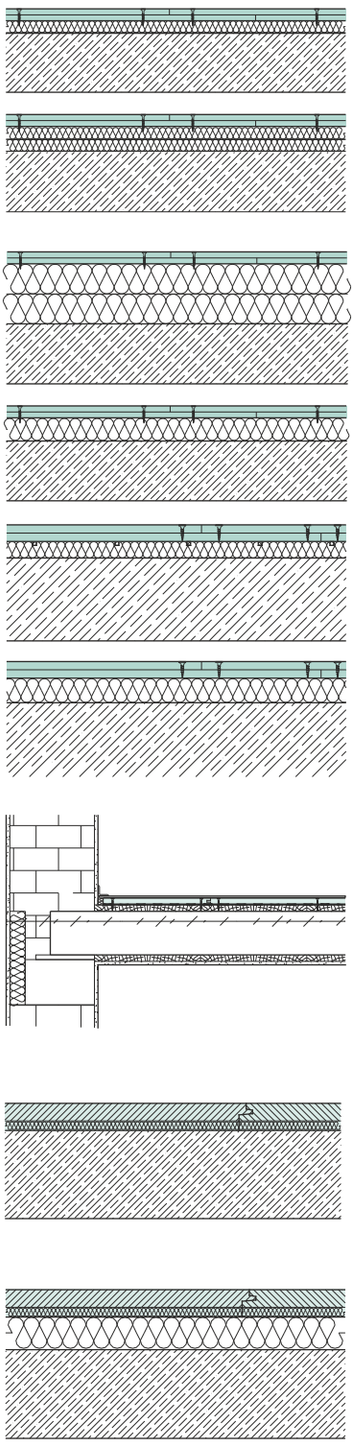
Floors

6.1 Types of CETRIS® Floor Systems

Floor constructions made of CETRIS® cement bonded particleboards can be solved in several basic versions according to the following diagram:

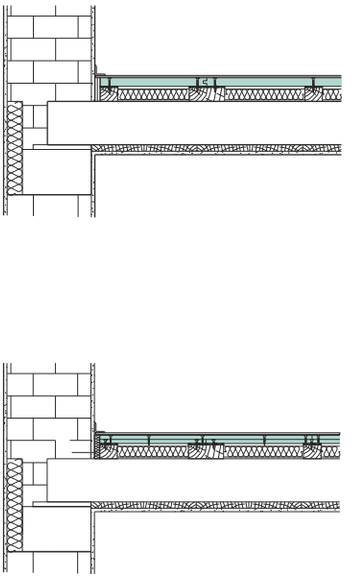
Floors laid on a flat base

- IZOCET
  - SP 65
  - SP 45
- POLYCET
  - Max, Min
  - Heat
  - Aku
  - Therm
- CETRIS® PD, PDB → On a load -bearing flat base
- CETRIS® PDI
  - On a load -bearing flat base
  - On a load -bearing flat base and insulation



Floors laid on grids or beams

- CETRIS® PD, PDB → On beams
- CETRIS® BASIC – two layers → Two layers on beams



Scope and application of CETRIS® board floating floors

CETRIS® cement bonded particleboard are successfully used as floor boards during the refurbishment of old wooden floors, as a load-bearing layers on beams or in a system of light floating floors. Because of their thermal conductivity (λ = 0,35 W/mK), they are applied in various floor heating systems. In combination with the thermal insulation materials, they form a floor construction with the required insulation and fire protection properties.

It is possible to use the CETRIS® boards to quickly and cheaply improve the acoustic and thermal insulation parameters of existing floor constructions or create a new floor construction without using wet processes. To ensure a quality floor construction, it is necessary to keep manufacturer's recommended technological procedures, which respect the properties of the CETRIS® cement bonded particleboards.

6.2 Applications of CETRIS® Floor Boards

Examples of the application of the floor systems of CETRIS® cement bonded particleboards:

- New residential and commercial developments
- Building reconstructions and renovations
- Floors in extensions and inbuilt structures in lofts
- Assembled buildings
- Offices, administration and classrooms
- Special flooring solutions
- Creation of a strong and flexible floor
- Anti-slip protection of the room
- etc.

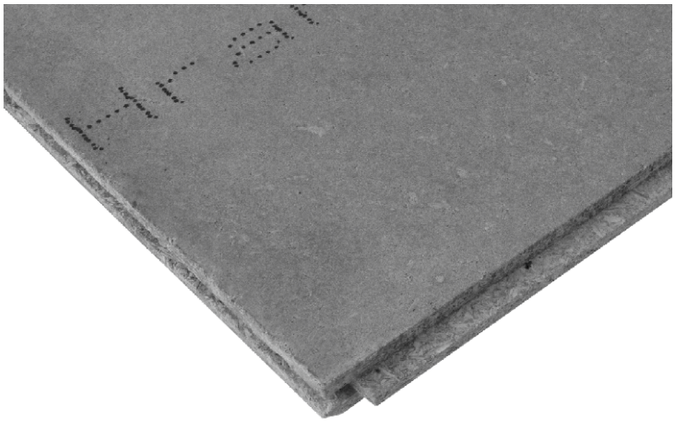
Advantages of CETRIS® cement bonded particleboard floor systems:

- Ability to level different elevations
- Possibility of combinations of different floor systems as needed (with different usable load-bearing capacities)
- Easy and quick assembly without wet processes
- Excellent acoustic and heat insulation properties
- Low area weight of floor construction
- Floor ready for walking immediately after laying
- High level of fire resistance
- High level of noise reduction
- Applicability of a wide range of floorings
- etc.

6.3 Types of CETRIS® Floor Boards

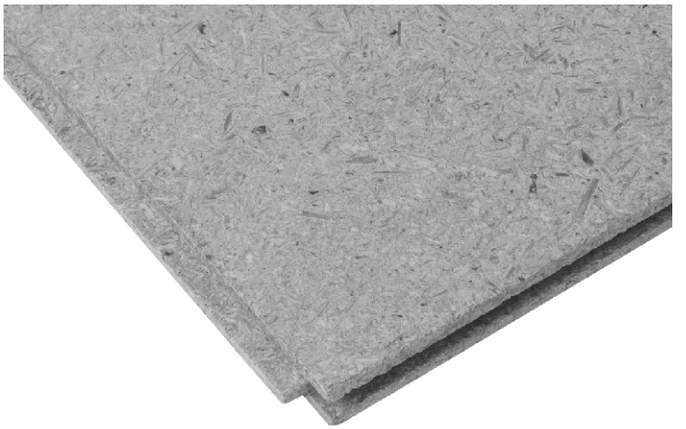
6.3.1 CETRIS® PD Floor Boards

The standard manufacturing dimensions are 625 x 1,250 mm (0.78 m^2) including the tongue. The cover size of the board is 617 x 1,242 mm (0.77 m^2). The standard manufactured thicknesses are 16, 18, 20, 22, 24, 26, 28 mm. The floor boards are provided with a groove and tongue along the perimeter with a groove depth of 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.



6.3.2 CETRIS® PDB Floor Boards

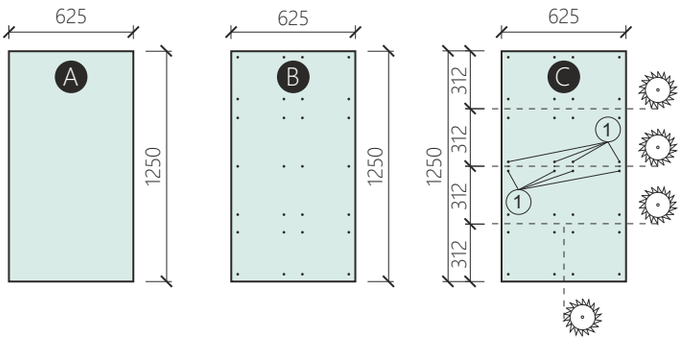
The standard manufacturing dimensions of the CETRIS® PDB floor boards are 625 x 1,250 mm (0.78 m2) inclusive. The cover size of the board is 617 x 1,242 mm (0.77 m2). The standard manufactured thicknesses are 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36 and 38 mm. The floor board is full-area sanded to achieve minimum thickness tolerances (max. ±0.3 mm). The floor boards are provided with a groove and tongue along the perimeter with a groove depth of 10 mm. On request other thicknesses may also be supplied. The bottom side of CETRIS® PDB boards is marked with a stamp for laying reasons. The sanded appearance of the CETRIS® PDB floor boards resembles chipboard, which may tempt the user to use the boards as the wear layer of the floor. However, it is necessary to consider the fact that the CETRIS® PD and CETRIS® PDB boards are manufactured as construction layers of the floor with the relevant permissible tolerances (length, width) and not as decorative floors. Complaints concerning board appearance cannot be accepted.



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

The IZOCET and POLYCET floor systems are made of CETRIS® boards of 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 are connected with self-tapping 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 4.5 mm. The screw spacing is specified by static tests of dry floor constructions. The average number of connecting screws is 30 pcs/m^2.

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



6.3.4 CETRIS® PDI Two-ply Panel

The CETRIS® PDI is a two-ply panel for dry floor technology. It consists of a 20 (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 32 (34) mm thick; it has a tongue and groove along the perimeter, its surface is smooth. The panels should be laid on a level surface area (ceiling structures, cladding). Their advantage is quick, easy and precise assembly. A further advantage is that they spread spot-load stress over a larger area. The CETRIS® PDI panels can be laid directly on the base – a ceiling structure or decking. The condition is that the base must be level, supporting and dry. In this way, a new load spreading and insulating layer with a thickness of only 32 (34) mm can be made with a high load-capacity and resistance against operational spot stress.

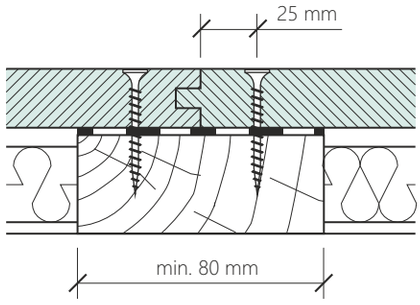
6.4 General Principles of Assembly of CETRIS® Floors

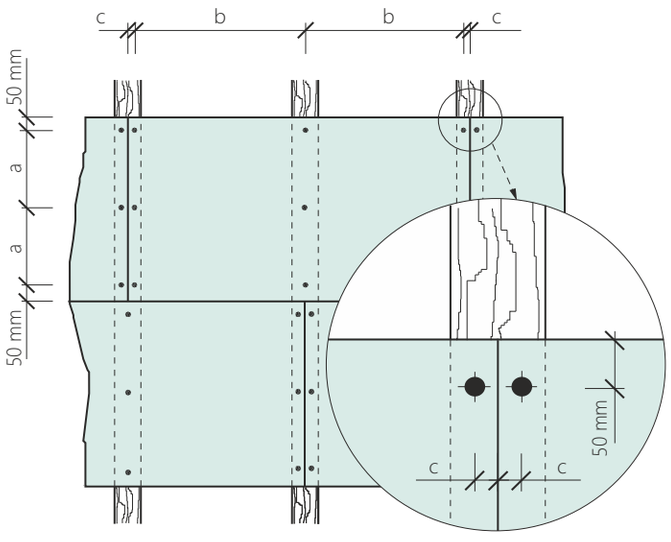
6.4.1 Fixing of CETRIS® Floor Boards

The 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). For screw connections self-tapping 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 screw reach length inside the base (beam) 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 pre-drilled 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 shown in the table. The axial distances of the holes from the board edges are at least 25 mm and maximum 50 mm. The width of the support (beam) must be at least 50 mm or at least 80 mm 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 (continuous beam).
- In the case of floor parts laid over a plank floor, the boards are laid crosswise to the direction of the original wooden floor.

The CETRIS® floor boards can be stapled or nailed to the grid; the principles for this type of anchoring are given in chapters 4.1.3 and 4.1.4.)





Type of product and 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 pre-drilled by the manufacturer, max. 300 mm		
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

6.4.2 Dilatation Joints when Laying CETRIS® Floor Boards

One of the properties of products containing wood mass is represented by size changes caused by changes in air humidity – expansion and shrinkage. This also applies to CETRIS® boards and must be considered when using them. The floor boards are laid tightly and dilatation is allowed along the walls where a gap of 15 mm is left. The dilatation joints divide the floor area into smaller fields. The dilatation joints run through the floor construction from the surface to the insulation or the load-bearing construction.

The dilatation joints must be implemented:

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

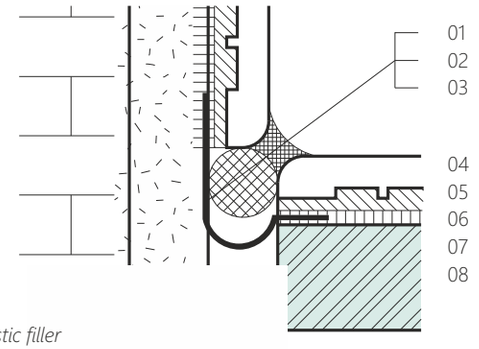
The dilatation joints (wall/floor contact points) when laying the floorings are solved by means of the following:

- PVC corner piece, carpet
- Wooden edge lath (wooden floorings)
- Schlüter® system profiles

When laying the floor around the threshold always, also make the dilatation joint. At the point of transition of a dry floor construction into another floor system (e.g. a traditional floor), where possible, we always recommend application of the transition system dilatation profile from Schlüter® (DILEX-EX, EKE, EDP, BWB, BWS, KS, etc.) at the door threshold.

