dimensional tolerance	±1.5 mm
Thickness	34 mm
Weight	ca 33.5 kg/m²
Features	Tongue & groove shaped edges
Surface finish	Without surface finish



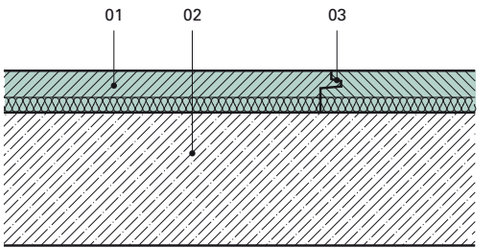
Panel thickness	Weight approx.	Approx. weight of the panel	Number of panels on the pad	Size of the panels on the pad	Total approximate weight of panels including the pad
34 mm	33.5 kg/m²	24 kg/pc	30 pcs	22.32 m²	750 kg

CETRIS® PDI floor panels are laid on wooden transport pallets, which enable forklift manipulation. The boards are secured with straps. CETRIS® PDI panels are protected against atmospheric influences by PE foil. Wrapping in PE foil, however, does not satisfy conditions for long-lasting exposure to atmospheric influences when stored in an open area.

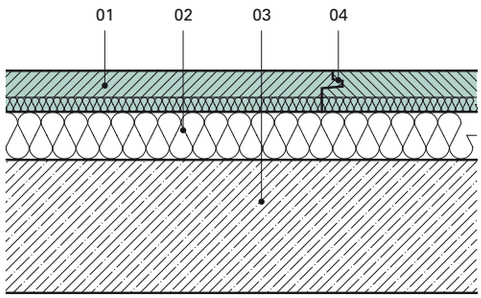
CETRIS® PDI panels must be stored in a sheltered dry area so that they do not get wet before laying (especially the fibreboard). When storing, CETRIS® PDI panels on the pallets can be stacked two layers high. The boards should be placed on the pallets when handled. They should be hand-carried in a vertical position.

Floor structures with CETRIS® PDI panels
CETRIS® PDI panels can be laid directly on the base – a ceiling structure or cladding. The base must be level, supporting and dry. In this way, a new load spreading and insulating layer only 34 mm thick can be made with a high load capacity and resistance against spot stress.

If a higher structural height has to be achieved, or if the floor structure must reach a higher thermal resistance value, we recommend laying insulation boards under the CETRIS® PDI panels. Polystyrene based insulation boards (min. class EPS S 70), or boards with stone or mineral wool or fibreboards are suitable. However, they must always be designed for light floating floors. The maximum recommended thickness of the insulation board is 50 mm.



01 CETRIS® PDI floor panel
02 ceiling structure
03 glued joint (polyurethane glue)



01 CETRIS® PDI floor panel
02 insulation board, max. 50 mm
03 ceiling structure
04 glued joint (polyurethane glue)

7.5.3.1 Properties of floors with CETRIS® PDI panels

Floor loading capacity
The loading capacity of CETRIS® PDI panels was determined by tests specified for light floor structures as per EN 13 810-1. The testing was performed in an acoustic chamber of the SCI (Zlín branch) on 3.6 × 3.0 m samples. The floor was always laid on a 140 mm thick reinforced concrete ceiling structure.

The test loading methods were as follows:
- **Concentrated load** – action of a spot load 130 kg (260 kg) in a circular area 25 mm in diameter. The critical sag value under the loading arm is 3 mm.
- **Impact load** – a 40 kg load was dropped from the height of 350 mm; the critical sag after ten drops is 1.0 mm. This load simulates a falling object, a tripping person, jumping and dancing.

The obtained results show that a floor made with CETRIS® PDI panels laid directly on the base (without inserted insulation) is suitable for all load categories:
- **C1** – areas with tables, e.g. schools, cafés, restaurants, dining halls, etc.
- **C2** – areas with fixed seats, e.g. churches, theatres, cinemas, meeting rooms, waiting rooms, etc.
- **C5** – areas with gathering people, e.g. buildings for public events such as concert halls.

The floor composition with an inserted insulation board (max. 50 mm) under the CETRIS® PDI panel is suitable for the following load categories:

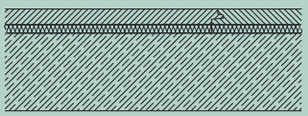
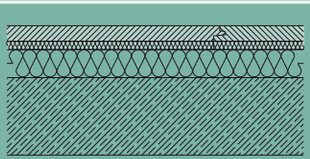
- **A** – dwelling areas and areas for household activities
- **B** – office areas

The loading method was performed as per EN 1991-1-1 Eurocode 1: Actions on structures - Part 1-1: General actions – Densities, self-weight, imposed loads for buildings.

When designing dry floor structures, it is necessary to take into account the maximum allowed sags and load capacity of the base.
The dry lightweight CETRIS® PDI floor is not suitable for areas with greater nominal load than specified for this type of floor and for wet areas such as saunas, laundries, showers, etc.

Sound-insulating properties
Acoustic properties of a dry floor made with CETRIS® PDI were determined by a laboratory method as per EN ISO 10140-2, EN ISO 10140-3 on a standardised ceiling board (reinforced 140 mm concrete ceiling structure). The thermal-technical properties of a floating floor made with CETRIS® PDI panels are determined mainly by the insulation board properties; values of increased thermal resistance were found by calculation.

Sound and thermal insulating properties

STRUCTURE PATTERN	FLOOR COMPOSITION	AIRBORNE-TRANSMISSION LOSS INDEX R_W	INDEX OF STANDARDIZED IMPACT NOISE L_{nw}	REDUCTION OF STANDARDIZED IMPACT NOISE LEVEL ΔL_W	IMPROVEMENT OF THERMAL RESISTANCE R ($Wm^{-2}K^{-1}$)
	• CETRIS® PDI Floor panel, 34 mm • Reinforced concrete slab, 140 mm	57 dB	60 dB	21 dB	0.33
	• CETRIS® PDI Floor panel, 34 mm • Polystyrene EPS S 70, max. thickness 50 mm • Reinforced concrete slab, 140 mm	58 dB	55 dB	26 dB	1.65

7.5.3.2 Preparation of the base before laying the floor

Load bearing base, requirements and preparation
It is important to prepare the supporting surface to ensure the final quality of the floating floor for laying down the wear layer. The load bearing base can be either massive ceiling structures (reinforced concrete slabs, ceramic ceilings, HURDIS ceilings, etc.) or wooden beam ceilings with plank cladding, wooden timber ceilings or a concrete foundation slabs.
The load bearing base should be able to transfer load at a minimum load stress = normative (utility) load + floor weight, while observing the maximum sag of the ceiling structure according to the given specifications.

The base must be dry and supporting with a maximum surface unevenness of 4 mm per 2 metres. Unless the allowable tolerances of the base are observed, the allowable unevenness tolerances under the final wear surface and reduction of the impact noise cannot be guaranteed. The local unevenness can reach 5 mm (e.g. protruding filler, concrete joints, knots in a wooden base), because the insulation layer can reshape. If the base is not sufficiently flat, it must be levelled.

Levelling of the supporting base
The base can be levelled by application of two methods:

1. **Wet method** – application of cement mortar with sand or a layer of self-levelling compound according to the producer's instructions.
2. **Dry sub-base** – it is possible to use dry self-levelling compounds based on crushed aero-concrete or perlite. The minimum height of the sub-base is 10 mm, the maximum is 40 mm. We recommend FERMACELL or BACHL BS Perlit or Siliperl as the sub-base.

When levelling the surface of a wooden beam ceiling, first inspect the quality of the bearing structure for warps and wears (unevenness above 5 mm) and replace damaged boards. Put paper cardboard on the cladding as a protection against sub-base dropping through knot-holes and gaps between the planks.

Make the sub-base according to the producer's instructions.

Moisture of the base
The maximum allowable specific moisture of the base:

- wooden base . . . . . 12 %
- silicate base . . . . . 6 %

Insulation against moisture
To eliminate transport of moisture into the thermal and sound insulation layer, this layer must be separated from the floor structure by a protective foil. This protection concerns mainly a support ceiling structure, which contains residual moisture or areas where increased penetration of moisture through the ceiling structure is anticipated. Spread a hydro-insulating foil (e.g. 0.2 mm PE foil) with overlaps of at least 200 mm (or plaster the joints with adhesive tape) over a cleaned surface and pull it up to vertical structures above the intended floor level.

When using a self-levelling compound, lay the moisture insulation film on the finished compound; if using a sub-base, lay it between the bearing structure and the sub-base.

When laying the floor on a wooden structure or an original ceiling structure, application of PE film is not recommended to ensure the breathing of the ceiling. If a room with higher air humidity (bathroom, kitchen) is located below the ceiling, it is necessary to prevent the transport of humidity into the structure or ensure its free evaporation.

Moisture insulation must be addressed within the complete structure of the ceiling or the floor.

A micro-ventilating layer (e.g. OLDROYD, TECHNODREN) or a studded foil can be used for venting wet structures.

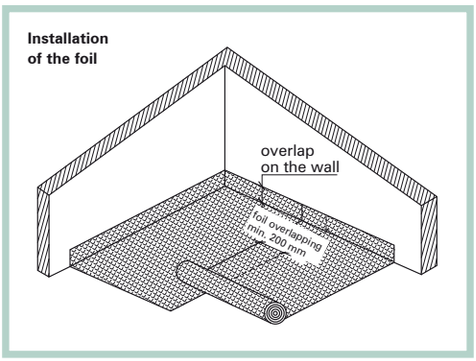
7.5.3.3 Laying CETRIS® PDI floor panels

1 Floating floors made with CETRIS® PDI are laid as a final layer after finishing «wet» building works (after finishing walls, plastering, etc.).

2 Floating floors made with CETRIS® PDI are laid on a dry, clean base.

3 Before laying, the floor panels must be allowed to acclimatise for at least 48 hours at a minimum temperature of 18° C and relative humidity of 70 % max. The acclimatisation adapts the production moisture in the board to the balanced moisture during application, thus reducing problems with future dimensional and shape changes.

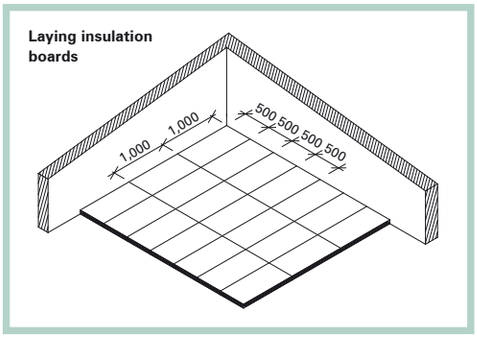
4 If the base contains a high level or residual moisture or if penetration of moisture through the ceiling structure is anticipated, a PE foil should be laid on the base with a 200 mm overlap of the strips and pulled up along vertical structures to the anticipated level of the floor.



5 If necessary, the base can be levelled with dry sub-base – spread it always only over a part of the surface.

6 If insulation boards are used together with CETRIS® PDI panels, the laying direction of the boards must be determined before their application. When laying individual layers, make sure they are laid crosswise over each other. Joints between insulation boards and the CETRIS® PDI sections must not mate.

7 The insulation boards should be set to the vertical structures so that they touch a dilatation insert, without dilatation gaps in the surface.

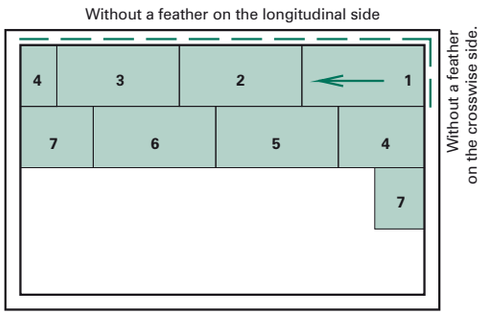


When a dry floor structure passes across a doorsill, take care of installation of the doorframe. It must be levelled and propped into a precise height by the central cross-beam. When fixing the threshold, use longer screws to connect the frame to the base section.

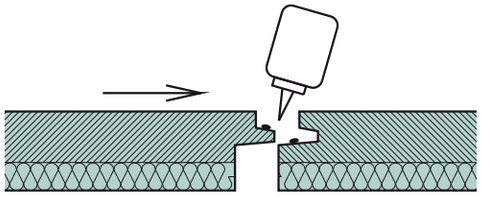
If an insulating board is used, we recommend installation of an underlaying batten under the CETRIS® PDI panel along both sides of the doorsill. The recommended size of an underlaying batten is 80 × 30 mm; it can be supplemented with an EPS board of an appropriate thickness (see the detail). The loss of impact noise reduction of the entire floor is negligible because of a local application. We also recommend using an underlaying batten for dilatation of the floor in the surface (area larger than 6 × 6 m), floor transitions, etc.

8 Make a 15 mm wide dilatation gap along vertical structures (walls, columns, etc.). We recommend inserting a 15 mm strip of mineral wool or polystyrene in the dilatation gaps to eliminate clogging during the subsequent operations. Cut this strip to the required height after finishing the surface of the floating floor before laying the flooring material.

9 Start the laying with a full CETRIS® PDI panel opposite the door. The panels are laid on the butt.



10 CETRIS® PDI panels are usually laid from the right to the left; no cross-joints may appear; the minimum overlap between joints is 200 mm. The protruding tongue on the first panel in the first row must be cut both on the long (longitudinal) and short (transverse) side. The tongue on the longer side must be cut on the remaining panels in the first row.
Apply glue to the top side of the tongue of the inserted panel and in the groove (bottom part) of the already laid panel.
Use polyurethane glue for wood (e.g. Den Braven D4, Soudal PRO 45, etc.). The approximate glue consumption is 40 g/m² of a laid area (500 ml packaging = ca. 12 m² of floor).



The floor panels must be glued at a maximum relative air humidity of 80 % and a minimum room temperature of 5° C. The CETRIS® PDI panels must be in full contact with each other.

11 When laying down the final panel, first cut it to the required length, then cut the tongue on the longitudinal side. You can use the cut-off piece (minimum length 200 mm) for starting the second row.

12 After laying a floor with CETRIS® PDI panels, cut an edge strip and the insulation foil to the required height with a knife.

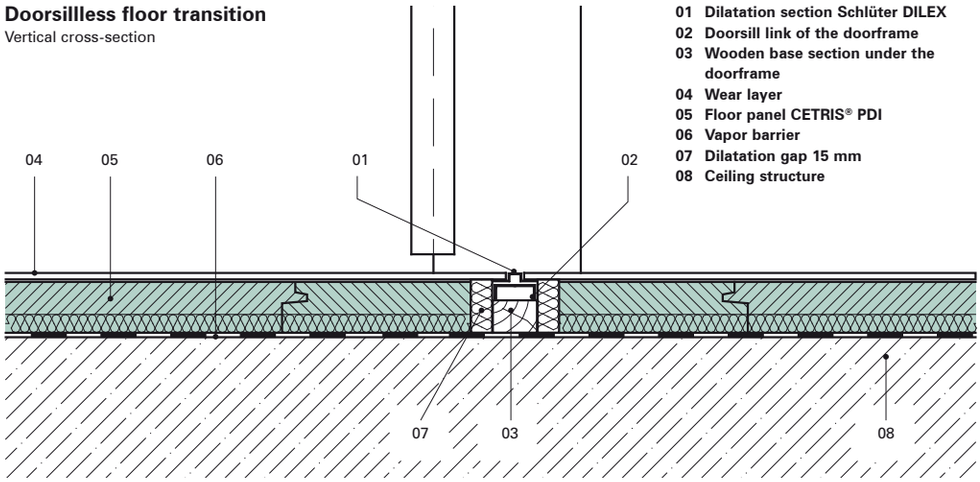
13 When laying a large floor area, we recommend a sequential installation of insulation and panels in individual areas of the dilatation zone. This will reduce damage to the insulation boards by worker activity.

14 The floor can be fully loaded and other operations can be performed (laying floor covering) after complete setting of the polyurethane glue (min. 24 hours). Remove the excessive glue with a spatula after the setting.

15 For laying the final flooring, we recommend the principles described in Chapter 7.9 Flooring (Materials for designing and implementation of CETRIS® boards).

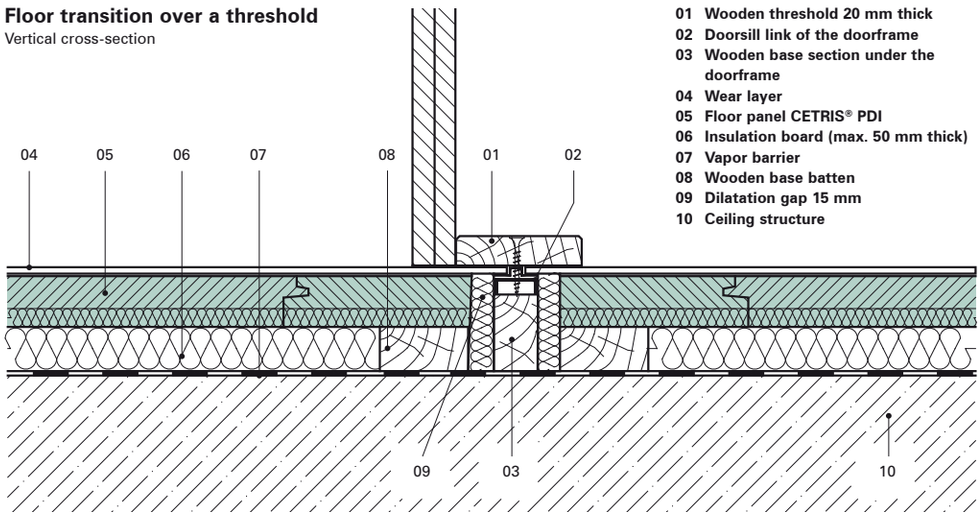
Note: As a result of drying and gradual adaptation of CETRIS® PDI panels, free edges may rise (along walls, in corners) after laying a floor especially during winter months. This effect can be eliminated by local fastening of CETRIS® PDI panels to the base (cladding, ceiling).

Doorsillless floor transition
Vertical cross-section



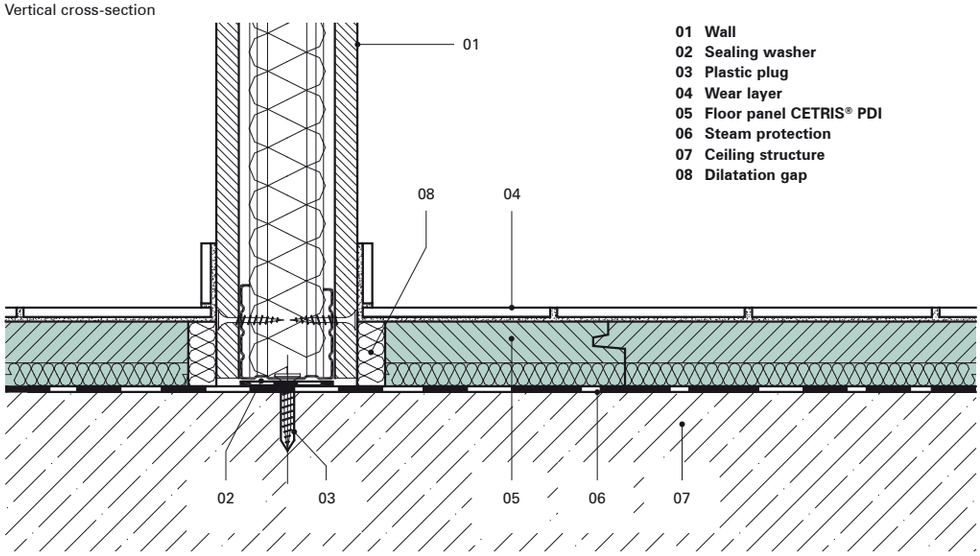
01 Dilatation section Schlüter DILEX
02 Doorsill link of the doorframe
03 Wooden base section under the doorframe
04 Wear layer
05 Floor panel CETRIS® PDI
06 Vapor barrier
07 Dilatation gap 15 mm
08 Ceiling structure

Floor transition over a threshold
Vertical cross-section



01 Wooden threshold 20 mm thick
02 Doorsill link of the doorframe
03 Wooden base section under the doorframe
04 Wear layer
05 Floor panel CETRIS® PDI
06 Insulation board (max. 50 mm thick)
07 Vapor barrier
08 Wooden base batten
09 Dilatation gap 15 mm
10 Ceiling structure

Joint of the floor with the wall
Vertical cross-section



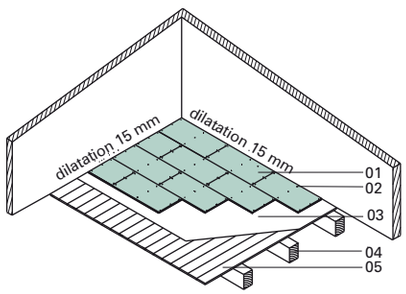
01 Wall
02 Sealing washer
03 Plastic plug
04 Wear layer
05 Floor panel CETRIS® PDI
06 Steam protection
07 Ceiling structure
08 Dilatation gap

7.6 CETRIS® PD and CETRIS® PDB Floors Systems on Load-Bearing Flat Base

CETRIS® PD and CETRIS® PDB cement-bonded particleboards laid over a load-bearing base are used for rehabilitation of flooring without defects of the load-bearing construction itself but with flooring damaged by long use and physical wear or inappropriate maintenance. These boards are mainly used for rehabilitation of old wooden floors.

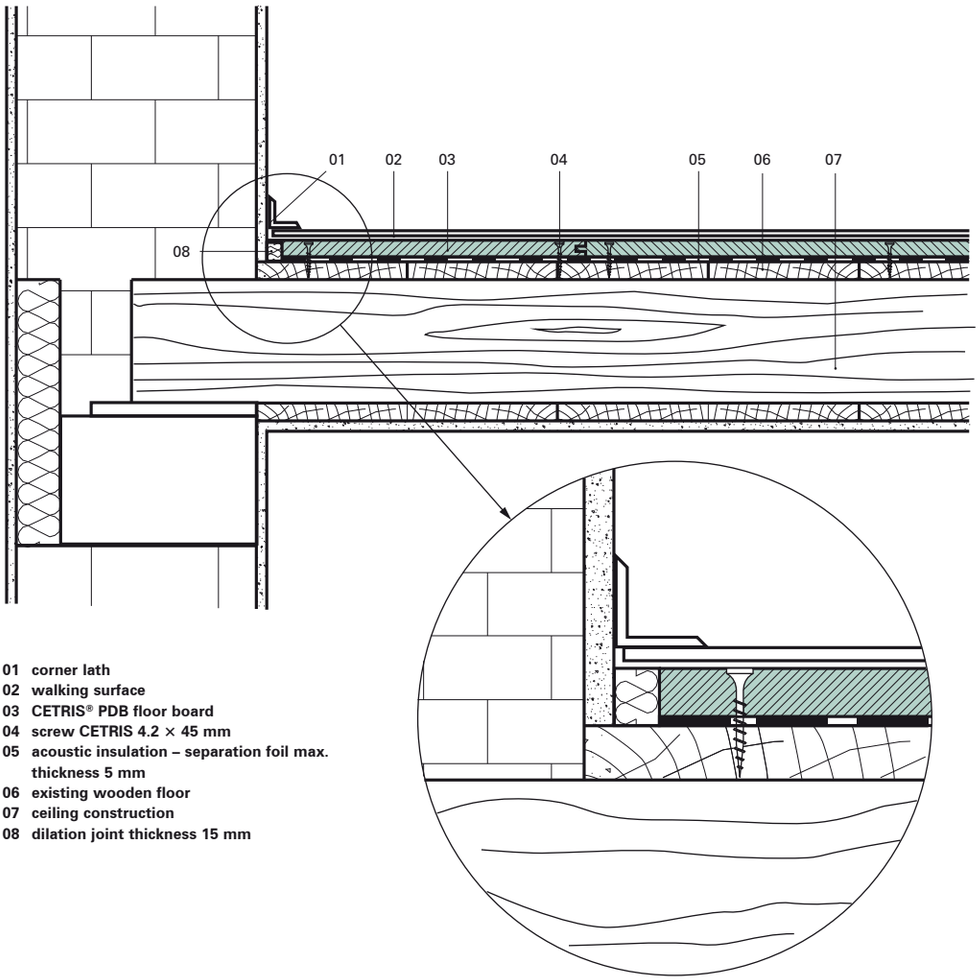
The floor boards CETRIS® PD (CETRIS® PDB) are then fully supported across their area and perform no load-bearing function, only providing a good plane for laying the final flooring. This solution requires CETRIS® PD (CETRIS® PDB) board thickness 16 mm is sufficient here.