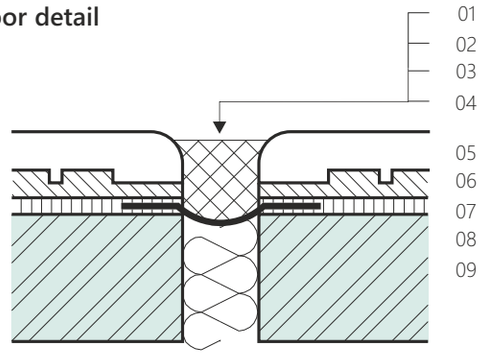
A) Joints filled with elastic mass

A_1 contact of floor and wall



01 elastic filler
02 sealing cord
03 corner insulating tape for use in hydro-insulating plaster
04 paving, flexible water tight joint filler
05 highly flexible adhesive filler
06 corner insulating tape for use in hydro-insulating plaster
07 primer
08 CETRIS® board

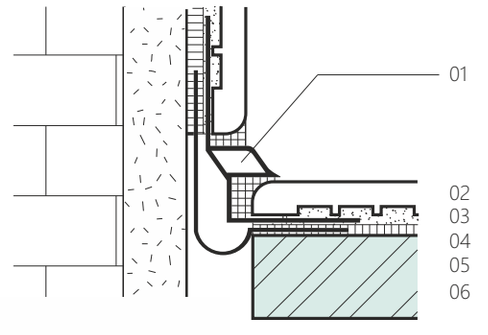
A_2 floor detail



01 elastic filler
02 corner insulating tape
03 sealing cord
04 separating layers (polystyrene, mineral wool)
05 paving, flexible water tight joint filler
06 highly flexible adhesive filler
07 hydro-insulating trowel-on coating
08 primer
09 CETRIS® board

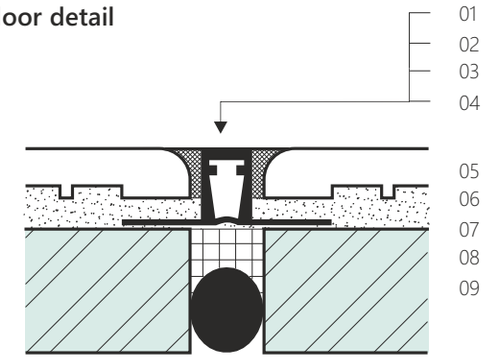
B) Joints filled with special dilatation profiles

B_1 contact of floor and wall



01 Schlüter® corner dilatation profile
02 paving, flexible water tight joint filler
03 highly flexible adhesive filler
04 corner insulating tape for use in hydro-insulating plaster
05 primer
06 CETRIS® board

B_2 floor detail



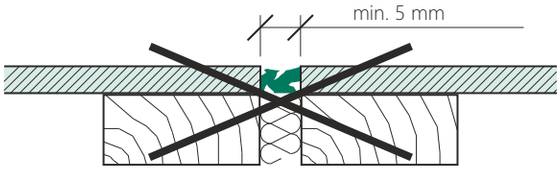
01 joint filler
02 Schluter® dilatation profile
03 elastic filler
04 sealing cord
05 paving, flexible water tight joint filler
06 highly flexible adhesive filler
07 hydro-insulating trowel-on coating
08 primer
09 CETRIS® board

Construction of the dilatation joint

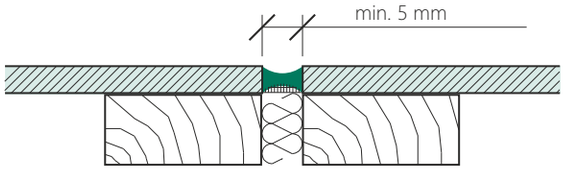
The width to depth ratio of the joint is 1:1, for larger joint widths 2:3. The dilatation joints to be filled must be dry and dust-free. Better adhesion may be achieved by priming the joint sides with the prescribed primer (or diluted filler), after which it is necessary to wait for the coat to dry completely. The main principle for correct function of the dilatation joints is elimination of three-sided adhesion in the joint, which causes uneven stress on the elastic filling and subsequently its tearing off the joint sides. This may be prevented by insertion of a slide insert into the joint bottom – polyethylene tape, or cord in the case of deeper joints. The result is adhesion of the elastic matter on the opposite sides only and hence equal stress on the filler – "chewing gum effect".

Dilation joint filling

1 – Incorrect: Three-sided adhesion of the filler in the dilatation joint



2 – Correct: Separation of the filler form the joint bottom with a slide insert min. 5 mm



6.5 Floating Floors of CETRIS® Boards

A 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, so-called, "floats" in it. The purpose of the dry floor construction is to create a new floor construction very quickly and cheaply without using the wet process while at the same time improving the acoustic and heat insulating properties of the ceiling construction. The 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, for which reason, these systems are not recommended for spaces with higher humidity (showers, bathrooms, laundries, saunas, etc.) where the permissible sag of the floor may jeopardize the function of the hydro insulating layer. The insulation boards used must be suitable for use in light floating floors. Use of mineral or rock wool insulation boards for use in heavy floating floors is not permissible.

The IZOCET, POLYCET, CETRIS® PDI dry floor constructions fall under the light floating floor category (floating floor weight up to 75 kg/m^2). The mechanical parameters were verified according to EN 13 810-1 Wood-based panels – Floating floors – Part 1: Performance specifications and requirements.

Composition of the floating floor:

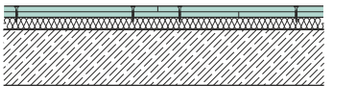
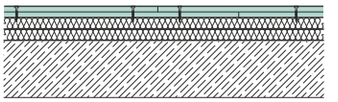
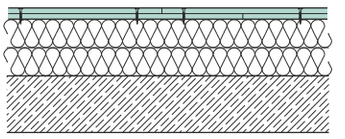
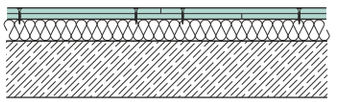
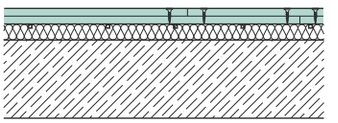
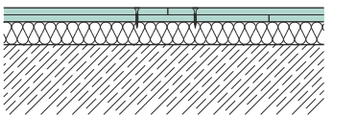
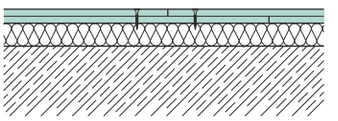
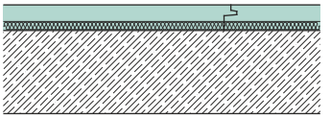
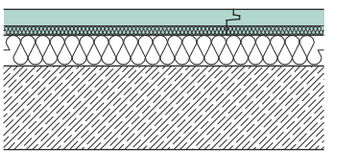
A – wear layers – may consist of a carpet, parquets, PVC, paving

B – load-distribution layers – consists of two CETRIS® boards, thickness 12 mm (thickness 10 mm – POLYCET Min floor system), which are screwed together with self-tapping screws 4.2 × 35 mm with sunken heads. In the case of CETRIS® PDI, the load-distribution layers consist of the CETRIS® cement bonded particleboards of thickness 20 (22) mm.

C – thermal insulation layers – the most important part of the floating floor, assuring increased impact sound transmission loss and airborne sound transmission loss as well as improved heat insulation. This function is fulfilled by pressed fibreboards (IZOCET System), or insulation boards made of elasticated polystyrene foam (hereinafter referred to as EPS) – POLYCET System.

D – edge strips – the CETRIS® cement bonded particleboard must be separated from the walls with a material with similar sound insulation properties as the insulation itself

6.5.1.1 Description of the construction of IZOCET, POLYCET, CETRIS® PDI floating floors

Brand name	Composition – Description	
IZOCET SP 45	CETRIS® cement bonded particleboard, 12 mm, upper drilled / CETRIS® cement bonded particleboard, 12 mm, lower / Insulation fibreboard of thickness 19 mm	
IZOCET SP 65	CETRIS® cement bonded particleboard, 12 mm, upper drilled / CETRIS® cement bonded particleboard, 12 mm, lower / Insulation fibreboard of thickness 19 mm 2 layers	
POLYCET Therm	CETRIS® cement bonded particleboard, 12 mm, upper drilled / CETRIS® cement bonded particleboard, 12 mm, lower / Separation layers – softened foil of maximum thickness 2 mm / Polystyrene foam EPS 100 Z of maximum thickness 60 mm, two layers	
POLYCET Aku	CETRIS® cement bonded particleboard, 12 mm, upper drilled / CETRIS® cement bonded particleboard, 12 mm, lower / Separation layers – softened foil of maximum thickness 2 mm / Polystyrene foam EPS T4000 of maximum thickness 50 mm	
POLYCET Heat	CETRIS® cement bonded particleboard, 12 mm, upper drilled / CETRIS® cement bonded particleboard, 12 mm, lower / Separation layers – softened foil of maximum thickness 2 mm / Polystyrene foam EPS 100 Z of maximum thickness 50 mm with integrated hot-water heating system	
POLYCET Max	CETRIS® cement bonded particleboard, 12 mm, upper drilled / CETRIS® cement bonded particleboard, 12 mm, lower / Separation layers – softened foil of maximum thickness 2 mm / Polystyrene foam EPS 200 S of maximum thickness 30 mm	
POLYCET Min	CETRIS® cement bonded particleboard, 10 mm, upper drilled/ CETRIS® cement bonded particleboard, 10 mm, lower / Separation layers – softened foil of maximum thickness 2 mm / Polystyrene foam EPS T 4000 of maximum thickness 30 mm	
CETRIS® PDI	Two-ply panel consisting of CETRIS® cement bonded particleboard of thickness 20 mm or 22 mm glued together with fibreboard insulation of thickness 12mm	
CETRIS® PDI + insulation	Floor insulation panel consisting of CETRIS® cement bonded particleboard of thickness 20 mm or 22 mm glued together with fibreboard insulation of thickness 12mm. Insulation (polystyrene foam) of maximum thickness 50 mm	

Material specifications:

- CETRIS® boards of thickness 12 (±1.0) mm, with tensile bending strength min. 9 Nm/m^2, size 625 x 1,250 mm, the boards for the upper layer are supplied with pre-drilled holes (diameter 5 mm). In the POLYCET Min floor composition, it is possible to use CETRIS® cement bonded particleboards of thickness 10 (±0.7) mm. Alternatively it is possible to also use the base board format 1,250 x 3,350 mm.
- Self-cutting screws 4.2 × 35 mm with double thread and sunken heads with blades for countersinking. Alternatively, the CETRIS® boards can be stapled together – Haubold KG 700 CNK staples. In the POLYCET Heat floor composition, the maximum length of the screws used is 25 mm
- Insulation boards in the IZOCET System - soft fibreboard (hardboard) of thickness 19 (±1.0) mm, volume mass 250 kg/m3 ±30 kg/m3, supplied in a size of 810 x 1,200 mm.
- Insulation boards in the POLYCET System made of elasticised foam polystyrene. The type and thickness is 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.
- UZIN MK 73 Glue for full-surface gluing of CETRIS® boards in the POLYCET Heat variant. A solvent type glue based on artificial resins. For particleboard, cement, magnesium, heated plasters, cast bitumen and UZIN insulation layers. Easy to spread, good filling, very quick adhesion, with hard elasticity and high shear strength. Alternatively, low-expansion polyurethane bonding foam can be used for full surface bonding of the cement bonded particleboards.
- CETRIS® PDI is a floor panel consisting of CETRIS® cement bonded particleboard of thickness 20 mm or 22 mm glued together with fibreboard insulation of thickness 12mm. The entire panel milled with tongue and groove around the perimeter. The panel surface is smooth.

6.5.1.2 Properties of floating floors

Mechanical load-bearing capacity of the floor

The load-bearing capacity of the IZOCET, POLYCET, CETRIS® PDI floating boards (panel thickness 34 mm) was set on the basis of tests for light floor constructions pursuant to 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 of size 3.6 × 3.0 m. The floor was always laid on a reinforced concrete ceiling construction.

Test loading methods:

- Concentrated load – local action of a load of weight 130 kg (classes A,B) or 260 kg (classes C1-C3, C5 and D1) on a circular area with a diameter of 25 mm. The limit sag under the loading arm is max. 3 mm.
- Impact load – a 40 kg load falls from a height of 350 mm, after 10 falls, the limit sag value is max. 1.0 mm. The load simulated falling objects, people, jumping, dancing.
- Application of an even load with an intensity of 3.0 kN/m^2 (classes A and B), or 5.0 kN/m^2 (classes C1-C3, C5 and D1)

Evaluation of the tests for the utility categories C1-C3, C5 (gathering areas) and D1 (shopping areas)

Parameter (test standard)	Parameter limit value	POLYCET Max	CETRIS® PDI 34 mm
Resistance to concentrated load (ČSN EN 13 810-1)	When F_k=2,6 kN deflection $d_F \leq 3,0$ mm	d_F = 2,96 mm	d_F = 0,96 mm
Resistance to dynamic impact load (ČSN EN 1195)	Increase of deflection $\partial dF \leq 3,0$ mm	∂d_F = - 0,35 mm	∂d_F = -0,04 mm
Resistance to even load (ČSN EN 12 431)	When q_k=5,0 kN/m^2 deflection $d_q \leq 3,0$ mm	d_q = 0,38 mm	d_q = 0,17 mm

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

Parameter (test standard)	Parameter limit value	IZOCET SP 45	IZOCET SP 45	POLYCET Therm	POLYCET Aku	POLYCET Heat	POLYCET Min	CETRIS® PDI 34 mm + 50 mm EPS
Resistance to concentrated load (ČSN EN 13 810-1)	When F_k=1,3 kN deflection $d_F \leq 3,0$ mm	d_F = 2,7 mm	d_F = 2,0 mm	d_F = 1,7 mm	d_F = 1,9 mm	d_F = 1,9 mm	d_F = 2,58 mm	d_F = 0,86 mm
Resistance to dynamic impact load (ČSN EN 1195)	Increase of deflection $\partial d_F \leq 1,0$mm	∂d_F = - 0,7 mm	∂d_F = 0 mm	∂d_F = 0,1 mm	∂d_F = 0,0 mm	∂d_F = 0,2 mm	∂d_F = 0,15 mm	∂d_F = -0,10 mm
Resistance to uniform load (ČSN EN 12 431)	When q_k=3,0 kN/m^2 deflection $d_q \leq 2,0$ mm	d_q = 0,26 mm	d_q = 0,43 mm	d_q = 0,9 mm	d_q = 0,8 mm	d_q = 1,0 mm	d_q = 0,48 mm	d_q = 0,23 mm

Range and application of CETRIS® board floating floor systems	
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	
CETRIS® PDI + inserted insulation (max. 50 mm)	
POLYCET Max	A – Residential areas B – Office areas C1 + C2 + C3 + C5 + D1
CETRIS® PDI	
Load categories pursuant to EN 1991-1-1	
A. Residential areas and areas for domestic activities	Rooms of residential buildings and houses, bed rooms and hospital operating theatres, hotel and hostel bedrooms, kitchens and toilets
B. Office areas	
C. Areas, where people may gather (except areas stated in categories A, B, D)	C1: Areas with tables, etc., e.g. areas in schools, cafés, restaurants, dining halls, reading rooms, receptions.
	C2: Areas with built-in seating, e.g. areas in churches, theatres 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 the access areas of public and office buildings and hotels.
	C4: Areas designed for physical 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 departmental stores, e.g. areas in warehouses for goods, paper and stationery.

Sound insulation properties

The acoustic properties of the IZOCET, POLYCET and CETRIS® PDI dry floating floors were specified by the laboratory method pursuant to ČSN EN ISO 140-3, ČSN EN ISO 140-6 on a standardised ceiling slab (reinforced concrete overhead construction of thickness 120 mm). The horizontal structures are assessed in terms of the airborne sound propagation (airborne sound insulation) and in terms of impact noise arising from dynamic impact load (impact noise insulation).Airborne sound insulation is the capability of the construction to acoustically isolate two neighbouring rooms in terms of airborne sound. The evaluation criterion is the weighted airborne sound insulation R´w or laboratory airborne sound insulation Rw. The higher the airborne sound insulation the higher the sound insulation capability.

The following applies: R´w = Rw - C (dB)
C ... correction dependent on sound transmission via lateral paths

Impact noise insulation expresses the capability of the construction to dampen sound energy, which arises from mechanical impact on the construction. The evaluation parameter is the weighted impact noise level L´nw, or the laboratory impact noise level Lnw. The higher the value, the higher the impact sound insulation between two spaces.

Reduction of standardised impact sound level – ΔLw – improvement of sound insulation, difference in the impact sound level only for the ceiling construction (without acoustic adjustment) and impact sound level of the ceiling including acoustic adjustment, adjusted by the correction factor (depends on the type of ceiling construction).

In terms of the quality of impact sound loss, the IZOCET, POLYCET and CETRIS® PDI dry floating floors can be used on load-bearing constructions with an area weight of 300 kg/m^2 or on ceiling constructions without acoustic requirements. For these reasons, in order to improve the acoustic properties of floors laid on a wooden beam ceiling, we recommend burdening the decking – e.g. with concrete paving of minimum thickness 40 mm.

Acoustic parameters of light floating floors on a standardised ceiling slab (specified by a test)

Floor structure	Index of airbornesound insulation R_w	Index of normalized contact noise level L_{nw}	Reduction of the level of normalizedcontact noise ΔL_w
IZOCET SP 45	58 dB	54 dB	26 dB
IZOCET SP 65	59 dB	52 dB	28 dB
POLYCET Therm	58 dB	54 dB	25 dB
POLYCET Aku	59 dB	52 dB	22 dB
POLYCET Min	54 dB	57 dB	23 dB
POLYCET Max	55 dB	58 dB	22 dB
CETRIS® PDI	57 dB	60 dB	21 dB
CETRIS® PDI + 50 mm EPS	58 dB	55 dB	26 dB

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

Space	Sound insulation requirements	
	R'_w (dB)	L'_{BW} (dB)
Residential houses – one living room in a multi-room apartments		
All other rooms of the same apartment unless they are functional parts of the protected space	47	63
Residential houses – apartments		
All rooms of other apartments	53 (52)	55 (58)
Common spaces used (stairways, corridors, etc.)	52	55
Common unused spaces (e.g. lofts)	47	63
Passages, underpasses	57	53
Passages, underpasses, garages	57	48
Workplaces with noise LA, MAX ≤85 dB in operation till 10 pm	57	53
Semi-detached and terraced family houses		
Rooms in the neighbouring house	57	48
Hotels and accommodation facilities – bedroom space, guest rooms		
Rooms of other guests	52	58
Common spaces in use (corridors, stairways)	52	58
Restaurants, social spaces and services in operation till 10 pm	57	53
Hospitals, sanatoria - wards, doctors' offices		
Wards, surgeries	52	58
Auxiliary and ancillary spaces	52	58
Schools and the like – teaching space		
Classrooms	52	58
Common spaces in use (corridors, stairways)	52	58
Offices and studies		
Offices and studies with standard administration activities	47	63
Studies with increased demand for noise protection	52	58

Orientation acoustic parameters of light floating floors on a wooden ceiling construction (specified by calculation)

Floor structure	Index of airbornesound insulation Rw	Index of normalized contact noise level L_{nw}	Reduction of the level of normalizedcontact noise ΔL_w
IZOCET SP 45	58 dB	62 dB	8 dB
POLYCET Therm	58 dB	63 dB	7 dB

Thermal insulation properties

The thermal insulation properties of IZOCET, POLYCET and CETRIS® PDI dry floating floors are mainly characterised by the properties of insulation boards.

Thermal technical parameters of the insulation boards

Type of insulation	EPS 100Z	EPS T4000	EPS 100S	EPS 200 S	fibreboard insulation panel
Coefficient of thermal conductivity (W/m.K)	0,038	0,045	0,038	0,034	0,050

Increase of the heat resistance of a ceiling construction with a light floating floor

Floor	Load distribution layers	Insulation		Increase of heat resistance R ($Wm^{-2}KJ^{-1}$)
		Type	Thickness (mm)	
IZOCET SP 45	CETRIS® 2x12 mm	fibreboard insulation panel	1x19	0,49
IZOCET SP 65			2x19	0,89
POLYCET Therm		EPS 100Z	2x60	3,24
POLYCET Aku		EPS T4000	50	1,19
POLYCET Heat		EPS 100S	50	1,4
POLYCET Max		EPS 200S	30	0,97
POLYCET Min	CETRIS® 2x10 mm	EPS T4000	30	0,84
CETRIS® PDI	CETRIS® 20/22mm	fibreboard insulation panel	12	0,33
CETRIS® PDI + 50 mm EPS			12+50 mm EPS	1,65

Required and recommended heat transmittance coefficient values for buildings with dominant design interior temperature θim in the interval 18 °C to 22 °C inclusive

Description of the construction	Heat transmittance coefficient [$W/(m^2 \cdot K)$]		
	Required values $U_{N,20}$	Recommended values $U_{rec,20}$	Recommended values for passive buildings $U_{pas,20}$
Ceiling with floor above an exterior space	0,24	0,16	0,15 až 0,10
Ceiling above a non-heated attic (roof without thermal insulation)	0,30	0,20	0,15 až 0,10
Floor and wall of a heated space on natural ground 1), 2)	0,45	0,30	0,22 až 0,15
Floor and wall of a tempered space n natural ground 6)	0,85	0,60	0,45 až 0,30
Ceiling between spaces with a temperature difference up to 10 °C inclusive	1,05	0,70	-
Ceiling between spaces with a temperature difference of up to 5 °C inclusive	2,20	1,45	-

1) In case of floor and wall heating, the heat transmittance coefficient includes only the layers from the plane where the heating is installed toward the exterior.
2) Corresponds to the calculation of the coefficient of heat transmittance according to ČSN 73 0540-4 (i.e. without the influence of soil), not the resulting action according to ČSN EN ISO 13370.

6.5.1.3 Base Preparation for Floor Laying

Load-bearing base, requirements and preparation

The preparation of the load-bearing base is important for ensuring the final quality of the floating floor surface for the wear layers. The load-bearing base may be a massive ceiling construction (a reinforced concrete slab, HURDIS 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 floating floor requires a dry load-bearing base with a planarity tolerance of 4 mm per 2 m. If the permissible deviations from the planarity of the load-bearing base shall not be observed, it is not possible to subsequently guarantee the permissible deviations of the planarity under the wear layers. The local irregularities may reach up to 5 mm (e.g. individually protruding fillings, concrete burrs or knots in the wooden base) due to the possibility of additional levelling of the insulation layer.

An insufficiently flat surface must be levelled.

Levelling of the load-bearing base

Levelling of the base can be done in two ways:

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

2. Using a dry sub-base – it is possible to use dry levelling mixtures based on crushed porous concrete, pearlite. The sub-base height must be minimum 10 mm and maximum 40 mm. It is possible to recommend the sub-base mixtures FERMACELL, BACHL BS Perlit, Siliperl, Cemwood 2000. **The sub-base mixture can not be used to level the surface under the CETRIS PDI floor panel.** When levelling the surface of a wooden log ceiling, it is necessary to first assess the quality of the load-bearing construction, beaten, distorted (unevenness above 5 mm) and replace otherwise damaged planks. Cardboard should be laid over the decking to prevent the dry sub-base mixture from falling through the openings after knots and gaps in the planks. The levelling sub-base is spread according to instructions of the individual manufacturers.

Recommended procedure:
1. Specify the required final height of the constructed floor and mark it on the adjacent walls (1 m above the final floor level)
2. Pour the sub-base mixture along one wall in a strip of approximate width 20 cm up to the height that corresponds to the required sub-base height (it is necessary to respect the construction height of the floor system). Create a parallel sub-base mixture strip at the distance equal to the length of the smoothing lath.
3. Place the smoothing lath on the strip and level with a spirit level. You need a set of smoothing laths for this activity (for instance, wooden prisms). The smoothing lath must have lateral cuts corresponding to the height of the levelling laths.
4. Fill the space between the strips with the sub-base mixture and subsequently use the smoothing lath to level the surface of the sub-base to the required height level.

Base humidity

Maximum permitted mass humidity of the base
- Wooden base - 12%
- Silicate base - 6%

Insulation against moisture

To prevent transfer of the moisture to the thermal and sound insulation layers, it is necessary to separate the layer from the floor construction with hydro-insulation foil. This barrier mainly applies to the load-bearing ceiling construction, which contains residual humidity, or where increased transition of the 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 of thickness 0.2 mm with overlaps between the individual strips - at least 200 mm (or glue the foil joints with an adhesive tape) and pull it over the vertical construction above the level of the assumed floor 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 mixture the humidity insulation is placed between the load-bearing construction and the sub-base. When laying the floor over a wooden load-bearing construction, or the original ceiling construction, use of PE foil is not recommended to ensure "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 ensure its free evaporation.

The humidity insulation must be solved as a component of the entire ceiling and floor construction. For the purpose of potential ventilation of wet constructions, it is possible to use micro-ventilating layer (e.g. OLDROYD, TECHNODREN) or a studded membrane..

6.5.1.4 Laying of IZOCET, POLYCET floating floors

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

2 – The IZOCET, POLYCET floating floor is laid on a dry and clean base.

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 a relative air humidity of max. 70 %. The acclimatisation approximates the manufacturing humidity of the board to the balanced humidity of the application and reduces the problem of later changes in the shape.

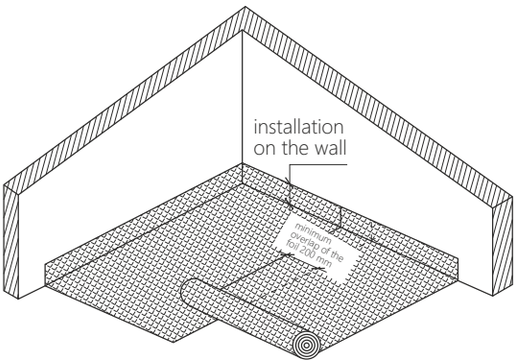
4 – If the sub-base contains high residual humidity, or in the case of risk of increased infiltration of humidity through the ceiling construction, cover the load-bearing ceiling construction with PE foil with 200 mm overlaps between the strips and overlapping the vertical constructions at least to the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

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

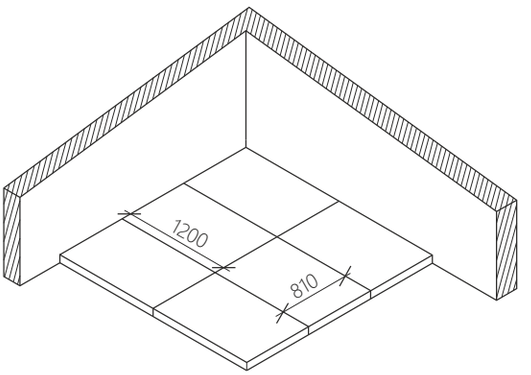
6 – Specify the direction of the upper CETRIS® board layer on which the direction of the bottom boards depends. When laying the layers, it is necessary to observe the principle that the individual layers must cross each other. It is necessary to ensure that the joints of the insulation boards and the CETRIS® floor boards do not lie above each other.

7 – The insulation boards (fibreboard in the IZOCET system, elasticized foam polystyrene in the POLYCET system) are laid flush on the vertical constructions. The insulation boards are laid without dilatation gaps in the surface. 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 wall. 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 base board width is 80 mm and the height is 19 mm up to the total height of the insulation supplemented with cut insulation board of adequate thickness (see detail drawing on page 63, 64). 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 dilatation across the surface (area larger than 6 x 6 m), floor transition, around the room perimeter – around the walls. To ensure proper contact of the door threshold particularly on the wear layer made of ceramic paving, we recommend application of silicone filler to the threshold before laying it.

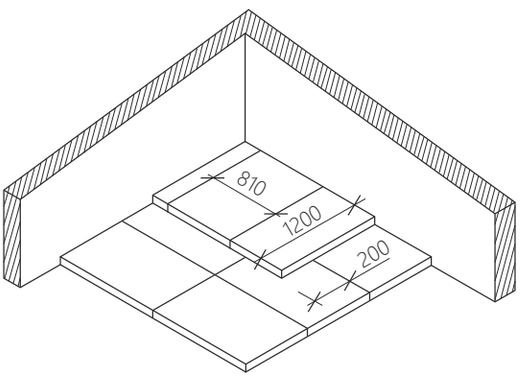
Installation of the foil



Laying of the first layer of insulation boards



Laying of the second layer of insulation boards

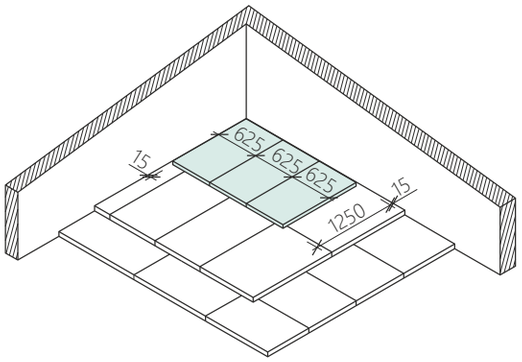


8 – When using two insulation board layers, the second layer is laid on the first layer with a minimum displacement (overlap) of 200 mm. Regarding the height of the insulation, it is recommended to eliminate the effect of the unfavourable deformations by using load-distributing elements as the base. As the best solution in terms of reinforcement of the floor, we recommend 80 x 30 mm planks and the thickness is supplemented with EPS boards up to the total height of the insulation base. These "reinforcements" are placed at the room transition points, transitions between the individual types of floorings, around the room perimeter and where concentrated loads larger than permissible for the given type of floor are assumed. In the case of POLYCET Heat, insulation boards with grooves for installation of floor heating are used. A straight insulation board is used across the floor area – with longitudinal grooves. An end piece is placed along the walls where a change in the heating pipe direction is expected. Thanks to the new technology the end piece is completely covered with aluminium foil to minimise heat loss. The universal groove layout allows for combinations of heating pipe spans – both 125 and 250 mm. Assembly is identical with the standard technological procedures for floor heating. The new technology allows for overlap of lengthwise joints between the shaped pieces with self-adhesive aluminium overlaps. Laying of the insulation boards is followed by the floor heating pipe. Before laying the load-distributing layer, the functionality and tightness of the floor heating pipes must be checked! Before laying the CETRIS® board load distribution layer, it is recommended to lay EPS separation foil on the insulation boards to prevent creaking of the floor – a softened PE foil – e.g. Mirelon of thickness 2 mm. In the case of the POLYCET HEAT floor where insulation boards with aluminium foil are used, the separation is not needed.

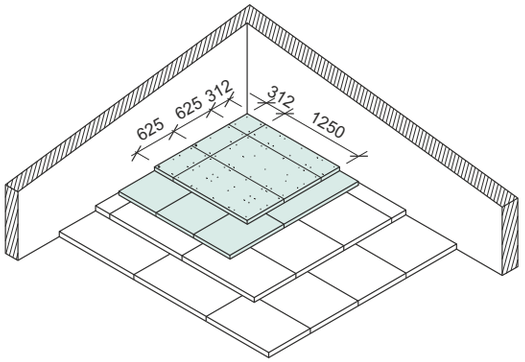
9 – Start CETRIS® board laying with a whole board opposite the door. The boards are laid tightly with a cross joint

10 – A dilatation joints with a width of 15 mm is created around the vertical constructions (walls, pillars etc.). It is recommended to place a 15 mm wide mineral wool or polystyrene strip into the dilatation joints along the vertical constructions to prevent clogging of the dilatation joint during subsequent work. This tape is cut to the desired height upon completion of the final surface finishing of the floating floor before installation of the floorings.

Laying of the first layer of CETRIS® boards



Laying of the second layer of CETRIS® boards



Further floor laying procedure depends on the floating floor variant.

The IZOCET, POLYCET Therm, Aku, Max and Min variants:

11 – The second layer of CETRIS® boards is laid crosswise on the first layer with an overlap of 1/3 of the board, i.e. 312 mm. For easier assembly, the upper layer CETRIS® floor boards are pre-drilled. The diameter of the pre-drilled holes is 4.5 mm.

12 – Immediately after laying, it is necessary to connect the CETRIS® boards with self-tapping screws of diameter 4.2 mm and length 35 mm with countersunk heads. The screws are inserted into the pre-drilled 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 of 300 mm between the individual joints. The screws must not pass through the joints of the bottom layer of CETRIS® boards. The average number of connecting screws is 30 pcs/m^2.