CETRIS® PD and CETRIS® PDB floor boards on load-bearing base



01 CETRIS® PDB floor board
02 screw CETRIS 4.2 × 45 mm
03 acoustic insulation – separation foil max. thickness 5 mm
04 ceiling construction
05 existing wooden floor

Model cross section – CETRIS® PD and CETRIS® PDB floor boards on load-bearing base
Vertical cross section



01 corner lath
02 walking surface
03 CETRIS® PDB floor board
04 screw CETRIS 4.2 × 45 mm
05 acoustic insulation – separation foil max. thickness 5 mm
06 existing wooden floor
07 ceiling construction
08 dilation joint thickness 15 mm

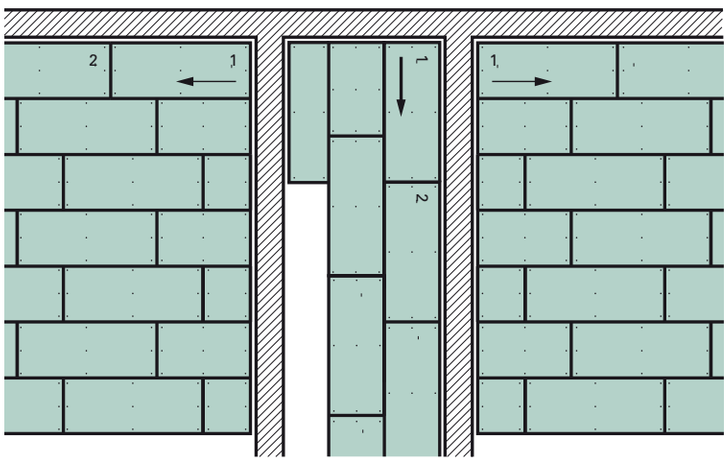
7.6.1 Load-Bearing Base, Requirements, Laying

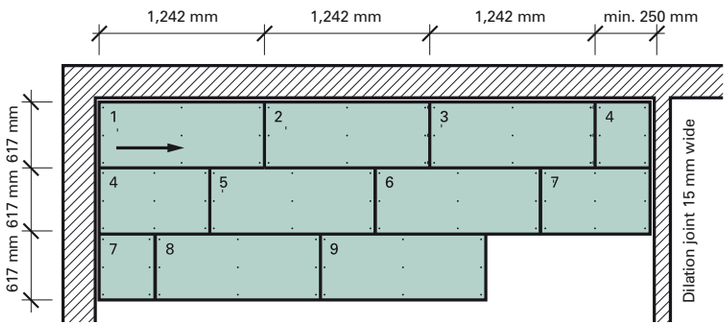
An important precondition for application of this floor type is the ability of the base (such as the original wooden floor) and the load-bearing ceiling construction (such as ceiling joists, steel girders) to transfer the needed load.

Recommended technological procedure of rehabilitation of original wooden floor:

- In the case of local irregularities exceeding 2 mm potential protrusions – knags, elevated growth rings etc. – must be sanded (attention must be paid to the reduced load-bearing capacity of the wooden base in the case of grinding large stretches of the surface!) and depressions must be filled with a suitable filler.
- In the case of a healthy, not too damaged wooden floor with local irregularities up to 2 mm, the existing floor is covered with a separation layer (unwoven fabric, cardboard etc.) and the CETRIS® PD (CETRIS® PDB) floor boards, thickness 16 mm, are laid directly over the separation layer.
- Laying CETRIS® PD (CETRIS® PDB) floor boards begins with a whole board in the corner opposite the door. CETRIS® PD (CETRIS® PDB) boards are laid tightly without gaps and the joints are fixed with a glue. The following dispersion glues resistant to alkali are recommended: UZIN MK33, MAPEI – ADESIVIL D3, SCHÖNOX HL, CONIBOMD PRO 1005, HENKEL PONAL SUPER 3 (PATEX SUPER 3).
- The boards must be laid within 15 minutes (which is the time of the glue plasticity). Excess (pushed out) glue must be removed after pressing the boards together for the joint to be filled with the glue up to the edge. After that the boards are screwed to the old wooden floor.
- When laying CETRIS® PD (CETRIS® PDB) cement-bonded particleboards cross joints are prohibited. The individual rows of the boards are laid with overlaps of a min. 1/3 of the board length, perpendicularly to the direction of the original wooden floor. The length of the first boards in a row must be selected for the minimum size of the cut board to be 250 mm. Min. 15 mm wide dilation joints must be made along the vertical constructions (walls, pillars etc.)
- Around the doors the CETRIS® PD (CETRIS® PDB) boards should not create a joint perpendicular to the door.
- In the case of floors attacked by fungi or rotten floors, the old boards should be replaced or removed and new CETRIS® PD (CETRIS® PDB) boards should replace them. The new boards must then be laid on joists, see Chapter 7.7 CETRIS® PD and CETRIS® PDB Floor Systems on joists.
- If the floor is wet it is necessary to provide for the moisture absorption for example by application of a separation foil.
- If the old wooden floor shows insufficient load-bearing capacity (is too flexible) it is necessary to assess the thickness of the CETRIS® PD (CETRIS® PDB) boards against the load tables or strengthen the original wooden floor by inserting reinforcing planks. Another option is installation of a load-bearing grid over the original floor.

CETRIS® PD and CETRIS® PDB board floor laying over load-bearing flat base





7.7 CETRIS® PD and CETRIS® PDB Floor Systems on Joists

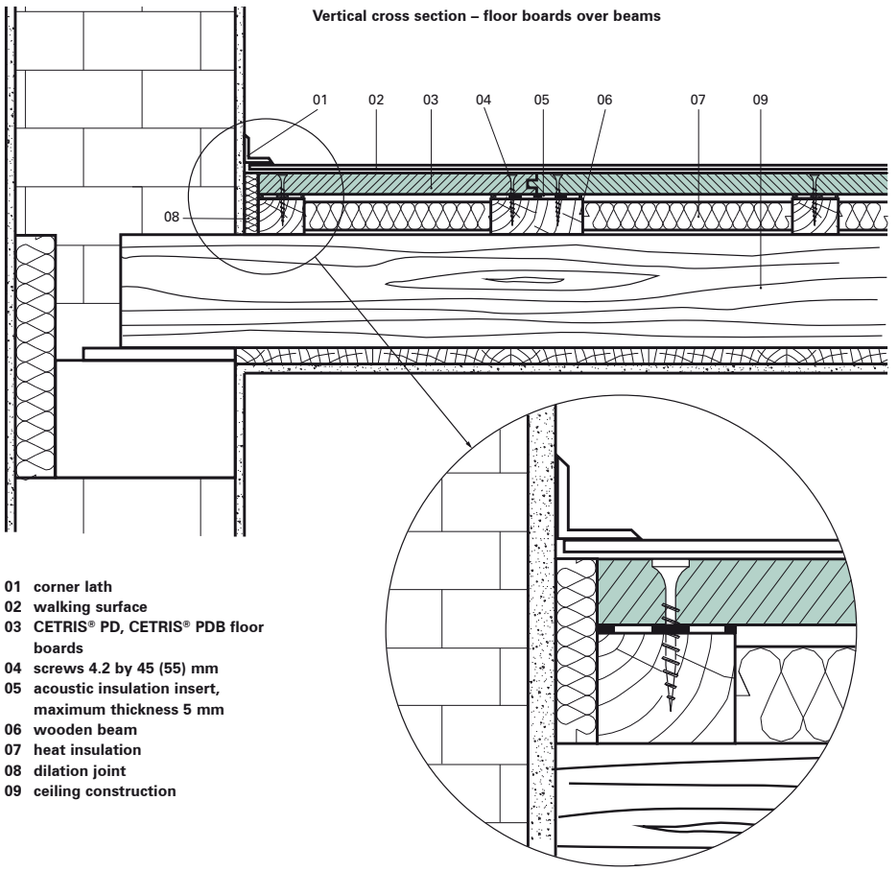
CETRIS® PD and CETRIS® PDB cement-bonded particleboards on joists are used both for floors in new houses and for reconstructions of old floors.

7.7.1 Description of Construction

The classical solid floor construction consists of beams (wooden joists, steel girders etc.). The beams are covered with CETRIS® PD and CETRIS® PDB cement-bonded particleboards in one layer screwed to the beams. The CETRIS® PD and CETRIS® PDB floor boards are laid tightly without gaps and the joints are secured with dispersion glue for assurance of joint action of the boards. Heat and sound insulation is placed between the beams as required. To prevent formation of sound bridges acoustic insulation is also laid over the beams in the maximum thickness of 5 mm. The floor is finished around the walls with a 15 mm wide dilation joint. It is recommended to place a mineral wool strip in the dilation joints around the vertical constructions (such as ORSIL, thickness 15 mm), to prevent the dilation joint from clogging by subsequent works. The strip is cut to the required height after completion of the surface finish of the floor before laying the flooring.

The beams must display sufficient load-bearing capacity and must be laid on a load-bearing construction of a sufficient capacity too. Their sag must be checked. In the case of a flat load-bearing construction, the beams should lie on the construction along their full length.

Vertical cross section – floor boards over beams



01 corner lath
02 walking surface
03 CETRIS® PD, CETRIS® PDB floor boards
04 screws 4.2 by 45 (55) mm
05 acoustic insulation insert, maximum thickness 5 mm
06 wooden beam
07 heat insulation
08 dilation joint
09 ceiling construction

7.7.2 Load Tables

The static calculation of the load-bearing capacity of CETRIS® PD and CETRIS® PDB floor boards was made for the board laying on beams (single-direction support) or grid (two-direction support). The grid beam spacing must be the same in both directions (the beams form square fields). Joint action of CETRIS® PD (CETRIS® PDB) boards is provided by a glued a tongue and groove joint.
The calculation assumes elastic material behaviour and respects the following mechanical and physical properties:

Tensile bend strength	σ = min. 9 Nmm^{-2}
Elasticity module	E = min. 4,500 Nmm^{-2}
Bulk density	ρ = 1,400 kgm^{-3}

The load-bearing capacity calculation also considered the effect of the board's own weight. The maximum normal tensions in the marginal fibres will not exceed 3.6 N/mm^2 (which means 2.5 multiple of the safe value). The maximum elastic sag of the board by operational traffic including the board's own weight will not exceed 1/300 of the board span.

The calculation has verified that the load-bearing capacity of the CETRIS® cement-bonded particleboard concentrated load pursuant to ČSN 73 00 35 (Loads of Building Constructions) is decisive. Specification of the maximum usable load of the board respects Article 6 of ČSN 73 00 35 standard, stipulating that in the case of ceilings, staircases, flat roofs and terraces concentrated standard vertical load must be considered in the kN value equal to the value of the standard usable uniform load per 1 m^2 of the ceiling.

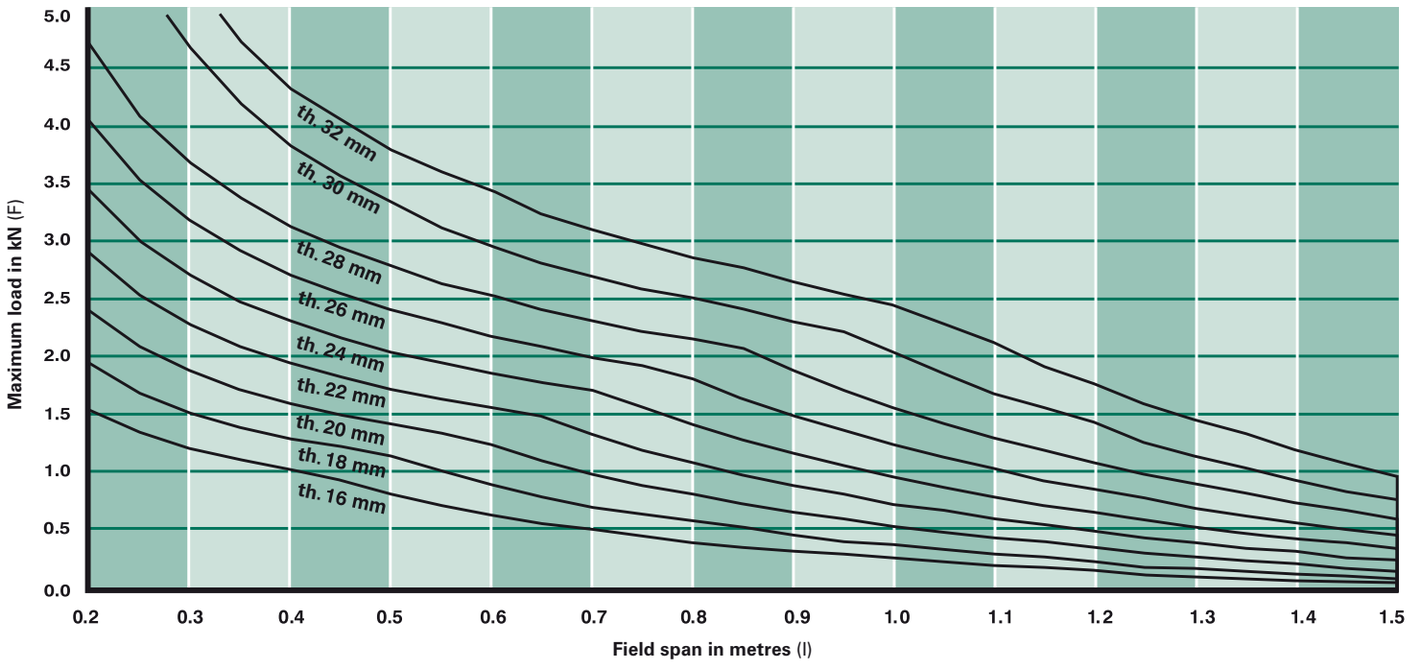
This concentrated load is assumed to act on a square area with 100 mm sides.

The calculation further assumes that the load acts directly on the board surface. In the case of use of load-distributing layers, the load-bearing capacity of CETRIS® floor boards will be higher, but must be proven by calculation for each individual case. The results of static calculations are shown in the following tables and diagrams.

Load-bearing capacity of CETRIS® PD and CETRIS® PDB floor boards in the case of one-direction beams

Max. sag L/300, max. tensile bend strength 3.6 N/mm², loaded area 100 x 100 mm

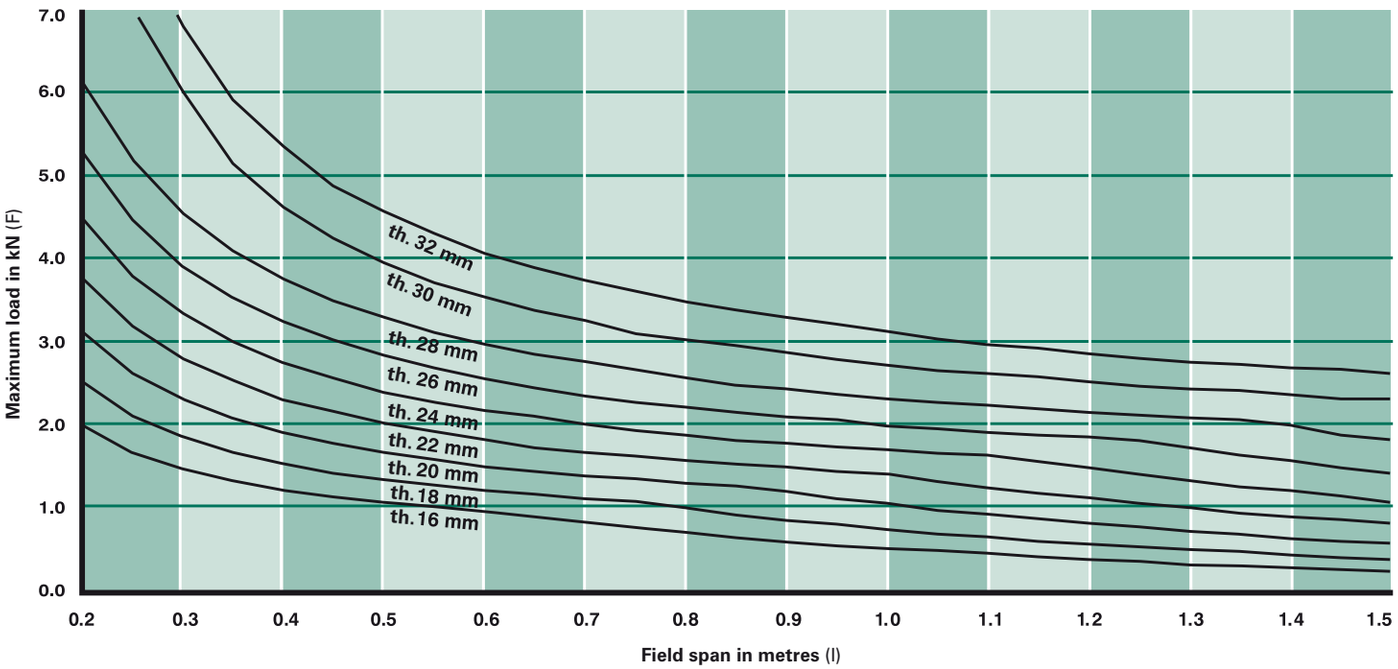
SPAN (m)	MAXIMUM LOAD F (kN)								
	th. 16 mm	th. 18 mm	th. 20 mm	th. 22 mm	th. 24 mm	th. 26 mm	th. 28 mm	th. 30 mm	th. 32 mm
0.200	1.532	1.940	2.396	2.899	3.451	4.052	4.700	5.396	6.140
0.250	1.335	1.691	2.089	2.529	3.010	3.534	4.100	4.708	5.357
0.300	1.200	1.520	1.878	2.274	2.707	3.179	3.688	4.235	4.820
0.350	1.099	1.393	1.721	2.085	2.483	2.916	3.384	3.886	4.423
0.400	1.020	1.293	1.599	1.937	2.308	2.711	3.146	3.614	4.114
0.450	0.922	1.212	1.499	1.817	2.165	2.544	2.953	3.392	3.862
0.500	0.802	1.144	1.415	1.716	2.045	2.403	2.790	3.207	3.651
0.550	0.703	1.010	1.343	1.628	1.942	2.282	2.651	3.047	3.470
0.600	0.620	0.893	1.235	1.551	1.851	2.176	2.528	2.906	3.311
0.650	0.550	0.794	1.101	1.476	1.769	2.081	2.418	2.781	3.168
0.700	0.488	0.708	0.985	1.323	1.695	1.994	2.318	2.667	3.039
0.750	0.435	0.635	0.884	1.190	1.559	1.915	2.227	2.562	2.920
0.800	0.387	0.568	0.795	1.073	1.409	1.807	2.141	2.465	2.810
0.850	0.345	0.509	0.715	0.970	1.276	1.639	2.068	2.373	2.707
0.900	0.307	0.456	0.644	0.877	1.157	1.489	1.878	2.288	2.610
0.950	0.272	0.408	0.580	0.793	1.049	1.354	1.711	2.124	2.518
1.000	0.240	0.364	0.522	0.717	0.952	1.232	1.560	1.940	2.375
1.050	0.211	0.325	0.469	0.648	0.864	1.121	1.423	1.773	2.174
1.100	0.184	0.288	0.420	0.584	0.783	1.020	1.298	1.621	1.991
1.150	0.159	0.254	0.375	0.526	0.709	0.927	1.184	1.482	1.823
1.200	0.136	0.223	0.334	0.472	0.641	0.842	1.079	1.354	1.669
1.250	0.115	0.194	0.296	0.423	0.578	0.763	0.982	1.235	1.527
1.300	0.095	0.168	0.259	0.375	0.517	0.687	0.888	1.121	1.390
1.350	0.076	0.141	0.225	0.332	0.462	0.618	0.803	1.018	1.265
1.400	0.059	0.118	0.195	0.295	0.412	0.556	0.726	0.924	1.153
1.450	0.043	0.097	0.167	0.256	0.366	0.499	0.656	0.840	1.051
1.500	0.029	0.077	0.141	0.223	0.325	0.447	0.592	0.762	0.959



Load-bearing capacity of CETRIS® PD and CETRIS® PDB floor boards in the case of two-direction beams (grids)

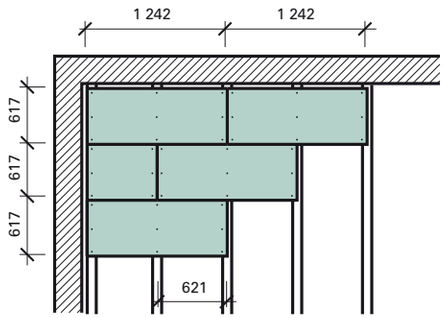
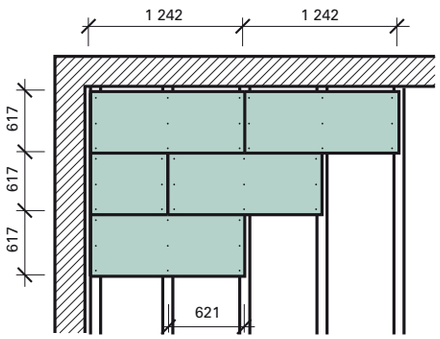
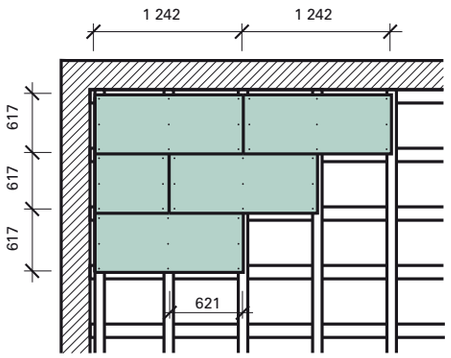
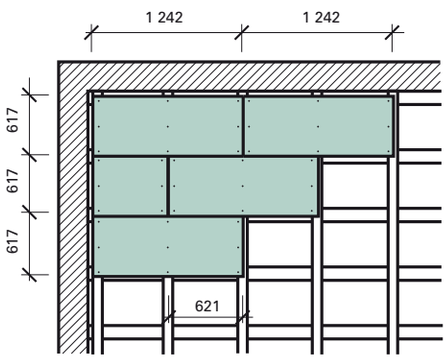
Max. sag L/300, max. tensile bend strength 3.6 N/mm², loaded area 100 x 100 mm

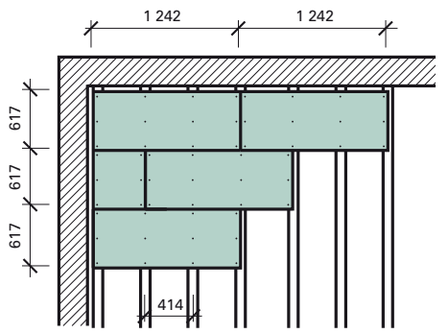
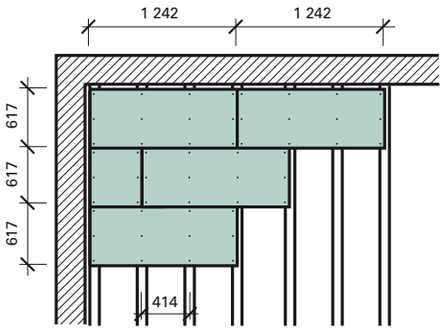
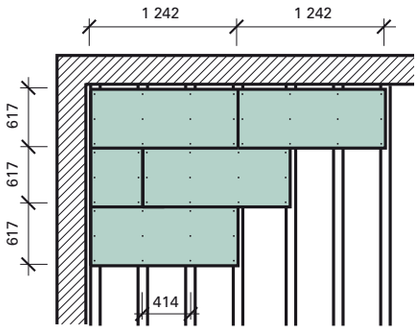
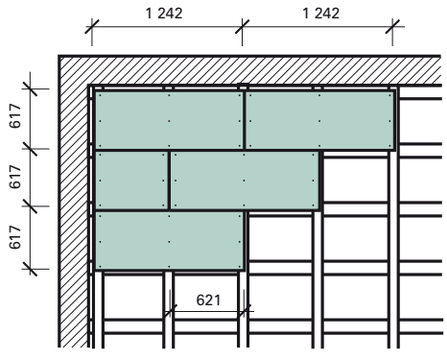
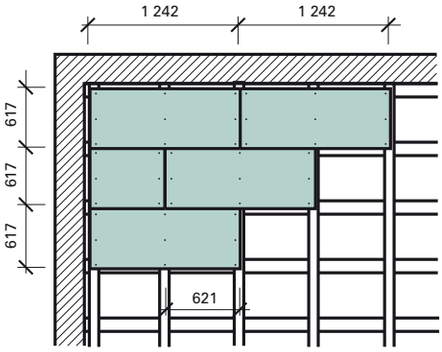
SPAN (m)	MAXIMUM LOAD F (kN)								
	th. 16 mm	th. 18 mm	th. 20 mm	th. 22 mm	th. 24 mm	th. 26 mm	th. 28 mm	th. 30 mm	th. 32 mm
0.200	1.999	2.530	3.124	3.781	4.500	5.282	6.126	7.033	8.002
0.250	1.692	2.142	2.645	3.201	3.810	4.472	5.187	5.955	6.776
0.300	1.487	1.882	2.325	2.814	3.349	3.932	4.560	5.236	5.958
0.350	1.340	1.697	2.097	2.537	3.020	3.545	4.113	4.722	5.374
0.400	1.229	1.557	1.924	2.329	2.773	3.255	3.776	4.336	4.935
0.450	1.143	1.448	1.789	2.167	2.580	3.029	3.514	4.036	4.593
0.500	1.074	1.361	1.682	2.036	2.425	2.848	3.304	3.795	4.319
0.550	1.017	1.289	1.593	1.930	2.298	2.699	3.132	3.597	4.095
0.600	0.969	1.229	1.519	1.840	2.192	2.575	2.988	3.432	3.907
0.650	0.913	1.177	1.456	1.764	2.102	2.469	2.866	3.292	3.748
0.700	0.836	1.133	1.401	1.698	2.024	2.378	2.760	3.171	3.611
0.750	0.768	1.094	1.354	1.641	1.956	2.299	2.669	3.066	3.492
0.800	0.708	1.019	1.312	1.591	1.896	2.229	2.588	2.974	3.387
0.850	0.655	0.945	1.274	1.546	1.843	2.167	2.516	2.892	3.294
0.900	0.608	0.879	1.219	1.505	1.795	2.111	2.452	2.818	3.211
0.950	0.566	0.820	1.140	1.469	1.752	2.060	2.394	2.752	3.136
1.000	0.527	0.766	1.067	1.435	1.713	2.015	2.341	2.692	3.068
1.050	0.491	0.717	1.002	1.351	1.677	1.973	2.293	2.637	3.005
1.100	0.459	0.673	0.942	1.273	1.644	1.934	2.249	2.587	2.948
1.150	0.428	0.631	0.887	1.201	1.580	1.899	2.208	2.540	2.896
1.200	0.400	0.593	0.836	1.135	1.496	1.866	2.170	2.497	2.847
1.250	0.374	0.557	0.789	1.074	1.419	1.828	2.134	2.456	2.801
1.300	0.349	0.524	0.745	1.018	1.347	1.739	2.101	2.419	2.759
1.350	0.325	0.492	0.704	0.965	1.281	1.656	2.069	2.383	2.719
1.400	0.302	0.462	0.665	0.915	1.219	1.579	2.002	2.350	2.681
1.450	0.281	0.434	0.628	0.869	1.160	1.507	1.914	2.318	2.646
1.500	0.260	0.406	0.593	0.825	1.105	1.439	1.832	2.287	2.612