13 – It is recommended to use electric screwdrivers to drive the screws. When joining the CETRIS® boards, it is necessary to locally press the boards down, ideally with the weight of the worker. This prevents the lifting of the upper layer of the boards and potential contamination of the joints with the sawdust from drilling. The screwing of the individual boards is done from the centre outwards.

When laying basic format CETRIS® boards (1,250 x 3,350 mm), it suffices to use approximately 20 screws on 1 m2 if the following conditions are met:

A) The minimum distance of each screw from the board edge is 25 mm
B) The maximum spacing of the screws in the board surface is 300 mm
C) Double-screwing is necessary at the contact points of the lower boards – the upper board must be screwed to both bottom boards
D) The upper boards must be have pre-drilled 4 mm holes.

The mutual connection and interaction of two layers of CETRIS® cement bonded particleboards of thickness 12 mm can be achieved also by stapling. The recommended instructions for stapling of the "CETRIS® board to the board":

- Staple types KG 700 CNK geh /DIN 1052/, wire diameter 1.53 mm 35 mm length
- Stapler type - Stapler PN 755 XI
- Number and positioning of the staples – 28 staples/m2, position according to the drilling template for the upper CETRIS® board of thickness 12 mm. Minimum spacing of the staple from the edge is 25 mm; the staple must be at an angle of 45° to the edge of the board

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

16 – A screw jointed floor is immediately walkable. It is possible to install the wear layer immediately.

POLYCET Heat Variant (embedded floor heating):

Before laying the second layer of CETRIS® boards apply UZIN MK-73 glue 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 that reduce adhesion. The glue must be applied evenly across the layer surface with a notched spatula with the notch height of B3. The recommended glue consumption is 0.8 – 1.0 kg/m2 Alternatively, low-expansion polyurethane bonding foam can be used for full surface bonding of the cement bonded particleboards. The foam is applied in beads with a diameter of 15 mm. The beads must run along the perimeter of the glued board and within the area with a maximum spacing of 150 mm.

11 – The second layer of CETRIS® boards is placed on the glue layer. The board is laid crosswise on the first layer with an overlap of 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-tapping screws with the diameter of 4.2 mm and length 25 mm with countersunk heads. The screws are inserted into the pre-drilled holes. The screws must be positioned 25 – 50 mm from the board edge and must not pass through the joints of the bottom layer of CETRIS® boards. Laying of basic format CETRIS® boards is not recommended in the case of the POLYCET Heat variant because of the short curing time of the glue.

13 – It is recommended to use electric screwdrivers to drive the screws. When joining the CETRIS® boards, it is necessary to locally press the boards down, ideally with the weight of the worker. This prevents the lifting of the upper layer of the boards and potential contamination of the joints with the sawdust from drilling.

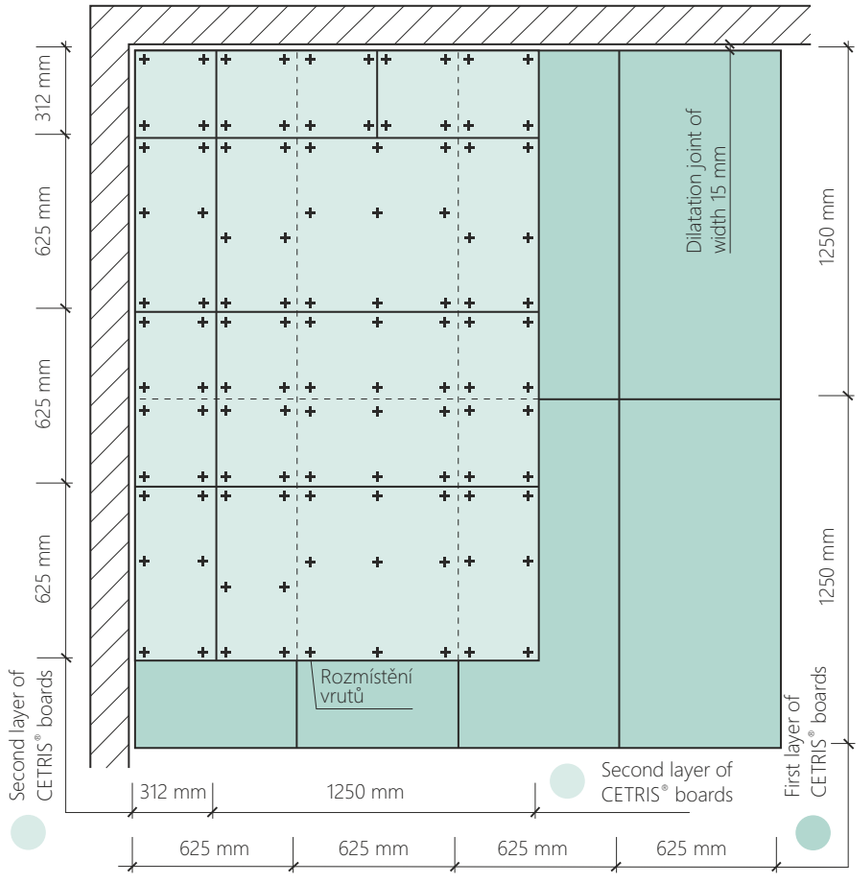
15 – After joining both layers of CETRIS® boards, cut the edge strip and the insulation foil at the required height with a knife.

16 – As the CETRIS® board layers are glued together, the POLYCET Heat floor is not ready for walking traffic immediately after laying. Walking and application of the wear layer on the laid floor is possible no sooner than 48 hours after assembly.

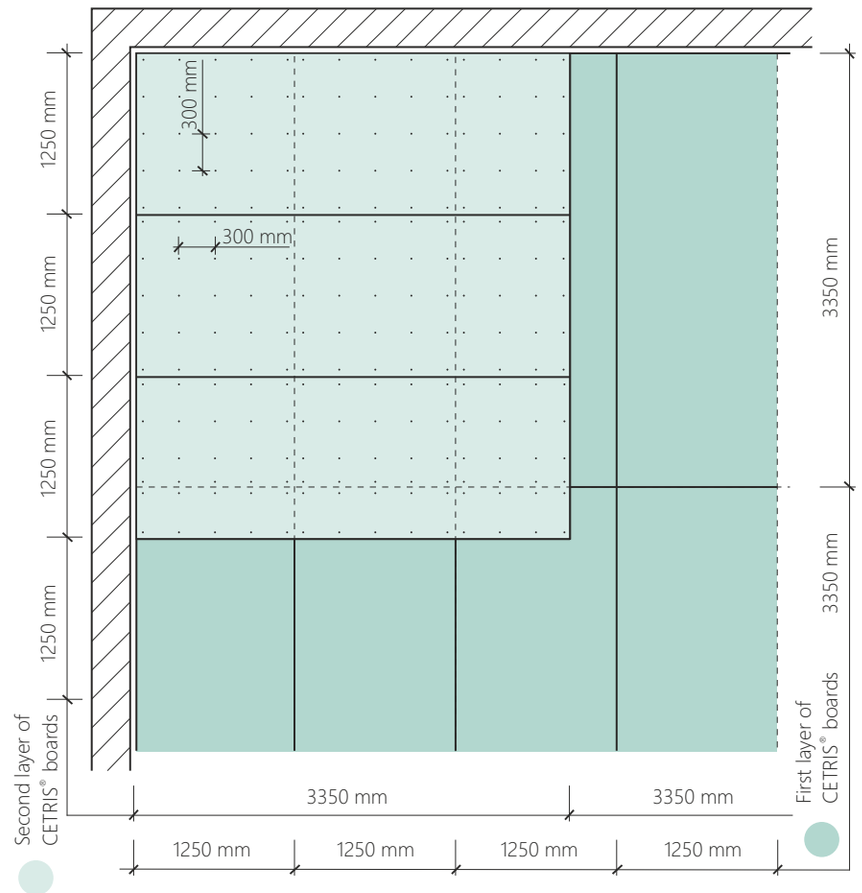
17 – When laying a large floor area, we recommend sequential installation of the insulation and panels in the individual areas of the dilatation zone. This reduces the risk of damage to the insulation boards from the movement of the workers.

Note: Due to drying and gradual acclimatisation of the CETRIS® boards after laying of the floor, especially in winter months, moderate lifting of the free edges (by the walls, in the corners) may occur. This effect may be eliminated by local anchoring of the CETRIS® boards to the base (sub-floor, ceiling).

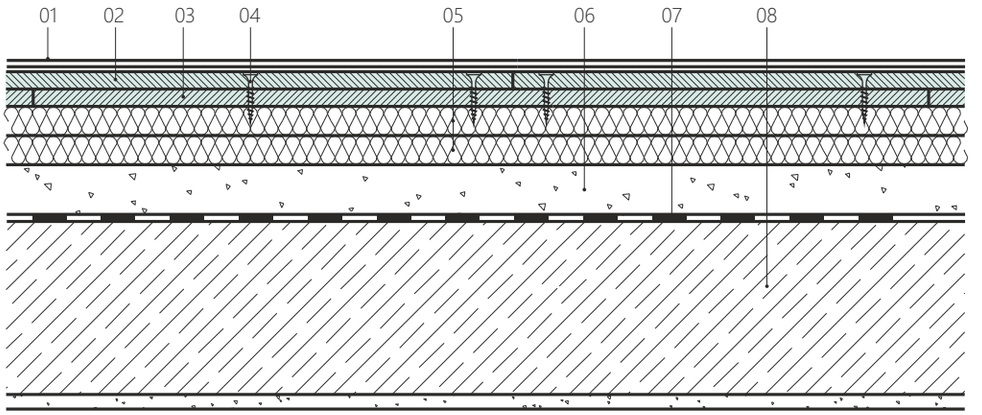
Installation of CETRIS® boards of format 1,250 x 625 mm - IZOCET, POLYCET floating floorsFirst layer of CETRIS® boards



Installation of CETRIS® boards of format 1,250 x 3,350 mm - IZOCET, POLYCET floating floors

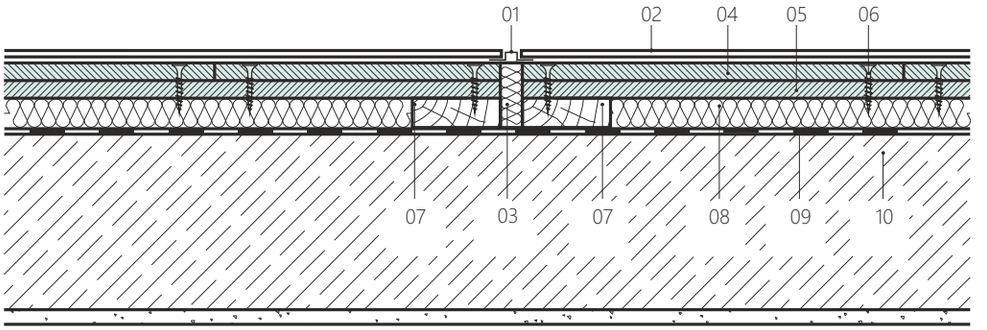


Levelling of the base, increase of the construction height of the IZOCET system - vertical section



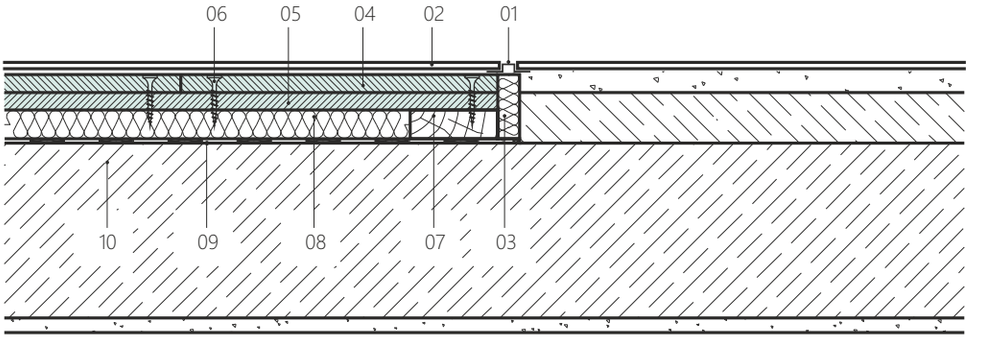
01 wear layer
02 CETRIS® board of thickness 12 mm, upper
03 CETRIS® board of thickness 12 mm, lower
04 screw 4.2 × 35 mm
05 insulation wood-fibre board of thickness 19 mm
06 sub-base mixtures (Fermacell, BACHL, Perlit, Cemwood 2000, Silipert) – max. thickness 40 mm
07 vapour barrier
08 ceiling construction

Dilatation joint in the IZOCET area - vertical section



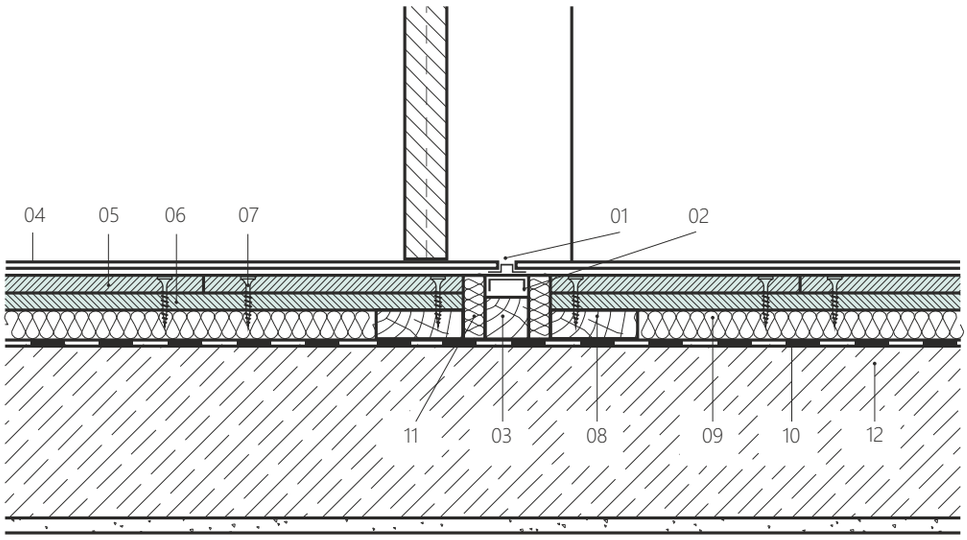
01 Schlűter DILEX dilatation profile
02 wear layer
03 dilatation (15 mm)
04 CETRIS® board of thickness 12 mm, upper
05 CETRIS® board of thickness 12 mm, lower
06 screw 4.2 × 35 mm
07 base wooden lath
08 insulation wood-fibre board of thickness 19 mm
09 vapour barrier
10 ceiling construction