CETRIS®
Floor Systems

The results of the static calculation point to the following options of use of CETRIS® floor boards:

Nature of the room	**Lofts, inaccessible terraces and flat roofs with roofing element span up to 9 m.**	**Residential apartments including antechambers and corridors, rooms in dormitories, hotels, rooms in crèches and nurseries, bedrooms of school dormitories and sanatoria, hospital wards, policlinics, other healthcare facilities, surgeries and waiting rooms.**
Standard load (kNm^{-2})	**0,75**	**1,50**
Recommended load-bearing floor construction	CETRIS® PD (PDB) floor boards thickness 18 mm over beams with the span of 0.621 m	CETRIS® PD (PDB) floor boards thickness 22 mm over beams with the span of 0.621 m
		
	CETRIS® PD (PDB) floor boards thickness 16 mm over beams in both directions with the span of 0.621 m	CETRIS® PD (PDB) floor boards thickness 20 mm over beams in both directions with the span of 0.621 m
		

Rooms and offices of research institutions, office buildings, reading rooms, classrooms without heavy equipment or material storage, agricultural rooms and areas.	**Halls and corridors in the mentioned above objects with exception of schools, lecture halls, mess halls, coffee and restaurant rooms.**	**Halls and corridors of messes, cafés, restaurants, schools, railway stations (areas open to public), theaters, cinemas, concerthall clubs, sports halls, department stores, museums, exhibition halls and pavilions, libraries and archives.**
2,00	**3,00**	**4,00**
CETRIS® PD (PDB) floor boards thickness 22 mm over beams with the span of 0.414 m	CETRIS® PD (PDB) floor boards thickness 28 mm over beams with the span of 0.414 m	CETRIS® PD (PDB) floor boards thickness 32 mm over beams with the span of 0.414 m
		
		Or individual solutions with thicker boards
CETRIS® PD (PDB) floor boards thickness 24 mm over beams in both directions with the span of 0.621 m	CETRIS® PD (PDB) floor boards thickness 30 mm over beams in both directions with the span of 0.621 m	
		

Note: Cases of higher usable load or large solitary objects must be addressed individually.

All values in mm

7.7.3 Laying of CETRIS® PD and CETRIS® PDB Floors

1 CETRIS® PD and CETRIS® PDB Floor boards are laid as final constructions after completion of the "wet" construction works (partition erection, plastering etc.). Where a light partition (plasterboard, CETRIS® on grid) is to be installed its weight must be considered by the design of dimensions and layout of the floor beams. In this case the possibility of sound transfer through the floor from one room to the other must be considered.

2 The width of the beam is based not only on the load-bearing capacity requirement but also on the requirement for sufficient anchoring of the floor sections CETRIS® PD (CETRIS® PDB) in the load-bearing construction. The width of wooden beams in the point of contact of two CETRIS® PD (CETRIS® PDB) boards must be at least 100 mm. It is recommended to place a flexible insert between the beams and the load-bearing construction (rubber, solid felt, PE foil layer of minimum thickness 5 mm) for sound transmission reduction. The inserts or wedges will at the same time level the beams. Anchor the levelled beams in the base. Use screws for anchoring to the wooden base and hammered dowels for anchoring to concrete. The floor beams are laid in axial distances required by the designed load.

3 It is recommended to separate CETRIS® PD (CETRIS® PDB) boards from the beams with a separation layer (unwoven fabric, felt, rubber, cardboard) to prevent potential knocking of the floor. It is sufficient to lay a strip of the same width as the beam along the full length of the beam.

4 The tongue edge by the wall is to be cut off.

5 CETRIS® PD (CETRIS® PDB) boards are laid tightly without gaps and the joints are fixed with glue. The following dispersion glues resistant to alkali are recommended: UZIN MK33, MAPEI – ADESIVIL D3, SCHÖNOX HL, HENKEL PONAL SUPER 3 (PATEX SUPER 3), CONIBOMD PRO 1005 etc. After glue application and board settlement the floor boards must be screwed immediately. Excess (pushed out) glue must be removed after pressing the boards together for the joint to be filled with the glue up to the edge. The maximum screw spacing is 600 mm in the lengthwise direction and 300 mm in the crosswise direction. The screws must be a min. 25 mm and max. 50 mm away from the board edges.

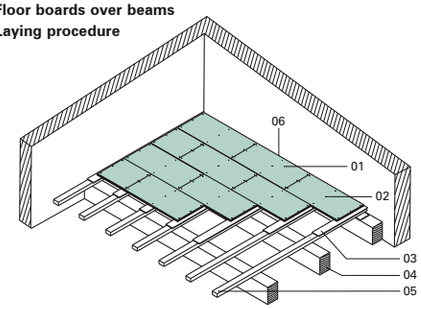
6 When laying CETRIS® PD (CETRIS® PDB) floor boards, cross joints should be avoided. Butt joints should be supported in at least one direction. The individual rows of the boards are laid with overlaps of a min. 1/3 of the board length, perpendicularly to the direction of the original wooden floor. The length of the first boards in a row must be selected for the minimum size of the cut board to be 250 mm. Min. 15 mm wide dilation joints must be made along the vertical constructions (walls, pillars etc.).

7 In the case of single-direction beams, CETRIS® PD (CETRIS® PDB) boards are laid with **the longer side perpendicular to the beams**.

8 CETRIS® PD (CETRIS® PDB) boards laid around the doors must avoid cross joints.

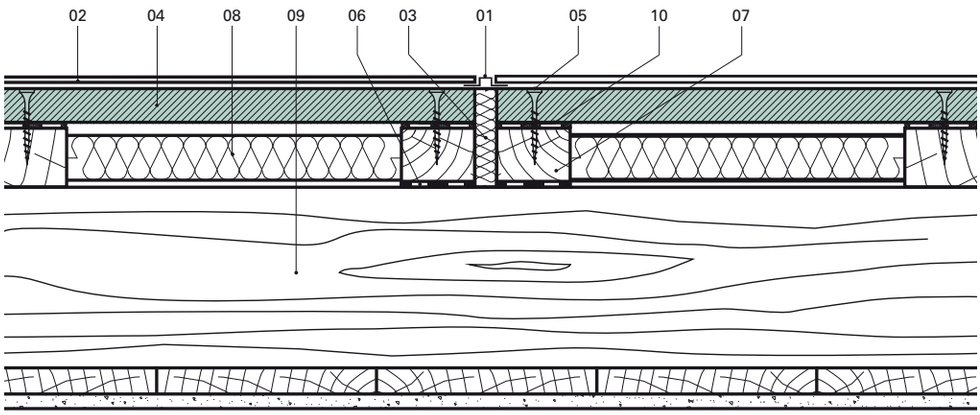
9 In the case of additional heat insulation between the beams by backfill (such as LIAPOR) up to the beam top, it is recommended to overfill the space between the beams to allow for additional compaction. The backfill is recommended to be covered with end-to-end cardboard for prevention of grain penetration to the joints of the floor boards in the course of the floor assembly and for elimination of the floor creaking.

Floor boards over beams
Laying procedure



01 CETRIS® PD (CETRIS® PDB) floor boards
02 CETRIS screw
03 base and levelling inserts
04 existing log
05 beams
06 dilation joint

Floor boards over beams – Dilation design



01 dilation profile
02 walking surface
03 dilation joint
04 CETRIS® PD (CETRIS® PDB) floor boards
05 CETRIS screw
06 underlay and leveling strip
07 beams
08 heat and sound insulation
09 ceiling construction
10 separation strip

7.8 Two-Layer CETRIS® Floors on Beams

Recent solutions and implementations of CETRIS® board floors are increasingly based on two or more layers of basic CETRIS® boards laid over beams. This solution is used for the better availability of the basic boards in comparison to the special floor boards. This method is also beneficial in the case of varied (changing) axial distances between the beams (in the case of reconstructions of old wooden floors).
The maximum permitted axial distance of the beams is 625 mm. In comparison to floor board laying this method is more laborious – more steps, a thick network of screws for perfect joining of the layers, the necessity to cut the basic board size.

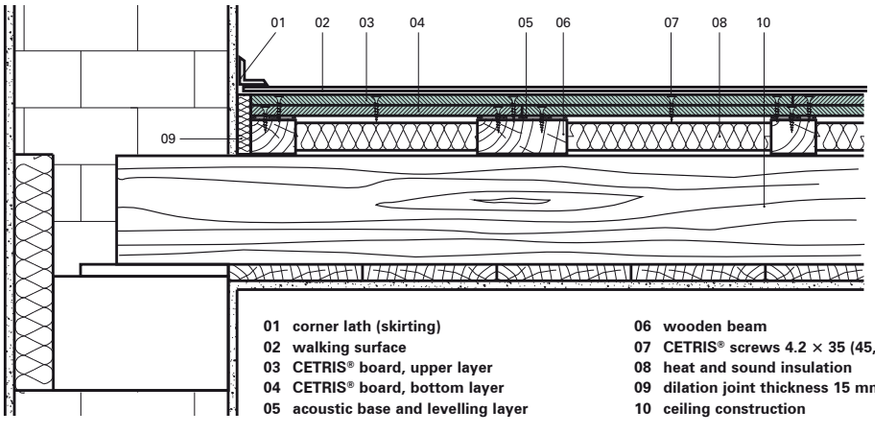
Attention!
Only one layer of CETRIS® boards on beams is not fully walkable. During the assembly the workers are allowed to walk only on the beams (supports). The total load capacity of the floor is achieved after screwing of the two layers of CETRIS® boards together! For this method to be effective both CETRIS® board layers must be perfectly joined together (by screwing, or riveting) for ideal transfer of shear and tensile tensions. If the layers are not perfectly bound together each of them behaves as a separate layer, which results in the risk of significant sags.

This solution is used both for floors in new buildings and for ceiling reconstructions in old buildings.

7.8.1 Description of Construction

The classical solid floor construction consists of one-way or two-way beams (wooden joists, steel girders etc.). The beams are covered with CETRIS® PD and CETRIS® PDB cement-bonded particleboards in two layers. Due to the static effects the largest possible sizes of the CETRIS® boards are recommended. The first layer of CETRIS® boards is laid tightly without gaps and screwed to the beams. The shorter sides of the boards are laid over the beams. The second CETRIS® board layer is laid with an overlap on both sides **for the shorter sides again to be laid over the beams (the overlap in the direction perpendicular to the beams equal one field length and in the beam direction a half board width)**. The second layer boards are again laid tightly and screwed for joint action of both board layers. Heat and sound insulation is placed between the beams as required. To prevent formation of sound bridges acoustic insulation is also laid under the beams in the maximum thickness of 5 mm. The floor is finished around the walls with a dilation joint with the width of 15 mm. The beams must display sufficient load-bearing capacity and must be laid on a load-bearing construction of a sufficient capacity too. Their sag must be checked. In the case of a flat load-bearing construction the beams should lie on the construction along their full length.

Two-layer CETRIS® floors over beams



01 corner lath (skirting)
02 walking surface
03 CETRIS® board, upper layer
04 CETRIS® board, bottom layer
05 acoustic base and levelling layer
06 wooden beam
07 CETRIS® screws 4.2 × 35 (45, 55) mm
08 heat and sound insulation
09 dilation joint thickness 15 mm
10 ceiling construction

7.8.2 Load Tables

In the case of compliance with the technological procedure of laying (and especially joining of the two layers) the design of this floor type may be based in the static calculation of load-bearing capacity for CETRIS® floor boards.
However, joint action of the two CETRIS® board layers must be assured by their screwing, or riveting (maximum distance of the joining elements in the lengthwise and the cross wise direction is 300 mm).
In the case of perfectly assured joint action of both layers the load-bearing capacity of the two-layer floor equals the load-bearing capacity of the one-layer CETRIS® PD (CETRIS® PDB) floor glued in the tongue and groove connections of the same total thickness, reduced for safety reasons by 25%. The other assumption of the calculation and the load tables can be found in Chapter 7.7 CETRIS® PD and CETRIS® PDB Floor Systems on Beams.

Maximum usable load in kN for most frequent application (floors of two screwed together layers of CETRIS® boards laid over one-direction grid)

SPAN (m)	CONSTRUCTION COMPOSITION (thickness + thickness in mm)				
	10 + 10	10 + 12	12 + 12	12 + 14	14 + 14
0.35	1.29	1.56	1.86	2.19	2.54
0.40	1.20	1.45	1.73	2.03	2.36
0.45	1.12	1.36	1.62	1.91	2.21
0.50	1.06	1.29	1.53	1.80	2.09
0.55	1.01	1.22	1.46	1.71	1.99
0.60	0.93	1.16	1.39	1.63	1.90
0.625	0.88	1.14	1.36	1.60	1.85

7.8.3 Laying of CETRIS® Boards

1 Floors of CETRIS® boards are laid as final constructions after completion of the "wet" construction works (partition erection, plastering etc.). Where a light partition (plasterboard, CETRIS® on grid) is to be installed its weight must be considered by the design of dimensions and layout of the floor beams. In this case the possibility of sound transfer through the floor from one room to the other must be considered.

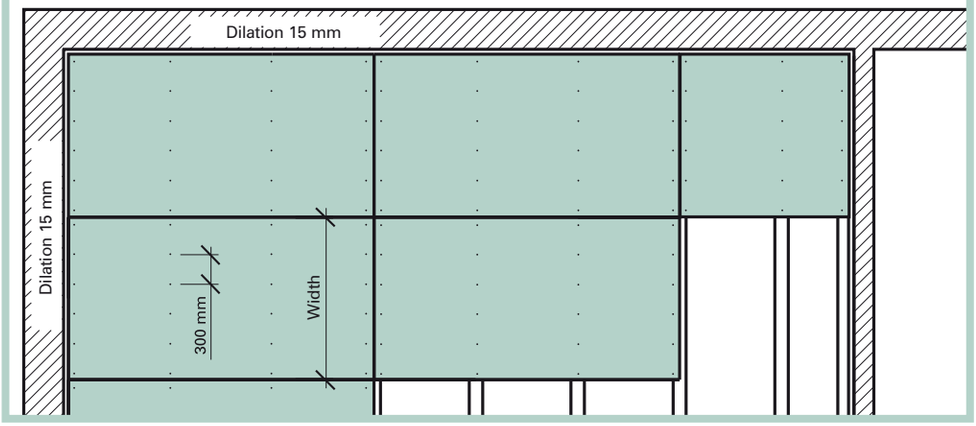
2 The width of the beam is based not only on the load-bearing capacity requirement but also on the requirement for sufficient anchoring of the CETRIS® boards in the load-bearing construction. The width of wooden beams in the point of contact of two CETRIS® boards must be at least 100 mm. It is recommended to place a flexible insert between the beams and the load-bearing construction (rubber, solid felt, PE foil layer of maximum thickness 5 mm) for sound transmission reduction. The inserts or wedges will at the same time level the beams. Anchor the levelled beams in the base. Use screws for anchoring to the wooden base and hammered dowels for anchoring to concrete.

3 It is recommended to separate CETRIS® boards from the beams with a separation layer (unwoven fabric, felt, rubber, cardboard) to prevent the potential knocking of the floor. It is sufficient to lay a strip of the same width as the beam along the full length of the beam.

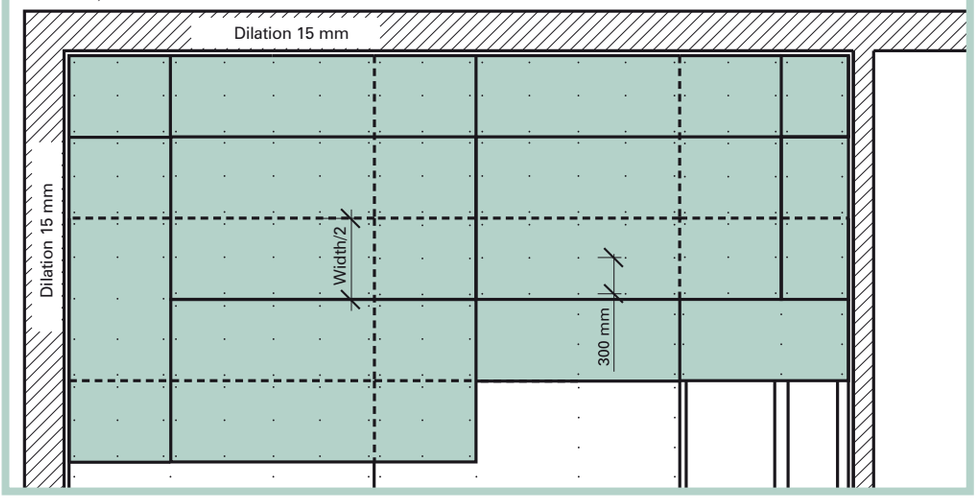
4 The first layer of CETRIS® boards is laid tightly with cross joints. The board is settled and immediately screwed. In the case of single-direction beams the first CETRIS® board layer is laid with the longer side perpendicular to the beams and the shorted side supported by the beam. The screw spacing in the beam direction must not exceed 300 mm. The screw distance from the board edge must range between 25 and 50 mm. The dilation joint of minimum width of 15 mm must be kept around the vertical constructions (walls, pillars).

5 The second layer of CETRIS® boards is laid with an overlap with the shorted sides again lying on the beams (the overlap equals the length of one field). The boards are again laid tightly with cross joints. The board is settled and immediately screwed to the bottom layer. The screw spacing in the lengthwise and crosswise direction must not exceed 300 mm. The screw distance from the board edge must range between 25 and 50 mm. The dilation joint of minimum width of 15 mm must be kept around the vertical constructions (walls, pillars).

Laying two-layer CETRIS® board floor on beams
Bottom layer



Laying two-layer CETRIS® board floor on beams
Bottom layer



Note: In the case of softened PE foil inserted between the two CETRIS® board layers for increased impact sound transmission loss, it is necessary to use milled floor boards CETRIS® PD (CETRIS® PDB) for the second layer. If non-milled boards are used, different local compression may occur with resulting irregularities of the cross joints of the CETRIS® boards. The CETRIS® PD or CETRIS® PDB floor board is glued in the tongue and groove joints and screwed to the bottom CETRIS® board layer.

6 The CETRIS® board laid around the doors must avoid joints.

7 In the case of additional heat insulation between the beams by backfill (such as LIAPOR) up to the beam top it is recommended to overfill the space between the beams to allow for additional compaction. The backfill is recommended to be covered with end-to-end cardboard for prevention of grain penetration to the joints of the floor boards in the course of the floor assembly and for elimination of the floor creaking.

7.9 Floor covering

7.9.1 Preparation of Surface of CETRIS® Floor Boards for Laying of Floor Finish

After completion of a CETRIS® PD (CETRIS® PDB) cement bonded particleboard floor, the surface must be checked for planarity deviations with a focus on elimination of the deviations between the individual boards and preparation of a perfectly flat surface for the Laying of Floor Finish. The method of elimination of potential irregularities is different for each flooring finish type.

The surface is levelled by sanding or application of levelling plaster.

- The joints of the CETRIS® board need not be processed under glued wooden parquet or pavement.

- If the parquet is to be floating and potential irregularities do not prevent laying priming is not necessary. However, it is recommended to place a separation foil of unwoven textile or foam polystyrene (MIRELON) between the parquet and the CETRIS® boards for creaking minimisation.

- In the case of full area filler or glue applications, the CETRIS® boards need priming. Priming is recommended to be applied immediately after the board laying on the dry and clean board surface. Priming means painting the CETRIS® board surface, which penetrates to the sub-surface layers to simultaneously fulfil the following three functions – reduction of the effects of various forms of humidity on the linear expansion of the boards, assurance of reliable adherence of the subsequently laid layers and reduction of absorption by the board (water absorption from the plaster). Well applied priming significantly affects the final effect of the subsequently performed works.

- In the case of use of thin layer floor covering (such as PVC or carpet) elastic filler should be spread over the CETRIS® board floor with an emphasis on the joints of the boards, the unused predrilled holes, and eventually also individual connecting screws. Larger irregularities should be sanded before the filler application.

- Because of diversity of the floor finishes used it is recommended to consult with the glue manufacturers.

- Priming and gluing of floor covering is recommended to be implemented with unified systems with all components of the system produced by the same manufacturer and tested for use over cement bonded particleboard (MAPEI, SCHÖNOX, DEGUSSA, BOTAMENT). It is not recommended to use a combination of materials by different manufacturers within a single floor system.

- If the CETRIS® floors are to be covered with mosaic, stone or ceramic floor finish, the maximum paving stone size should not exceed 200 × 200 mm. The paving stones must not be laid in the oblique orientation. Because of the nature of the CETRIS® boards, the pavement must not be glued with standard fillers which are not able to compensate shape alterations of the base. Ceramic tile gluing over CETRIS® boards is only reliable if elastic glues are used. The glue must be applied with a teethed spatula with the tooth size at least 8 mm. The pavement is glued in the floating and buttering manner. When laying pavement the issue of dilation joints must be carefully considered. The pavement dilations should correspond to the base dilations and should be designed with regard to the size and shape of the room.

- Elastic joint filling materials must be used for pavement joint filling.

- Pavements may also be glued with special glues not requiring priming (two-in-one). Use of these products must be consulted with their respective manufacturers.

- Spaces stressed with water (sanitary rooms of residential houses) must be provided with sufficient hydro-insulation (elastic hydro-insulating plaster or hydro-insulating foil) for reliable protection of the CETRIS® boards against water infiltration.

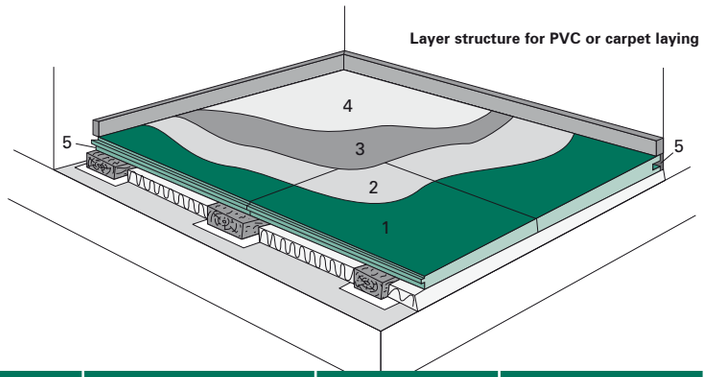
- If the flooring is not to be laid within 48 hours after the CETRIS® board floor laying it is recommended to treat the boards with a protective paint, ideally priming (type pursuant to the floor covering – such as MAPEI Primer S, Schönox KH, Botact 11 etc.).

- Particular cases occurring in the course of laying the floor covering should be consulted with representatives or technicians of the building chemical manufacturer. Applications of individual materials should comply with the principles stated on the product packages, or in the product data sheets.

7.9.2 PVC, Carpets

In the case of use of thin layer floor covering (such as PVC or carpet) elastic filler should be spread over the CETRIS® board floor with an emphasis on the joints of the boards, the unused predrilled holes, and eventually also individual connecting screws. Larger irregularities should be sanded before the filler application.

01 CETRIS® cement-bonded particleboard
02 priming
03 levelling plaster
04 PVC, carpet
05 dilation joint

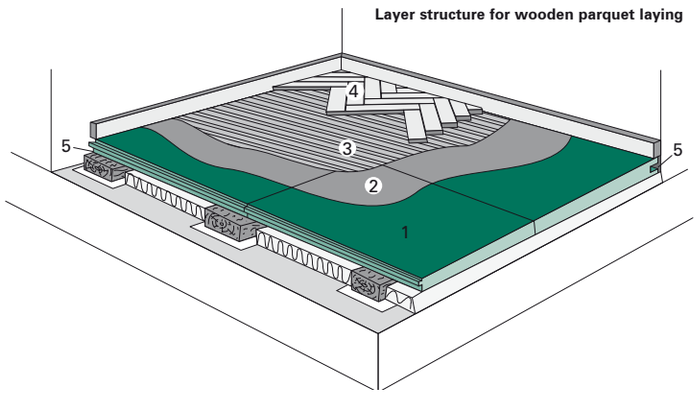


SYSTEM COMPOSITION	MAPEI system	SCHÖNOX system	BASF system	THOMSIT system	UZIN system	MUREXIN system
Primer	MAPEPRIM SP	Schönox KH	Penetration PGM	Thomsit R 777, R 766	UZIN PE 360	Murexin D7
Levelling plaster	FIBERPLAN v tl. min. 3 mm	Schönox SP, AM	Mastertop 515	Thomsit FA 97	UZIN NC 170 LevelStar	Murexin NH 75
Glue	ROLLCOLL	Schönox Unitech, Floorplastic, Tex-object	---	Thomsit K 188, T 440	UZIN UZ 57, LE 44, KE 66	Murexin D 321

7.9.3 Wooden Parquet

Dry floor must be primed before gluing wooden parquet. If the parquet is to be floating priming is not necessary. However, it is recommended to place a separation foil of unwoven fabric or foam polystyrene between the parquet and the CETRIS® boards (for creaking minimisation).