Transition to another IZOCET floor - vertical section



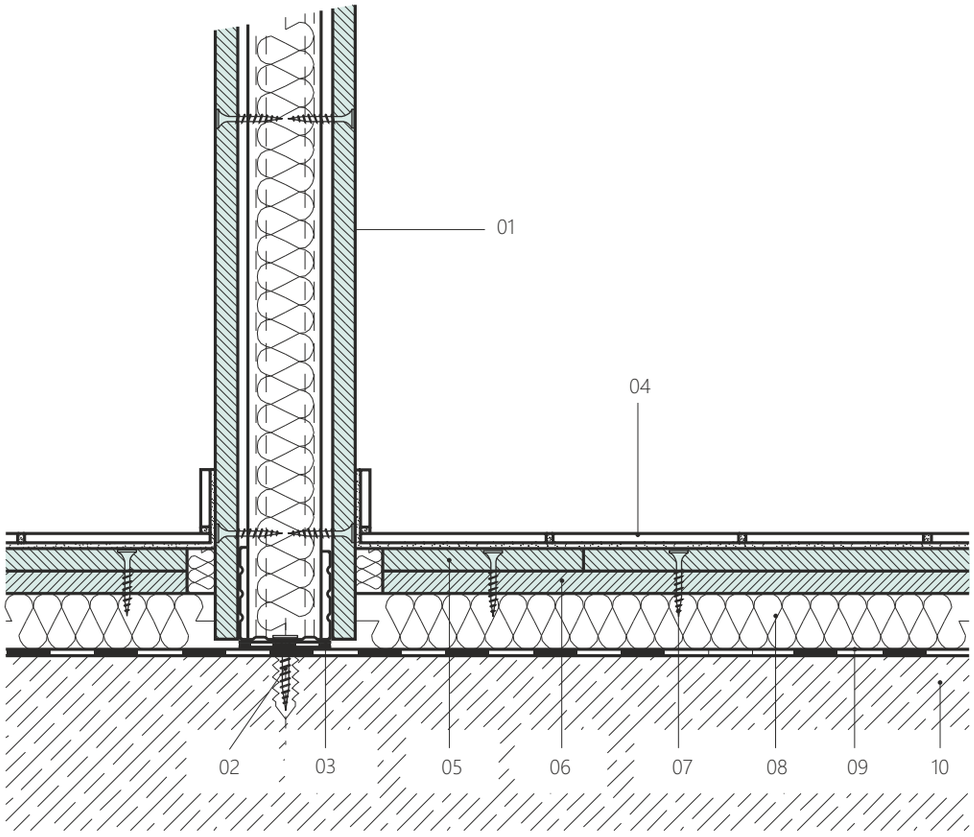
01 Schlűter DILEX dilatation profile
02 wear layer
03 dilatation (15 mm)
04 CETRIS® board of thickness 12 mm, upper
05 CETRIS® board of thickness 12 mm, lower
06 screw 4.2 × 35 mm
07 base wooden lath
08 insulation wood-fibre board of thickness 19 mm
09 vapour barrier
10 ceiling construction

Threshold free transition for the IZOCET floor - vertical section



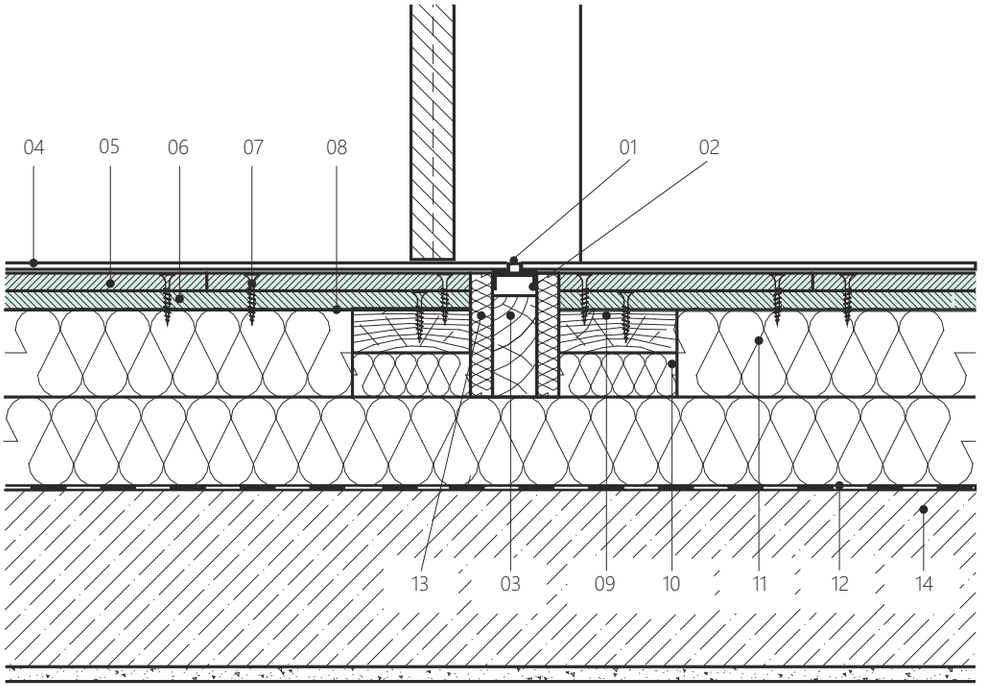
01 Schlűter DILEX dilatation profile
02 threshold connection
03 wooden threshold base profile
04 wear layer
05 CETRIS® board of thickness 12 mm, upper
06 CETRIS® board of thickness 12 mm, lower
07 screw 4.2 × 35 mm
08 base wooden lath
09 insulation wood-fibre board of thickness 19 mm
10 vapour barrier
11 dilatation (15 mm)
12 ceiling construction

Connection of IZOCET floor to a partition wall - vertical section



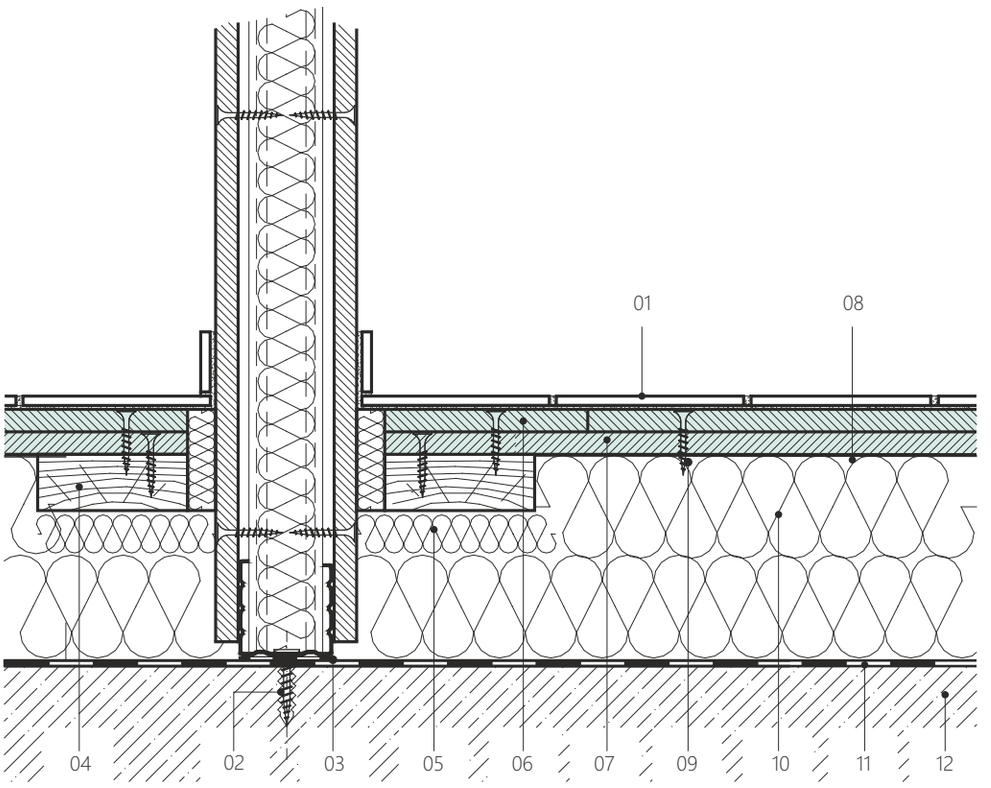
01 partition wall
02 dowel
03 sealing washer
04 base wooden lath
05 CETRIS® board of thickness 12 mm, upper
06 CETRIS® board of thickness 12 mm, lower
07 screw 4.2 × 35 mm
08 insulation wood-fibre board of thickness 19 mm
09 vapour barrier
10 ceiling construction

Threshold free transition for the POLYCET floor - vertical section



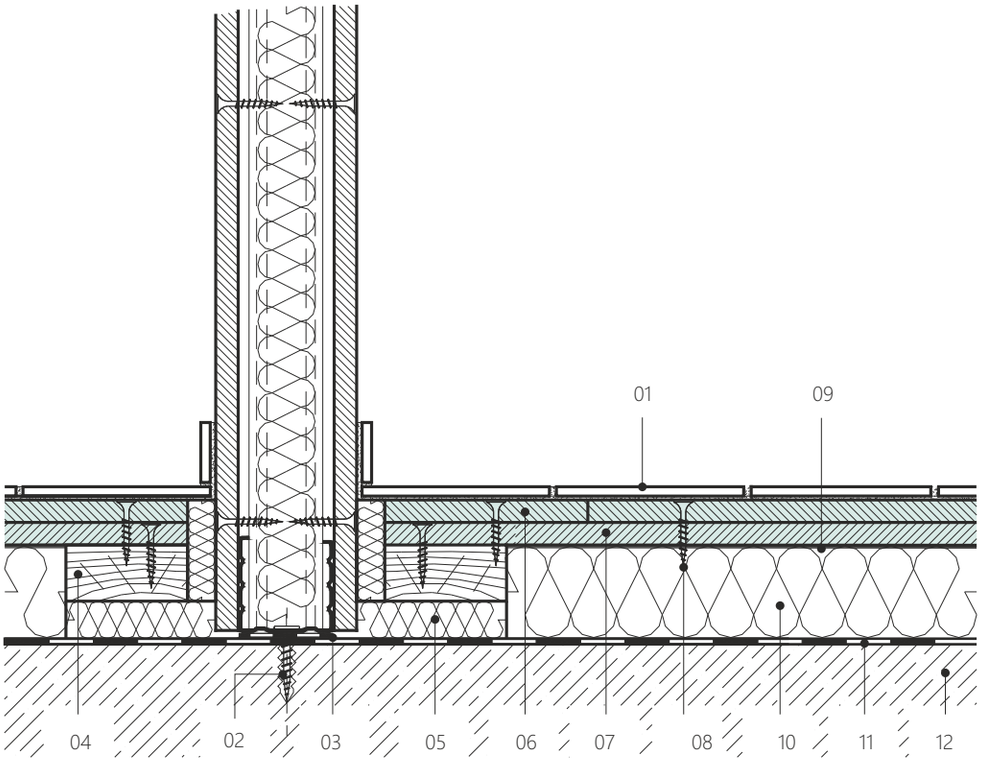
01 Schlűter DILEX dilatation profile
02 threshold connection
03 wooden threshold base profile
04 wear layer
05 CETRIS® board of thickness 12 mm, upper
06 CETRIS® board of thickness 12 mm, lower
07 screw 4.2 × 35 mm
08 separation layers – foam foil of thickness 2 mm
09 wooden base lath 80 × 30 mm
10 EPS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

Connection of POLYCET Therm floor to a partition wall - vertical section



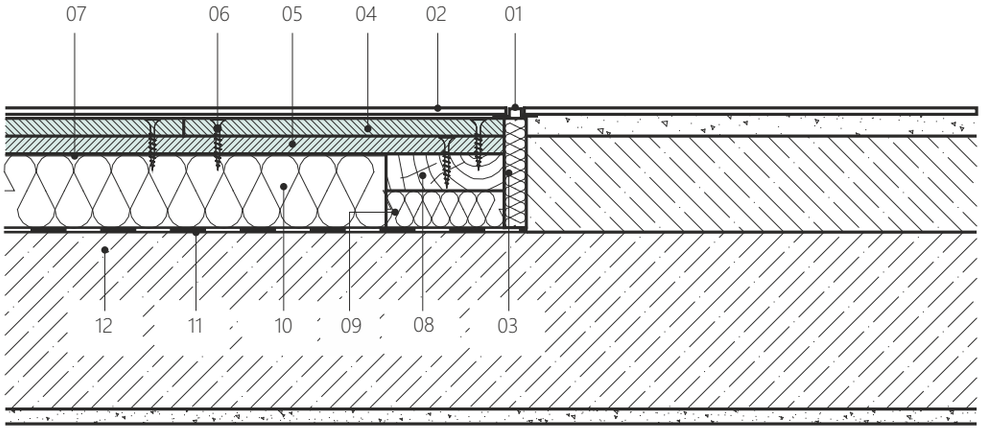
01 wear layer
02 dowel
03 sealing washer
04 wooden base lath 80 × 30 mm
05 EPS insulation
06 CETRIS® board of thickness 12 mm, upper
07 CETRIS® board of thickness 12 mm, lower
08 separation layers – foam foil 2 mm
09 screw 4.2 × 35 mm
10 EPS insulation board EPS 100Z (two layers)
11 vapour barrier
12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

Connection of POLYCET Aku floor to a partition wall - vertical section



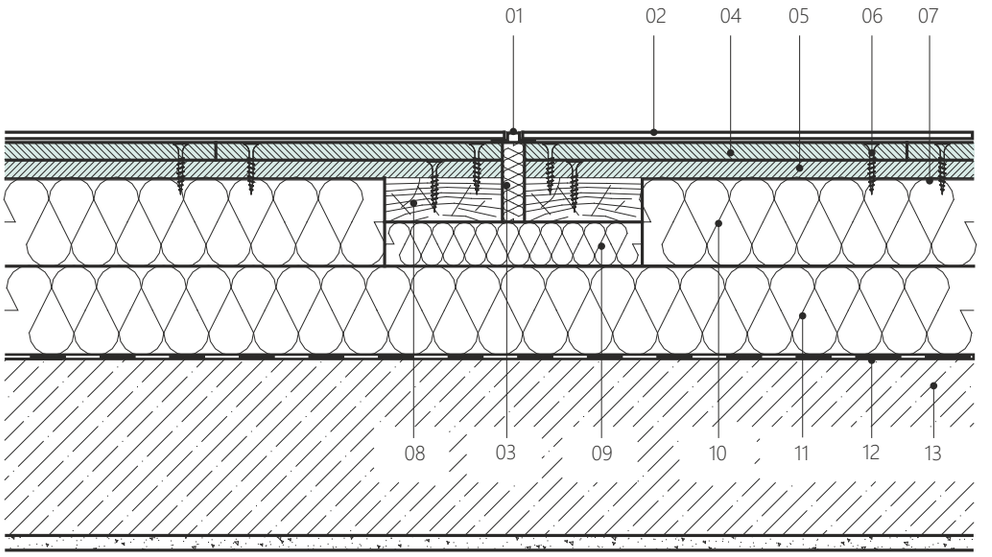
01 wear layer
02 dowel
03 sealing washer
04 wooden base lath 80 × 30 mm
05 EPS insulation
06 CETRIS® board of thickness 12 mm, upper
07 CETRIS® board of thickness 12 mm, lower
08 screw 4.2 × 35 mm
09 separation layers – foam foil 2 mm
10 EPS insulation
11 vapour barrier
12 ceiling construction

Transition to another floor - vertical cross-section



01 dilatation profile
02 wear layer
03 dilatation (15 mm)
04 CETRIS® board of thickness 12 mm, upper
05 CETRIS® board of thickness 12 mm, lower
06 screw 4.2 × 35 mm
07 separation layer – foam foil th. 2 mm
08 wooden base lath 80 × 30 mm
09 EPS insulation
10 EPS 100Z insulation board
11 vapour barrier
12 ceiling construction

Dilatation joint in the surface - vertical cross-section



01 Schlűter DILEX dilatation profile
02 wear layer
03 dilatation (15 mm)
04 CETRIS® board of thickness 12 mm, upper
05 CETRIS® board of thickness 12 mm, lower
06 screw 4.2 × 35 mm
07 separation layers – foam foil th. 2 mm
08 wooden base lath 80 × 30 mm
09 EPS insulation
10 EPS insulation board, type 100Z
11 EPS insulation board, type 100Z
12 vapour barrier
13 ceiling construction

6.5.1.5 Laying of the CETRIS® PDI floor

1 – The CETRIS®PDI floating floor is laid as the final construction after completion of the "wet" building construction work (after erection of the partition walls, after plastering, etc.).