01 CETRIS® cement-bonded particleboard
02 priming
03 gluing filler
04 wooden parquet
05 dilation joint

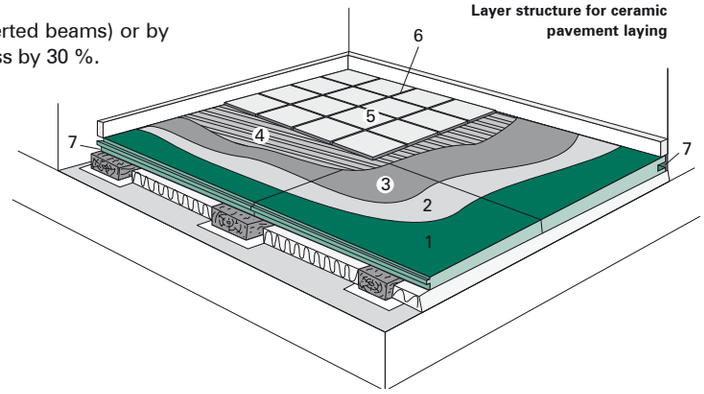


SYSTEM COMPOSITION	MAPEI system		SCHÖNOX system	THOMSIT system	SIKA system	LEAR system	UZIN system	MUREXIN system
Primer	PRIMER PA	not required	not required	Thomsit R 777	not required	Unixin A170	UZIN PE 414 TURBO	not required
Gluing filler	ADESILEX PA	LIGNOBOND	Schönox MS-elastic	Thomsit P 600, P 685	Sika Bond T 52, T 54, T 55	Unixin P230	UZIN MK 100	Objekt X-Bond MS-K 509

7.9.4 Ceramic Pavement

If the CETRIS® floors are to be covered with mosaic, stone or ceramic floor finish, the maximum paving stone size should not exceed 200 × 200 mm. The mentioned compositions are also suitable for anchoring of a heating (resistance) mat with subsequent ceramic tile gluing. The pavement must be glued in compliance with the instructions of the respective manufacturers of the gluing fillers (the recommended consumption, size of the teethed spatula with the tooth size at least 8 – 10 mm, two-sided gluing). In water-unstrained rooms hydro insulation is not needed. When using a larger tile format than 200 by 200 mm it is recommended to increase the compactness of the floor – ideally by reduction of the axial distance of the supports to a half (by inserted beams) or by an increase of the board thickness by 30 %.

Layer structure for ceramic pavement laying



01 CETRIS® cement-bonded particleboard
02 priming
03 hydro insulating plaster
04 gluing filler
05 ceramic pavement
06 joint filler
07 dilation joint

SYSTEM COMPOSITION	MAPEI system	SCHÖNOX system	BASF SH system	BOTAMENT system	CERESIT system	SIKA system	Systém UZIN
Primer	not required	Schönox KH diluted with water 1 : 3	PCI-Gisogrund	Botact D 11	Ceresit CT 17	not required	codex Fliesengrund
Hydro insulation (bandage of corners, dilations)	KERALASTIC min. 1 mm (MAPEBAND)	Schönux HA in combination with a sealing tape Schönux ST and accessories Schönux ST-IC - inner corner, Schönux EA - outer corner including an insulating collar Schönux ST-D. Corresponds to ETAG 022 standard.	PCI-Lastogun	Botact MD 28 Botact SB 78	Ceresit CL 51 (Ceresit CL 52)	Sika Bond T 8	codex Power Flex Turbo (Multimoll TOP 4)
Gluing filler	KERALASTIC	Schönox PFK plus	PCI-Nanolight	Botact M 21 (lower loads) Botact M 29 (higher loads)	Ceresit CM 16 (lower loads) Ceresit CM 17 (higher loads)	Sika Bond T 8	codex Power CX 3
Joint filler	ULTRACOLOR (MAPESIL AC)	Schönox WD FLEX Schönox SU	PCI-Flexfuge	Botact M 30 Botact S 5	Ceresit CE 43 (Ceresit CS 25)	Sikaflex 11 FC	codex Brillant Flex Basic (codex quadrosil)

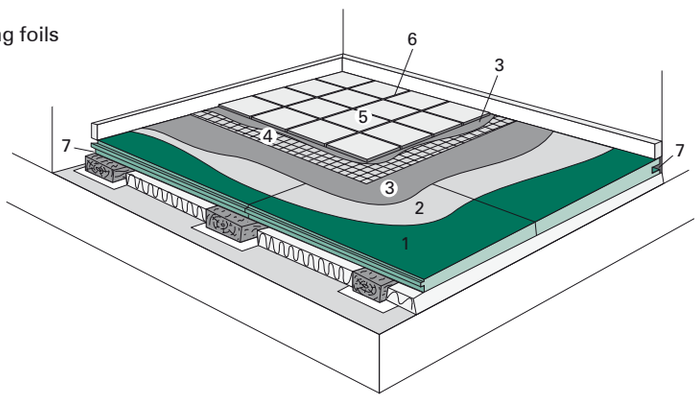
Note: When using DEGUSSA products it is recommended to cover CETRIS® board joints with an reinforcing fabric 300 mm wide and anchor to the base by shot staples.

7.9.5 Ceramic Pavement with Hydro Insulating Foil

Floors with ceramic pavement for spaces stressed with water may be designed with a hydro-insulation foil application. The load-bearing layer of these foils is represented by polyethylene strips with one-sided (bottom) or two-sided textile (fleece) for effective anchoring in the gluing filler. The foil is used not only for insulation but also as the layer for levelling vapour overpressure and the separation layer compensating horizontal stresses in the base and able to bridge cracks.
The foil is laid over the gluing filler bed. The joints and the corners are treated with accessory elements. Immediately after the foil (mat) gluing the pavement may be laid in a thin glue bed.
The gluing filler must be elastic, hydraulically hardening.

Suitable types:
- Schlüter DITRA
- Botact insulating and separating foils

Hydro-insulating layer of Schlüter® DITRA foil



01 CETRIS® cement-bonded particleboard
02 priming
03 gluing filler
04 hydro insulating mat
05 ceramic pavement
06 joint filler
07 dilation joint

7.9.6 System Solution under Ceramic Pavement

System solution for impact noise absorption under ceramic pavement
This composition includes pressed boards of polymer fibre bonded with latex. Insertion of these boards in the floor composition, even in low thicknesses (6 mm) may reduce impact noise by up to 13 dB (tested pursuant to EN ISO 140-8) and separate the base from the upper layers with preservation of the very low construction height of the floor. The boards are laid in a layer of gluing filler and pressed in – ideally with a hard roller. To prevent formation of acoustic bridges it is necessary to glue the contact joints with self-sticking cover tape.

Note: For the purpose of uniform distribution of the load the minimum floor tile format is 150 × 150 mm, or 240 × 115 mm.

SYSTEM TYPE	SYSTEM SOLUTION FOR IMPACT SOUND ABSORPTION UNDER CERAMIC PAVEMENT	SYSTEM SOLUTION FOR BASE STABILITY INCREASE
System supplier	BOTAMENT	
Primer	BOTACT D 11	
Board/mat gluing	Special quick-drying filler BOTACT M 26	BOTACT M 21 Quick-drying filler BOTACT M 24 (in wet spaces BOTACT MD 1)
Board/mat	BOTACT – separation board for impact sound absorption	BOTACT – light separating mat
Gluing filler	BOTACT M 26 or BOTACT M 29	
Joint filler	Flexible joint filling material BOTACT M 30 or MULTIFUGE	
Elastic fill	BOTACT S 5 or BOTACT S 3	

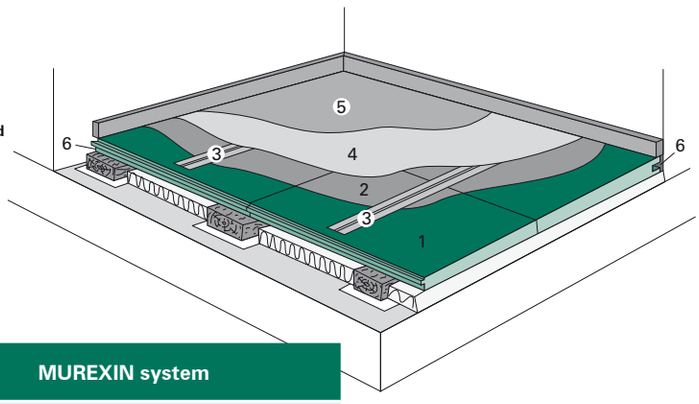
System solution for increased base stability
This solution is ideal for reduction of the risk of cracks in critical bases with preservation of the very low construction height of the floor. The floor composition includes a sandwich separating mat BOTACT, under the walking surface of the floor covering with reinforcing fabric inside. Especially in the case of floor rehabilitation in old houses the undisputed advantages include the minimum height (0.7 mm) and weight of the geo textile fleece. The mat is laid in a layer of gluing filler with 40 mm overlap, and pressed in – best made with a hard roller.

Note: The minimum thickness of the ceramic pavement must be 8 mm, the sizes need to be chosen from the range 150 × 150 mm to 300 × 300 mm and the tiles may not be laid "over joints". **This mat is not designed for dilation joint bridging!**

7.9.7 Self-Levelling Cast Floor, Electrostatically Conductive

The self-levelling cast floor, electrostatically conductive, the "antistatic" floor, is mainly used for spaces with high concentration of computer technology – computer rooms, offices etc. This floor may also be used in rooms where castor chairs are used. The board joints must be covered with an reinforcing fabric, width 300 mm, anchored to the base by short staples. This floor must be laid by a professional company and consulted with the manufacturer.

01 CETRIS® cement-bonded particleboard
02 priming
03 conductive tapes
04 conductive paint
05 cast upper abrasive layer
06 dilation joint

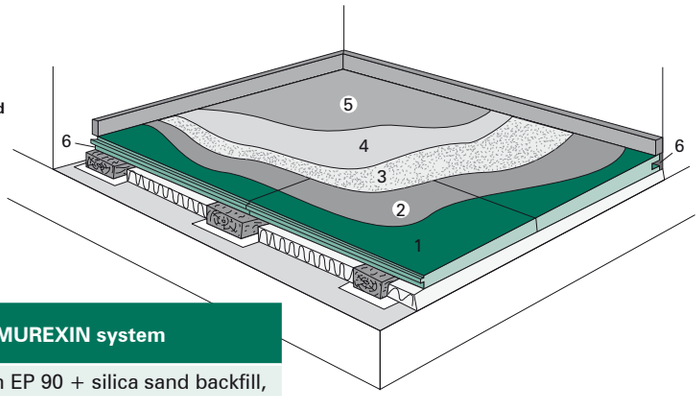


SYSTEM COMPOSITION	BASF SH system	MUREXIN system
Primer	MASTERTOP P 678 (Conipur 78)	Epoxy antistatic primer Aquapox ASG 170
Conductive tapes	PCI-Kupferband	Copper strip KB 20
Conductive paint	MASTERTOP CP 687 W AS (Conipur 287 W-AS)	not required
Cast upper abrasive layer	MASTERTOP BC 375 AS (Conipur 275 AS)	Epoxy antistatic coating ASD 130

7.9.8 Comfort Cast Decorative Elastic Floor

The cast comfort decorative elastic floor is designed for spaces where an elastic surface with easy maintenance is required (nurseries, old people's homes, sports grounds with light burdens). The board joints must be covered with an reinforcing fabric, width 300 mm, anchored to the base by short staples. This floor must be laid by a professional company and consulted with the manufacturer.

01 CETRIS® cement-bonded particleboard
02 priming
03 silica sand backfill
04 abrasion layer
05 protective UV paint
06 dilation joint



SYSTEM COMPOSITION	BASF Building Materials system	MUREXIN system
Primer	MASTERTOP P 678 (Conipur 78) + silica sand backfill, fraction size 0.4 – 0.8 mm	Epoxy resin EP 90 + silica sand backfill, fraction size 0,3 – 0,9 mm
Abrasion layer	MASTERTOP BC 375 A (Conipur 225 A)	Polyurethane coating HIRES PU 300
Protective UV paint	MASTERTOP TC 467 or P (Conipur 67)	Closing polyurethane paint PU 40

7.10 Floor Heating

Floor heating may be applied with CETRIS® board floor systems.

At present two types of floor heating are most frequently used:

- Floor heating under load-distribution floor boards (medium hot water circulating in PE or copper pipelines, or electrical heating cables)
- Floor heating laid over the load-distributing layer of the floor – the "warm pavement" system – electrical heating cables (mats) in the filler under the pavement.