2 – The CETRIS®PDI floating floor is laid on a dry and clean base.

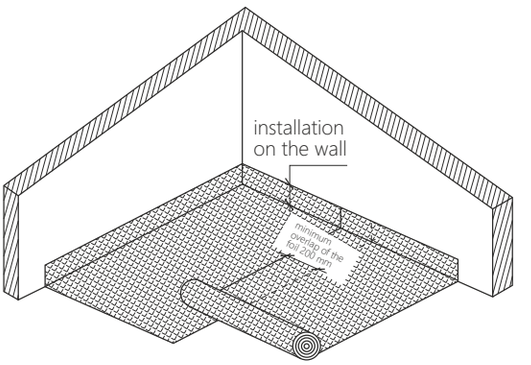
3 – Before laying the floor construction the floor parts should be acclimatised for a minimum period of 48 hours at the minimum temperature of 18° C and a relative air humidity of max. 70%. The acclimatisation approximates the manufacturing humidity of the board to the balanced humidity of the application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

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 an insulation board is inserted between the CETRIS®PDI floor board panels, it is necessary prior to laying to specify the laying direction of the insulation boards. When laying the layers, it is necessary to observe the principle that the individual layers must be crosswise. It is necessary to ensure that the joints of the insulation boards and the CETRIS® PDI floor boards do not lie above each other.

6 – The insulation boards are laid flush on the vertical constructions. The insulation boards are laid without dilatation gaps in the surface. 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 wall. When fixing the door threshold it is necessary to use longer screws to connect the door frame with the base profile.

Installation of the foil



If the composition includes insulation boards, it is recommended in the case of a door threshold to always install the base laths on both sides of the threshold under the CETRIS® PDI boards. The recommended base board dimensions are 80 x 30 mm, which may be supplemented to the total height of the insulation with cut EPS insulation board of adequate thickness (see detail). 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 dilatation across the surface (area larger than 6 x 6 m), floor transition, etc.

7 – A dilatation joints with a width of 15 mm is created around the vertical constructions (walls, pillars etc.). It is recommended to place a 15 mm wide mineral wool or polystyrene strip into the dilatation joints along the vertical constructions to prevent clogging of the dilatation joint during subsequent work. This tape is cut to the desired height upon completion of the final surface finishing of the floating floor before installation of the floorings.

8 – Start laying the CETRIS® PDI board with a whole board opposite the door. The boards are laid tightly with a cross joint.

9 - The CETRIS®PDI boards are laid from right to left and no cross-joints may appear when laying the boards; the minimum overlap between joints is 200 mm. The protruding tongue of the first panel in the first row must be cut both on the long (longitudinal) and short (transverse) side. In the case of the rest of the boards in the first row, the tongue must be cut on the longer (longitudinal) side. Before laying the boards, 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 45P, etc.). The approximate glue consumption is 40 g/m2 of laid area (500 ml pack = 12 m2 of floor area). 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.

10 - When laying the final panel, first cut it to the required length and then cut-off the tongue on the longitudinal side. You can use the cut-off piece (minimum length of 200 mm) to start the second row.

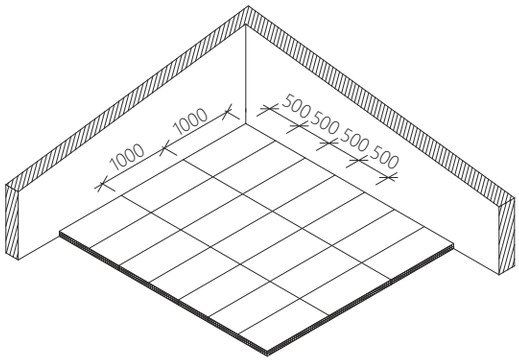
11 – After joining both layers of CETRIS® PDI boards, use a knife to cut-off the edge strip and the insulation foil at the required height.

12 – When laying a large floor area, we recommend sequential installation of the insulation and panels in the individual areas of the dilatation zone. This reduces the risk of damage to the insulation boards from the movement of the workers.

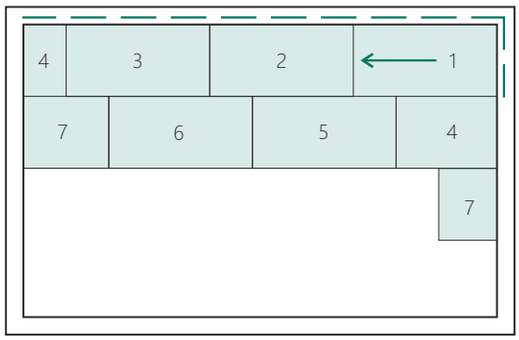
13 – Full loading of the floor or performance of other operations (laying the floor covering) on the floor can be done only after complete curing of the polyurethane glue (min. 24 hours). Remove the excessive glue with a spatula after curing of the glue. A screw-jointed floor is immediately walkable. It is possible to install the wear layer immediately.

Note: Due to drying and gradual acclimatisation of the CETRIS® PDI boards after laying of the floor, especially in winter months, moderate lifting of the free edges (by the walls, in the corners) may occur. This effect may be eliminated by local anchoring of the CETRIS®PDI boards to the base (sub-floor, ceiling).

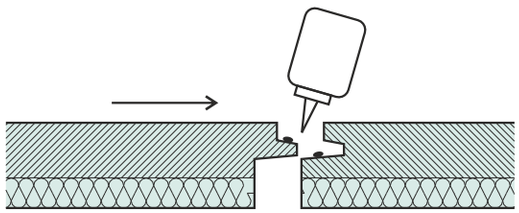
Laying of the insulation boards



Without a tongue on the longitudinal side

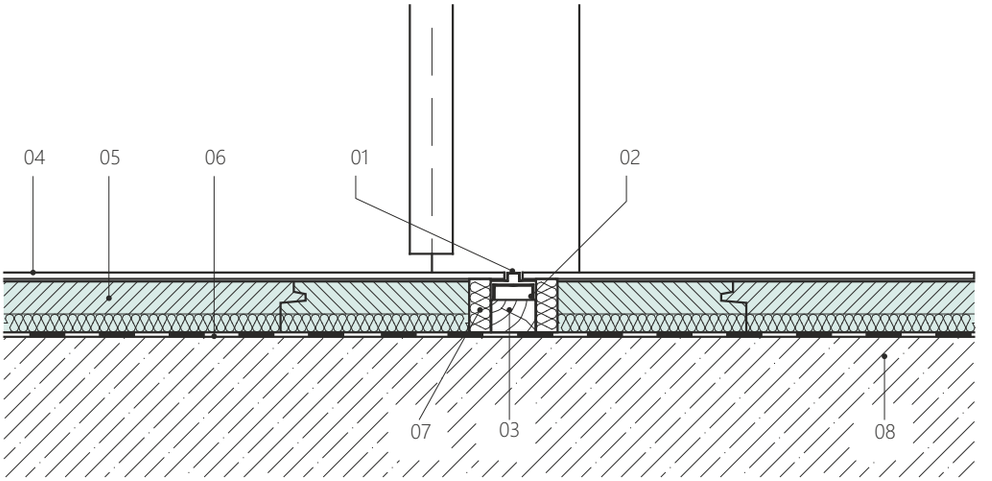


Without a tongue on the transverse side



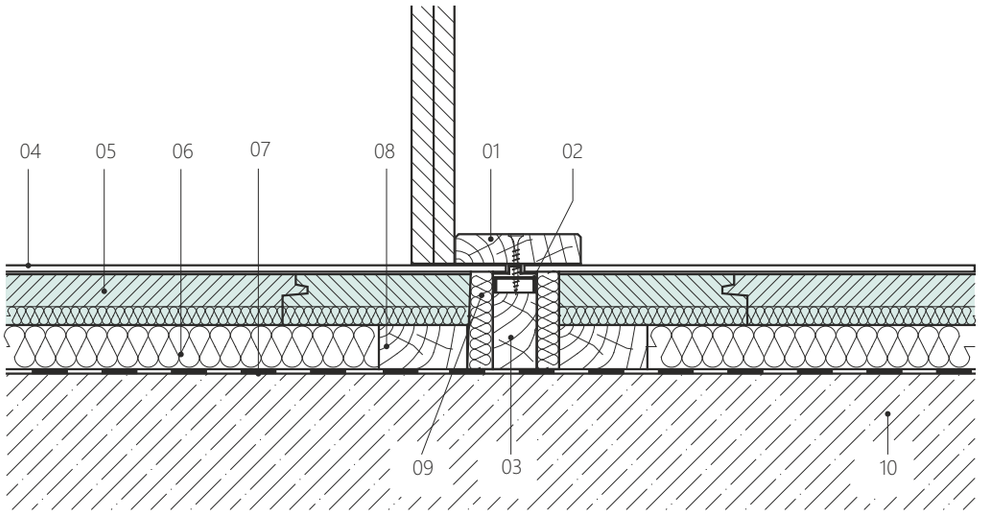
Details of the CETRIS® PDI floor

Threshold free floor transition - vertical section



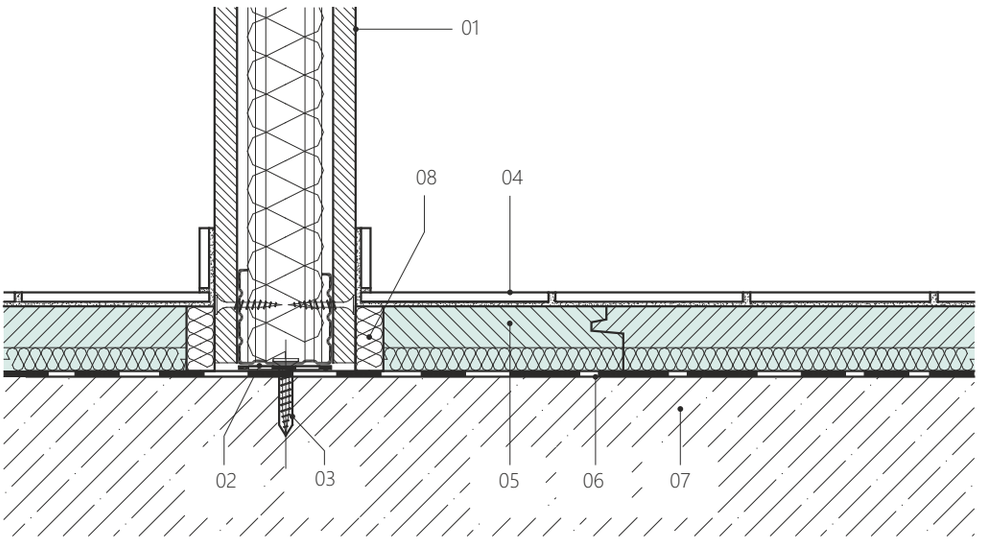
01 Schlűter DILEX dilatation profile
02 threshold link to the door frame
03 wooden base section under the door frame
04 wear layer
05 CETRIS® PDI floor panel
06 vapour barrier
07 dilatation joint 15 mm
08 ceiling construction

Floor transition over a threshold - vertical cross-section



01 wooden threshold with a thickness of 20 mm
02 threshold link to the door frame
03 wooden base section under the door frame
04 wear layer
05 CETRIS® PDI floor panel
06 insulation board (max. thickness 50 mm)
07 vapour barrier
08 wooden base batten
09 dilatation joint 15 mm
10 ceiling construction

Connection of the floor to a partition wall - vertical cross-section



01 partition wall
02 sealing washer
03 dowel
04 wear layer
05 CETRIS® PDI floor panel
06 vapour barrier
07 ceiling construction
08 dilatation joint

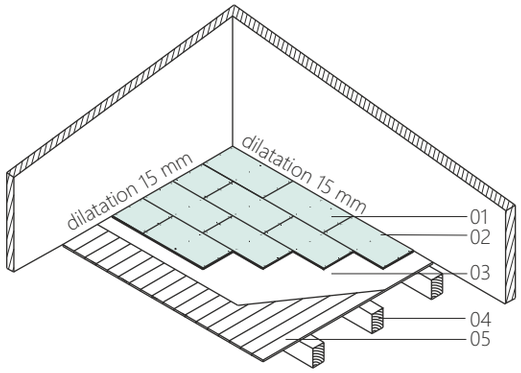
6.6 CETRIS® PD and CETRIS® PDB Floor Boards on a Load-bearing Flat Base

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

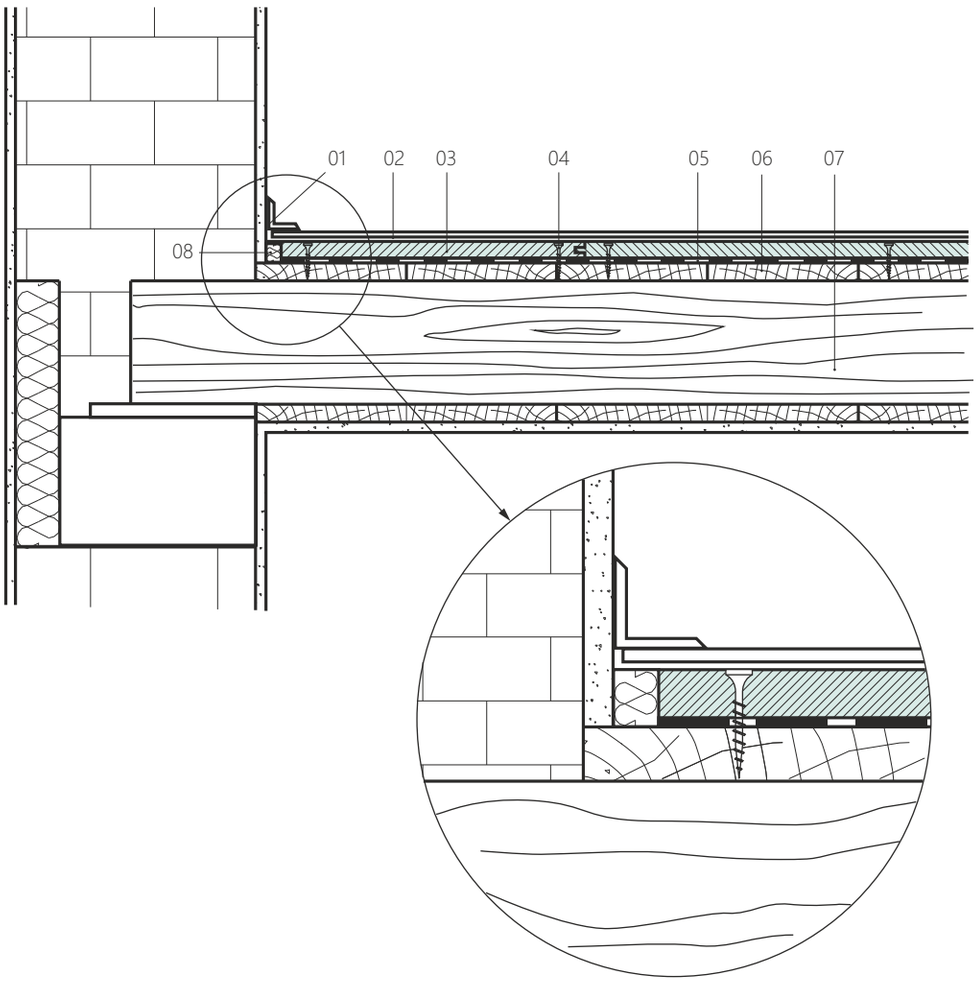
The CETRIS® PD (PDB) floor boards are thus supported over the full area and do not have any load-bearing function. They only provide a quality surface for laying the final wear layer. For this solution, the CETRIS® PD (PDB) board of thickness 16 mm is sufficient.