When designing floor heating it is necessary to observe the recommendation of the floor covering supplier about the maximum permitted temperature of the floor surface for prevention of damage to the walking surface of the floor. The floor heating implementation must be performed in strict compliance with the instructions and procedures of its manufacturer (supplier).

The heating media (cables, pipelines, mats) are not recommended to be installed under furniture with closed pedestal (living room furniture, kitchen furniture) and with storage space underneath (beds, sofas) for in these places there is the risk of overheating of the thermo cables as a consequences of poor heat transfer from the covered floor surface.

7.10.1 Floor Heating under CETRIS® boards

For light floor construction with hot water heating see Chapter 7.5.2.1 Description and Variants of POLYCET Floors, POLYCET Heat Floor.

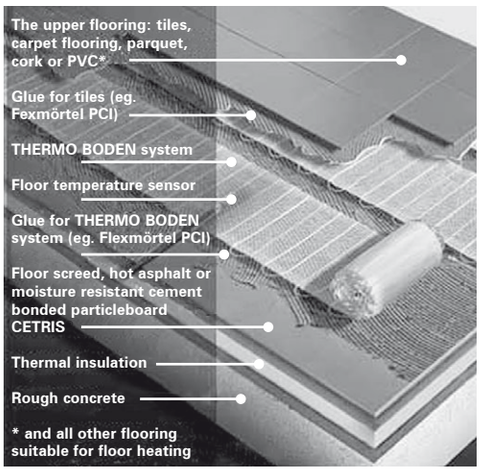
7.10.2 Floor Heating over CETRIS® boards

System description
The heating medium is represented by electrical heating cables, or heating mats, laid over the load-distributing and load-bearing layer of CETRIS® boards. The heating cables (mats) are covered with a layer of cement gluing filler and the final floor covering. This method, sometimes called "warm pavement", may be applied on both floating floors and CETRIS® PD (CETRIS® PDB) board floors.

When implementing this method it is necessary to comply with the technological principles of the floor heating supplier.

As this is a wet process, the CETRIS® boards must be primed before the heating media installation. For coverage of heating cables (mats) and gluing of the floor covering, gluing elastic fillers must be used which are suitable for floor heating systems (permanently increased temperature environment). The products recommended in Chapter 7.9 Floor covering comply with this requirement.

Note: The first commissioning of the system or renewal of operation after an outage must be very slow with the maximum permitted surface temperature of 28° C.



Product certificate:
The IZOCET light floating floor

AUTORIZOVANÁ OSOBA 212
CENTRUM STAVEBNÍHO INŽENÝRSTVÍ, a.s. Praha
pracoviště Zlín, K Cihelně 304, 764 32 Zlín - Louky

na základě Rozhodnutí o autorizaci č. 35/2006 ze dne 01.09.2006

vydává

CERTIFIKÁT VÝROBKU

č. 0087/Z/212/2009

V souladu s ustanovením § 5 odst. 2 nařízení vlády č. 163/2002 Sb., ve znění nařízení vlády č. 312/2005 Sb., kterým se stanoví technické požadavky na vybrané stavební výrobky, autorizovaná osoba potvrzuje, že u stavebního výrobku:

Lehká plovoucí podlaha IZOCET

Výrobce: **CIDEM Hranice a.s.**
Skalní 1088
753 40 Hranice I - Město

Místo výroby: **CIDEM Hranice a.s.**
Divize CETRIS
Nová 223
753 40 Hranice I - Město

přezkoumala podklady předložené výrobcem, provedla počáteční zkoušku typu výrobku na vzorku a posoudila systém řízení výroby a zjistila, že tento výrobek splňuje požadavky stanovené určenými normami, stavebním technickým osvědčením, které souvisejí se základními požadavky. Jedná se o následující:

stavební technické osvědčení: **č. STO-09-0090/Z, ze dne 20.10.2009**.

Dále zjistila, že systém řízení výroby zabezpečuje, aby výrobky uváděné na trh splňovaly požadavky stanovené shora uvedenými určenými normami, stavebním technickým osvědčením a odpovídaly technické dokumentaci podle § 4 odst. 3.

Nedílnou součástí tohoto certifikátu je protokol č.: 0087/Z/212/2009, ze dne 23.10.2009, který obsahuje závěry zjišťování, ověřování a výsledky zkoušek a základní popis certifikovaného výrobku.

Tento certifikát byl poprvé vydán dne 23.10.2009 a zůstává v platnosti tak dlouho, dokud se podmínky stanovené v určených normách, stavebním technickém osvědčením na něž byl uveden odkaz, nebo výrobní podmínky v místě výroby či systém řízení výroby výrazně nezmění.

Autorizovaná osoba provádí nejméně jedenkrát za 12 měsíců dohled nad řádným fungováním systému řízení výroby v místě výroby podle ustanovení § 5 odst. 4. Pokud autorizovaná osoba zjistí nedostatky, je oprávněna zrušit nebo změnit jí vydaný certifikát.

Ve Zlíně, dne 23.10.2009

Ing. Antonín Novotný
vedoucí AO 212

Product certificate:
The POLYCET Therm, Aku and Heat floating floor

AUTORIZOVANÁ OSOBA 212
CENTRUM STAVEBNÍHO INŽENÝRSTVÍ, a.s. Praha
pracoviště Zlín, K Cihelně 304, 764 32 Zlín - Louky

na základě Rozhodnutí o autorizaci č. 35/2006 ze dne 01.09.2006

vydává

CERTIFIKÁT VÝROBKU

č. 1567/Z/212/2008

V souladu s ustanovením § 5 odst. 2 nařízení vlády č. 163/2002 Sb., ve znění nařízení vlády č. 312/2005 Sb., kterým se stanoví technické požadavky na vybrané stavební výrobky, autorizovaná osoba potvrzuje, že u stavebního výrobku:

Lehká plovoucí podlaha POLYCET – typ Therm, Aku a Heat

Výrobce: **CIDEM Hranice, a.s.**
Skalní 1088
Hranice I - Město
753 40 Hranice

Místo výroby: **CIDEM Hranice, a.s., divize CETRIS**
Nová 223
753 40 Hranice

přezkoumala podklady předložené výrobcem, provedla počáteční zkoušku typu výrobku na vzorku a posoudila systém řízení výroby a zjistila, že tento výrobek splňuje požadavky stanovené určenými normami, stavebním technickým osvědčením, které souvisejí se základními požadavky. Jedná se o následující:
ČSN EN 13810-1, ČSN EN 1991-1-1, stavební technické osvědčení č. STO-08-2205/Z, ze dne 21.07.2008.

Dále zjistila, že systém řízení výroby zabezpečuje, aby výrobky uváděné na trh splňovaly požadavky stanovené shora uvedenými určenými normami, stavebním technickým osvědčením a odpovídaly technické dokumentaci podle § 4 odst. 3.

Nedílnou součástí tohoto certifikátu je protokol č.: P-C-1567/Z/212/2008, ze dne 25.07.2008, který obsahuje závěry zjišťování, ověřování a výsledky zkoušek a základní popis certifikovaného výrobku.

Tento certifikát byl poprvé vydán dne 25.07.2008 a zůstává v platnosti tak dlouho, dokud se podmínky stanovené v určených normách, stavebním technickém osvědčením na něž byl uveden odkaz, nebo výrobní podmínky v místě výroby či systém řízení výroby výrazně nezmění.

Autorizovaná osoba provádí nejméně jedenkrát za 12 měsíců dohled nad řádným fungováním systému řízení výroby v místě výroby podle ustanovení § 5 odst. 4. Pokud autorizovaná osoba zjistí nedostatky, je oprávněna zrušit nebo změnit jí vydaný certifikát.

Ve Zlíně, dne 25.7.2008

Ing. Antonín Novotný
vedoucí AO 212

Product certificate:
The POLYCET Max and Min light floating floor

AUTORIZOVANÁ OSOBA 212
CENTRUM STAVEBNÍHO INŽENÝRSTVÍ, a.s. Praha
pracoviště Zlín, K Cihelně 304, 764 32 Zlín - Louky

na základě Rozhodnutí o autorizaci č. 35/2006 ze dne 01.09.2006

vydává

CERTIFIKÁT VÝROBKU

č. 0050/Z/212/2011

V souladu s ustanovením § 5 odst. 2 nařízení vlády č. 163/2002 Sb., ve znění nařízení vlády č. 312/2005 Sb., kterým se stanoví technické požadavky na vybrané stavební výrobky, autorizovaná osoba potvrzuje, že u stavebního výrobku:

Lehká plovoucí podlaha POLYCET Max
POLYCET Min

Výrobce: **CIDEM Hranice a.s., Skalní 1088, 753 40 Hranice I - Město**
IČ: 14617081

Místo výroby: CIDEM Hranice a.s., Divize CETRIS, Nová 223, 753 40 Hranice I - Město

přezkoumala podklady předložené výrobcem, provedla počáteční zkoušku typu výrobku na vzorku a posoudila systém řízení výroby a zjistila, že tento výrobek splňuje požadavky stanovené stavebním technickým osvědčením **č. STO-11-0055/Z ze dne 02.08.2011** a určenými normami.

Dále zjistila, že systém řízení výroby zabezpečuje, aby výrobky uváděné na trh splňovaly požadavky stanovené shora uvedenými určenými normami, stavebním technickým osvědčením a odpovídaly technické dokumentaci podle § 4 odst. 3.

Nedílnou součástí tohoto certifikátu je protokol č. C-0050/Z/212/2011, ze dne 05.08.2011, který obsahuje závěry zjišťování, ověřování a výsledky zkoušek a základní popis certifikovaného výrobku.

Tento certifikát byl poprvé vydán dne 05.08.2011 a zůstává v platnosti tak dlouho, dokud se podmínky stanovené v určených normách, stavebním technickém osvědčením na něž byl uveden odkaz, nebo výrobní podmínky v místě výroby či systém řízení výroby výrazně nezmění.

Autorizovaná osoba provádí nejméně jedenkrát za 12 měsíců dohled nad řádným fungováním systému řízení výroby v místě výroby podle ustanovení § 5 odst. 4. Pokud autorizovaná osoba zjistí nedostatky, je oprávněna zrušit nebo změnit jí vydaný certifikát.

Ve Zlíně, dne 05.08.2011

Ing. Antonín Novotný
vedoucí AO 212

Product certificate:
The CETRIS PDI light floating floor

AUTORIZOVANÁ OSOBA 212
CENTRUM STAVEBNÍHO INŽENÝRSTVÍ, a.s. Praha
pracoviště Zlín, K Cihelně 304, 764 32 Zlín - Louky

na základě Rozhodnutí o autorizaci č. 35/2006 ze dne 01.09.2006

vydává

CERTIFIKÁT VÝROBKU

č. 039/Z/212/2012

V souladu s ustanovením § 5 odst. 2 nařízení vlády č. 163/2002 Sb., ve znění nařízení vlády č. 312/2005 Sb., kterým se stanoví technické požadavky na vybrané stavební výrobky, autorizovaná osoba potvrzuje, že u stavebního výrobku:

Lehká plovoucí podlaha z panelů CETRIS® PDI

Výrobce: **CIDEM Hranice a.s., Skalní 1088, 753 40 Hranice I - Město**
IČ: 14617081

Místo výroby: CIDEM Hranice a.s., Divize CETRIS, Nová 223, 753 40 Hranice I - Město

přezkoumala podklady předložené výrobcem, provedla počáteční zkoušku typu výrobku na vzorku a posoudila systém řízení výroby a zjistila, že tento výrobek splňuje požadavky stanovené stavebním technickým osvědčením **č. STO-12-040/Z ze dne 23.04.2012** a určenými normami.

Dále zjistila, že systém řízení výroby zabezpečuje, aby výrobky uváděné na trh splňovaly požadavky stanovené shora uvedenými určenými normami, stavebním technickým osvědčením a odpovídaly technické dokumentaci podle § 4 odst. 3.

Nedílnou součástí tohoto certifikátu je protokol č. C-039/Z/212/2012, ze dne 25.04.2012, který obsahuje závěry zjišťování, ověřování a výsledky zkoušek a základní popis certifikovaného výrobku.

Tento certifikát byl poprvé vydán dne 25.04.2012 a zůstává v platnosti tak dlouho, dokud se podmínky stanovené v určených normách, stavebním technickém osvědčením na něž byl uveden odkaz, nebo výrobní podmínky v místě výroby či systém řízení výroby výrazně nezmění.

Autorizovaná osoba provádí nejméně jedenkrát za 12 měsíců dohled nad řádným fungováním systému řízení výroby v místě výroby podle ustanovení § 5 odst. 4. Pokud autorizovaná osoba zjistí nedostatky, je oprávněna zrušit nebo změnit jí vydaný certifikát.

Ve Zlíně, dne 25.04.2012

Ing. Antonín Novotný
vedoucí AO 212