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

01 CETRIS® PD (PDB) floor board
02 screw CETRIS® 4.2 × 45 mm
03 acoustic insulation base – separating foil of max. thickness 5 mm
04 ceiling construction
05 existing wooden floor



Model cross-section – CETRIS® PD (CETRIS® PDB) floor boards on a load-bearing base



01 corner lath
02 wear layer
03 CETRIS® PD (PDB) floor board
04 screw 4.2 × 45 mm
05 acoustic insulation – separating foil of max. thickness 5 mm
06 existing wooden floor
07 ceiling construction
08 dilatation joint of thickness 15 mm

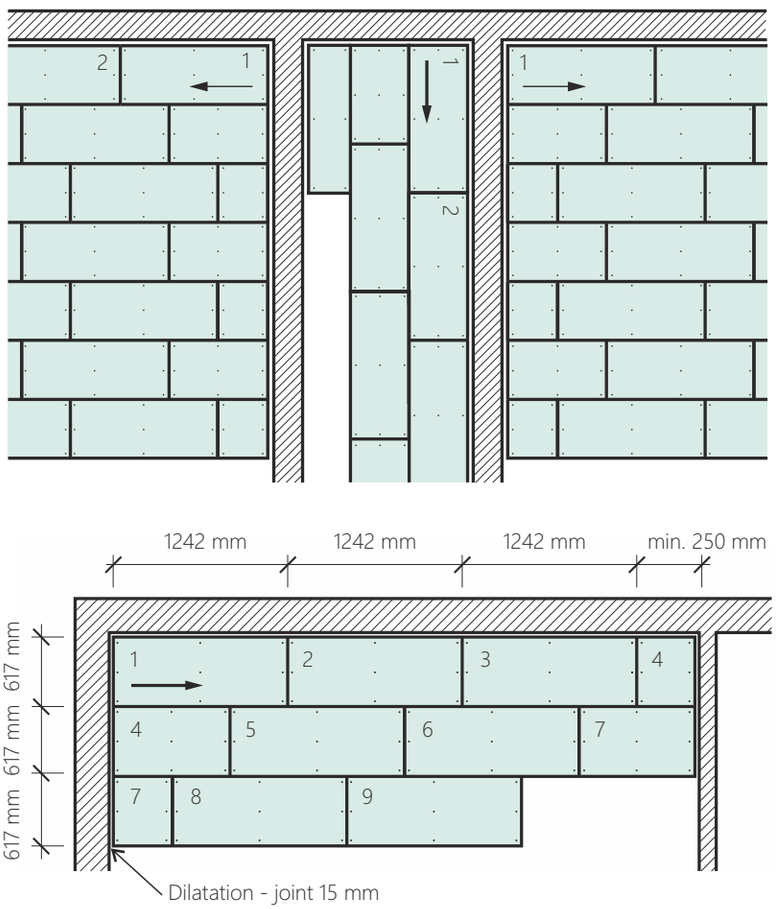
6.6.1 Load-Bearing Base, Requirements, Laying

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 for rehabilitation of an original wooden floor:

- In the case of local unevenness greater than 2 mm, the eventual protrusions – knots, raised rings – are sanded (beware of reduction of the load capacity of the board surface when sanding larger areas!), depressions are filled with suitable filler.
- In the case of a healthy wooden floor that is not damaged so much and has local irregularities up to 2 mm, the existing floor is covered with a separation layer (non-woven fabric, cardboard etc.) and the CETRIS® PD (CETRIS® PDB) floor boards with a thickness of 16 mm are laid directly on the separation layer.
- Laying of the CETRIS® PD (CETRIS® PDB) floor boards starts with a whole board in the corner opposite the door. The CETRIS® PD (CETRIS® PDB) boards are laid tightly against each other and the joint is fixed with glue. The following alkali-resistant dispersion glues are recommended: UZIN MK33, MAPEI – ADESIVIL D3, SCHÓNOX HL, CONIBOND PRO 1005, HENKEL PONAL SUPER 3 (PATEX SUPER 3).
- The boards must be laid within 15 minutes (glue plasticity time). The excessive (expelled) glue is removed after pushing the boards against each other to ensure that the joint is fully filled with glue. After this, the boards are screw-jointed with the old wooden floor.
- Cross-joints are prohibited when laying CETRIS® PD (CETRIS® PDB) cement-bonded particleboards. 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. Around the vertical joints (walls, pillars, etc.) it is necessary to observe a dilatation joint of minimum width 15 mm. Around the doors the CETRIS® PD (CETRIS® PDB) boards should not create a joint perpendicular to the door profile.
- If one of the floors is afflicted by fungi or the floor is rotten, the old boards should be replaced or removed and a new CETRIS® PD (CETRIS® PDB) on joists should be laid in its place, see Chapter 6.7 CETRIS® PD and CETRIS® PDB Floor Systems on joists
- If the floor is wet it is necessary to provide dehumidification, 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 on the original floor.

Laying of CETRIS® PD and CETRIS® PDB board floors on a load-bearing flat base



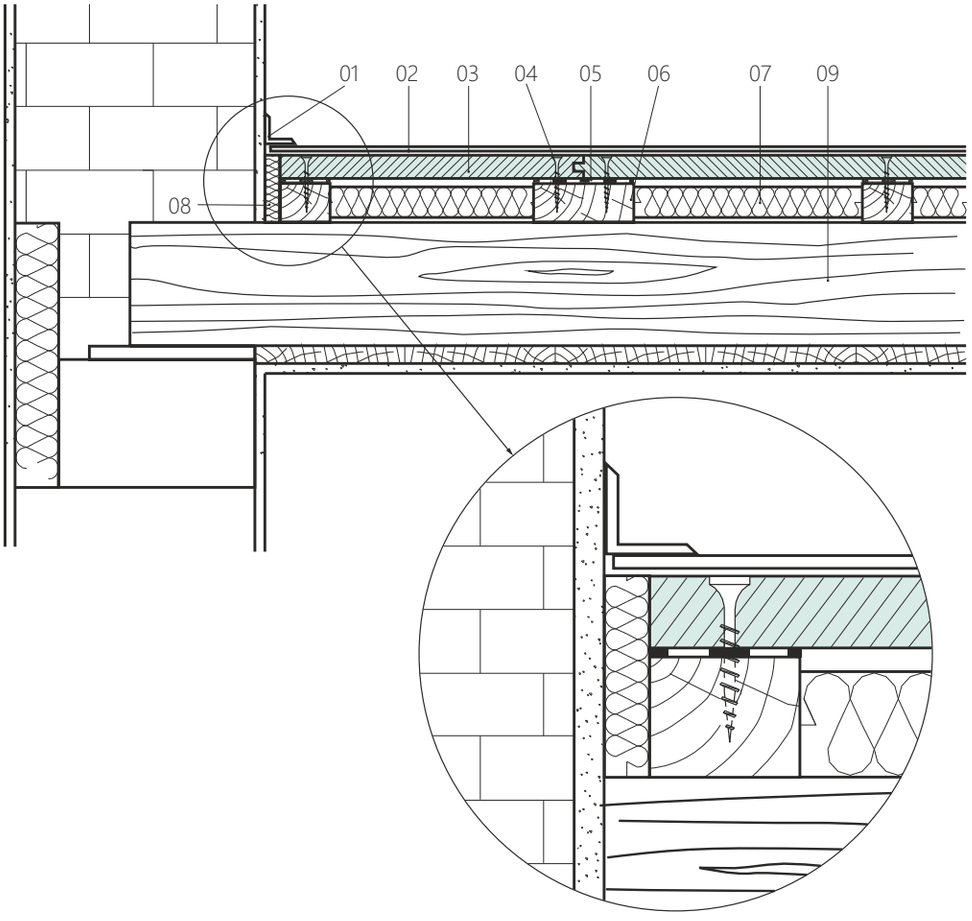
6.7 CETRIS® PD and CETRIS® PDB Floor Systems on Joists

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

6.7.1 Description of the Construction

The classic fixed structure of the floors consists of the single or bi-directional beams (wooden prisms – pillows, steel beams, and the like). 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 to ensure the interaction of the boards. Heat and sound insulation is placed between the beams as required and acoustic insulation with a maximum thickness of 5 mm is also laid over the beams to prevent formation of sound bridges. The floor is finished around the walls with a dilation joint with a width of 15 mm. It is recommended to place a 15 mm wide mineral wool or polystyrene strip into the dilatation joints along the vertical constructions to prevent clogging of the dilatation joint during subsequent works. This tape is cut at the desired height after completion of the final surface finishing of the floating floor before installation of the floorings. The beams must have an adequate load-bearing capacity, set on a load-bearing construction. It is necessary to verify their deflection. If the load-bearing construction is flat, the beams should be installed on the full length of the structure.

Vertical cross-section – Floor boards on beams



01 corner lath
02 wear layer
03 CETRIS® PD (PDB) floor board
04 screws 4.2 × 45 (55) mm
05 acoustic insulation insert with a maximum thickness of 5 mm
06 wooden beam
07 thermal insulation
08 dilatation joint
09 ceiling construction

6.7.2 Load Tables

The static calculation of the load-bearing capacity of the CETRIS® PD and PDB floor boards was done for boards mounted on beams (unidirectional mounting) or on a grid (bi-directional mounting). The span of the beams in the grid is the same in both directions (square field). The interaction of the CETRIS® PD (PDB) boards is ensured by a tongue and groove joint and its glue bonding. The calculation is done assuming the elastic behaviour of the material while respecting the following mechanical and physical characteristics:

Flexural tensile strength	f = min. 9 N/mm^2
Modulus of elasticity	E = min. 4500 N/mm^2
Density	ρ = 1400 kg/m^3

When determining the load capacity, the dead weight of the board was also taken into consideration. The maximum normal stress in the terminal fibres shall not exceed 3.60 N/mm2 (a 2.5 multiple of safety is achieved). The maximum elastic deflection of the board from the operating load including dead weight shall not exceed 1/300 of the span. The calculation was used to verify that concentrated load is decisive for the load capacity of the CETRIS® cement bonded particleboards according to ČSN 73 00 35 (load on building structures). Specification of the maximum usable load of the board respects Article 6 of ČSN 73 00 35 standard, which stipulates that in the case of ceilings, staircases, flat roofs and terraces, a concentrated standard vertical load whose value in kN is equal to the value of the standard usable uniform load per 1 m^2 of the ceiling.

It is assumed that this concentrated load acts on a square area with side of length 100 mm. The calculation further assumes that the load acts directly on the board surface and in case of the application of load distribution layers, the load capacity of the CETRIS® floor boards shall be higher, but this must be verified by a calculation for each individual case. The static calculation results are given in the following tables and graphs.

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

Max. deflection L/300, max. flexural tensile stress 3.6 N/mm^2, loaded area 100 x 100 mm

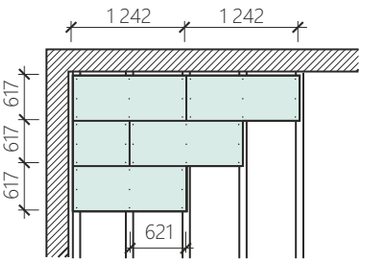
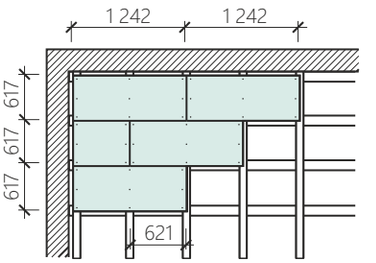
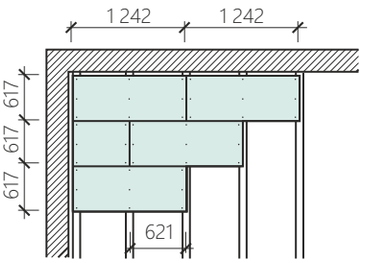
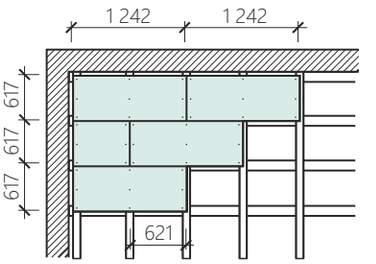
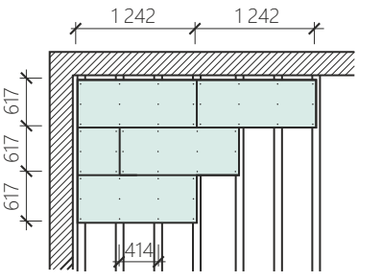
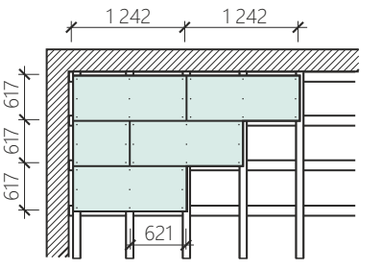
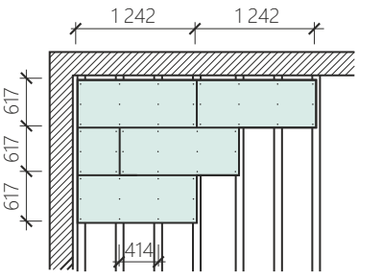
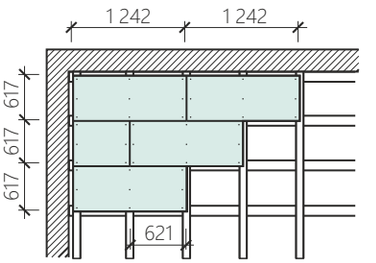
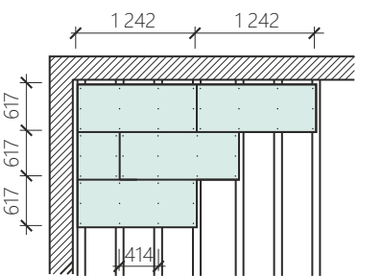
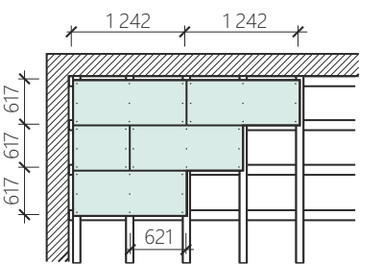
Interval	Maximum load F (kN)												
(m)	Th. 16 mm	Th. 18 mm	Th. 20 mm	Th. 22 mm	Th. 24 mm	Th. 26 mm	Th. 28 mm	Th. 30 mm	Th. 32 mm	Th. 34 mm	Th. 36 mm	Th. 38 mm	Th. 40 mm
0,200	1,532	1,940	2,396	2,899	3,451	4,052	4,700	5,396	6,140	6,932	7,773	8,661	9,598
0,250	1,335	1,691	2,089	2,529	3,010	3,534	4,100	4,708	5,357	6,049	6,783	7,559	8,376
0,300	1,200	1,520	1,878	2,274	2,707	3,179	3,688	4,235	4,820	5,443	6,104	6,802	7,539
0,350	1,099	1,393	1,721	2,085	2,483	2,916	3,384	3,886	4,423	4,995	5,602	6,244	6,920
0,400	1,020	1,293	1,599	1,937	2,308	2,711	3,146	3,614	4,114	4,646	5,211	5,809	6,438
0,450	0,922	1,212	1,499	1,817	2,165	2,544	2,953	3,392	3,862	4,363	4,894	5,455	6,047
0,500	0,802	1,144	1,415	1,716	2,045	2,403	2,790	3,207	3,651	4,125	4,628	5,160	5,720
0,550	0,703	1,010	1,343	1,628	1,942	2,282	2,651	3,047	3,470	3,921	4,400	4,906	5,439
0,600	0,620	0,893	1,235	1,551	1,851	2,176	2,528	2,906	3,311	3,742	4,199	4,683	5,192
0,650	0,550	0,794	1,101	1,476	1,769	2,081	2,418	2,781	3,168	3,581	4,020	4,483	4,972
0,700	0,488	0,708	0,985	1,323	1,695	1,994	2,318	2,667	3,039	3,436	3,857	4,303	4,773
0,750	0,435	0,634	0,884	1,190	1,559	1,915	2,227	2,562	2,920	3,303	3,708	4,138	4,590
0,800	0,387	0,568	0,795	1,073	1,409	1,807	2,141	2,465	2,810	3,179	3,570	3,984	4,421
0,850	0,345	0,509	0,715	0,970	1,276	1,639	2,062	2,373	2,707	3,063	3,441	3,841	4,263
0,900	0,307	0,456	0,644	0,877	1,157	1,489	1,878	2,288	2,610	2,954	3,320	3,706	4,114
0,950	0,272	0,408	0,580	0,793	1,049	1,354	1,711	2,124	2,518	2,851	3,204	3,578	3,973
1,000	0,240	0,364	0,522	0,717	0,952	1,232	1,560	1,940	2,375	2,752	3,094	3,456	3,838
1,050	0,211	0,325	0,469	0,648	0,864	1,121	1,423	1,773	2,174	2,630	2,989	3,339	3,710
1,100	0,184	0,288	0,420	0,584	0,783	1,020	1,298	1,621	1,991	2,412	2,887	3,227	3,586
1,150	0,159	0,254	0,375	0,526	0,709	0,927	1,184	1,482	1,823	2,212	2,651	3,119	3,466
1,200	0,136	0,223	0,334	0,472	0,641	0,842	1,079	1,354	1,669	2,029	2,434	2,889	3,350
1,250	0,115	0,194	0,296	0,423	0,578	0,763	0,982	1,235	1,527	1,860	2,235	2,656	3,126
1,300	0,095	0,166	0,259	0,375	0,517	0,687	0,888	1,121	1,390	1,696	2,042	2,430	2,863
1,350	0,076	0,141	0,225	0,332	0,462	0,618	0,803	1,018	1,265	1,548	1,867	2,226	2,626
1,400	0,059	0,118	0,195	0,292	0,412	0,556	0,726	0,924	1,153	1,414	1,710	2,042	2,412
1,450	0,043	0,097	0,167	0,256	0,366	0,499	0,656	0,840	1,051	1,293	1,567	1,875	2,219
1,500	0,029	0,077	0,141	0,223	0,325	0,447	0,592	0,762	0,959	1,184	1,438	1,724	2,044

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

Max. deflection L/300, max. flexural tensile stress 3.6 N/mm^2, loaded area 100 x 100 mm

Interval	Maximum load F (kN)												
(m)	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	Th. 34 mm	Th. 36 mm	Th 38 mm	Th.40 mm
0,200	1,999	2,530	3,124	3,781	4,500	5,282	6,126	7,033	8,002	9,030	10,125	11,281	12,501
0,250	1,692	2,142	2,645	3,201	3,810	4,472	5,187	5,955	6,776	7,646	8,573	9,553	10,585
0,300	1,487	1,882	2,325	2,814	3,349	3,932	4,560	5,236	5,958	6,723	7,538	8,400	9,308
0,350	1,340	1,697	2,096	2,537	3,020	3,545	4,113	4,722	5,374	6,063	6,798	7,576	8,395
0,400	1,229	1,557	1,924	2,329	2,773	3,255	3,776	4,336	4,935	5,567	6,243	6,957	7,710
0,450	1,143	1,448	1,789	2,167	2,580	3,029	3,514	4,036	4,593	5,181	5,811	6,476	7,177
0,500	1,074	1,361	1,682	2,036	2,425	2,848	3,304	3,795	4,319	4,872	5,464	6,090	6,750
0,550	1,017	1,289	1,593	1,930	2,298	2,699	3,132	3,597	4,095	4,619	5,180	5,774	6,400
0,600	0,969	1,229	1,519	1,840	2,192	2,575	2,988	3,432	3,907	4,407	4,943	5,510	6,108
0,650	0,913	1,177	1,456	1,764	2,102	2,469	2,866	3,292	3,748	4,227	4,742	5,286	5,860
0,700	0,836	1,133	1,401	1,698	2,024	2,378	2,760	3,171	3,611	4,073	4,569	5,094	5,647
0,750	0,768	1,094	1,354	1,641	1,956	2,299	2,669	3,066	3,492	3,938	4,419	4,926	5,462
0,800	0,708	1,019	1,312	1,591	1,896	2,229	2,588	2,974	3,387	3,820	4,286	4,779	5,299
0,850	0,655	0,945	1,274	1,546	1,843	2,167	2,516	2,892	3,294	3,715	4,169	4,649	5,155
0,900	0,608	0,879	1,219	1,505	1,795	2,111	2,452	2,818	3,211	3,621	4,064	4,532	5,026
0,950	0,566	0,820	1,140	1,469	1,752	2,060	2,394	2,752	3,136	3,537	3,970	4,428	4,910
1,000	0,527	0,766	1,067	1,435	1,713	2,015	2,341	2,692	3,068	3,460	3,884	4,333	4,806
1,050	0,491	0,717	1,002	1,351	1,677	1,973	2,293	2,637	3,005	3,390	3,806	4,246	4,710
1,100	0,459	0,673	0,942	1,273	1,644	1,934	2,249	2,587	2,948	3,326	3,734	4,167	4,622
1,150	0,428	0,631	0,887	1,201	1,580	1,899	2,208	2,540	2,896	3,267	3,668	4,093	4,542
1,200	0,400	0,593	0,836	1,135	1,496	1,866	2,170	2,497	2,847	3,212	3,607	4,026	4,467
1,250	0,374	0,557	0,789	1,074	1,419	1,828	2,134	2,456	2,801	3,161	3,550	3,963	4,398
1,300	0,349	0,524	0,745	1,018	1,347	1,739	2,101	2,419	2,759	3,073	3,497	3,904	4,333
1,350	0,325	0,492	0,704	0,965	1,281	1,656	2,069	2,383	2,719	2,829	3,381	3,849	4,273
1,400	0,302	0,462	0,665	0,915	1,219	1,579	2,002	2,350	2,681	2,612	3,124	3,698	4,216
1,450	0,281	0,434	0,628	0,869	1,160	1,507	1,914	2,318	2,646	2,418	2,895	3,429	4,024
1,500	0,260	0,406	0,593	0,825	1,105	1,439	1,832	2,287	2,612	2,440	2,897	3,407	3,974

The results of the static calculation indicate the following application options for CETRIS® floor boards:

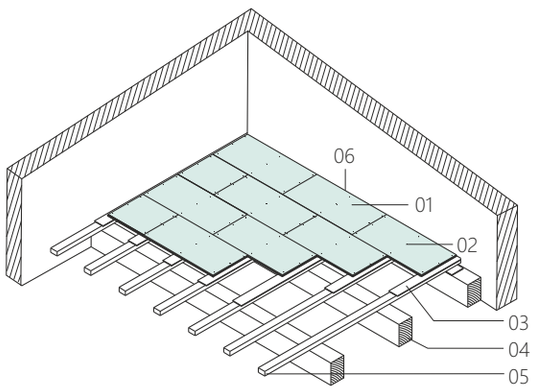
Standard load (kNm^{-2}) and nature of the room	Recommended load-bearing construction for the CETRIS® PD (PDB) floor boards	
	Single direction beams	Two-direction beams (grids)
0,75 Lofts, inaccessible terraces and flat roofs with a roofing element span of up to 9 m.	Beam span 621 mm / Board thickness 18 mm 	Beam span 621 mm / Board thickness 16 mm 
1,50 Residential apartments including ante-chambers and corridors, rooms in hostels, hotels, rooms in nurseries and childcare centres, bedrooms of school dormitories and sanatoria, hospital wards, polyclinics, other healthcare facilities, surgeries and waiting rooms.	Beam span 621 mm / Board thickness 22 mm 	Beam span 621 mm / Board thickness 20 mm 
2,00 Rooms and offices of research institutions, office buildings, reading rooms, classrooms without heavy equipment or material storage, agricultural rooms and areas.	Beam span 414 mm / Board thickness 22 mm 	Beam span 621 mm / Board thickness 24 mm 
3,00 Halls and corridors in the above-mentioned buildings with the exception of schools, lecture halls, mess halls, cafés and restaurants.	Beam span 414 mm / Board thickness 28 mm 	Beam span 621 mm / Board thickness 30 mm 
4,00 Halls and corridors of messes, cafés, restaurants, schools, railway stations (areas open to public), theatres, cinemas, clubs, concert halls, sports halls, department stores, museums, exhibition halls and pavilions, libraries and archives of industrial buildings.	Beam span 414 mm / Board thickness 32 mm 	Beam span 621 mm / Board thickness 34 mm 

Note: Cases of higher useful load or large solitary loads must be solved individually. The load capacity of two-layer CETRIS® board constructions is solved in Chapter 6.8 Two-layer CETRIS® board floors on beams

6.7.3 Laying of CETRIS® PD and CETRIS® PDB Floor Boards

1. The CETRIS® PD and CETRIS® PDB floor boards are laid as the final constructions after completion of the "wet" building construction work (after erection of the partition walls, after plastering, etc.). In a case where a light partition (plasterboard, CETRIS® on a grid) is to be installed, its weight must be considered during the design of the dimensions and layout of the floor beams. In this case, it is necessary to consider the possibility of noise transmission via the floor from one room to another.

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® PD (CETRIS® PDB) floor sections in the load-bearing construction. For the wooden beams, it applies that the width of the beams at the contact point of two CETRIS® PD (CETRIS® PDB) boards must be at least 80 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) to reduce sound transmission. At the same time, the beams can be height-adjusted using supports or wedges. We anchor the balanced beams in the base, for a wooden base, we use screws, for concrete, we use drive-in dowels. The floor beams are laid at axial distances according to the required load.



Floor boards on beams – laying procedure

01 CETRIS® PD (PDB) floor boards
02 CETRIS® screw
03 supporting and adjusting washer
04 existing joist
05 beams
06 dilatation joint

3. It is recommended to separate CETRIS® PD and CETRIS® PDB boards from the beams with a separating 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 its full length.

4. The tongue edge at the wall must be cut off.

5. The CETRIS® PD (CETRIS® PDB) boards are laid tightly against each other and the joint is fixed with glue. The following alkali-resistant dispersion glues are recommended: UZIN MK33, MAPEI – ADESIVIL D3, SCHÖNOX HL, HENKEL PONAL SUPER 3 (PATEX SUPER 3), etc. When using CETRIS® boards without tongue and groove, it is necessary to glue the joints (polyurethane glue, e.g. DenBraven polyurethane glue for use on wood, SOUDAL PU glue 66A, etc.). Immediately screw the floor board after application of the glue and setting of the board. The excessive (expelled) glue is removed after pushing the boards against each other to ensure that the joint is fully filled with glue. The maximum screw spacing is 300 mm in the direction of the joists (400 mm in the case of the CETRIS® boards of thickness 26 mm and above); the screws must be min. 25 mm and max. 50 mm from the board edge.

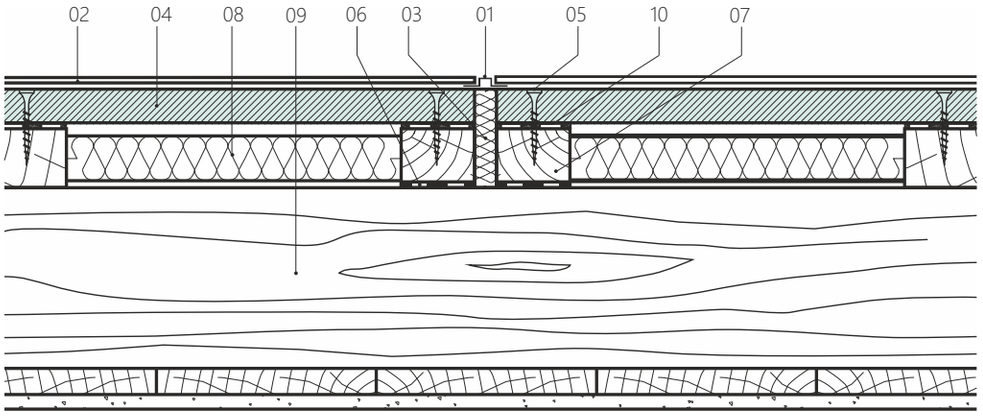
6. When laying CETRIS® PD (CETRIS® PDB) floor boards, cross joints should be avoided and the contact joints should be supported, at least, in one direction. The individual rows of the boards are laid with overlaps depending on the spacing of the beams, but at least by 1/3 of the board length. The minimum size of the finally cut board is 250 mm. Around the vertical joints (walls, pillars, etc.) it is necessary to keep a dilatation joint of minimum width 15 mm.

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

8. Around the doors the CETRIS® PD (CETRIS® PDB) boards should be laid in such a manner as to avoid the creation of a cross-joint.

9. If additional thermal insulation is applied between the beams by backfill (e.g. LIAPOR) up to the beam height, it is recommended to overfill the space between the beams to allow for additional compaction. It is suitable to place full surface paper cardboard on the backfill to prevent penetration of the grain into the floor boards during their installation and also to prevent squeaking of the floor.

Floor boards on beams – solution of dilatation



01 dilatation profile
02 wear layer
03 dilatation joint
04 CETRIS® PD floor boards (CETRIS® PDB)
05 CETRIS® screw
06 supporting and adjusting washer
07 beams
08 heat and sound insulation
09 ceiling construction
10 separating washer

6.8 Two-layer CETRIS® Board Floors on Beams

Wear layer – the beams may be covered with basic CETRIS® boards in two and more layers. The given solution is considered mainly for reason of better availability of basic boards as compared with floor boards. This method is often applied also in the case of various (changing) beam axial distances (reconstruction of old wooden floors), or in case of a requirement for high floor load capacity.

Note:

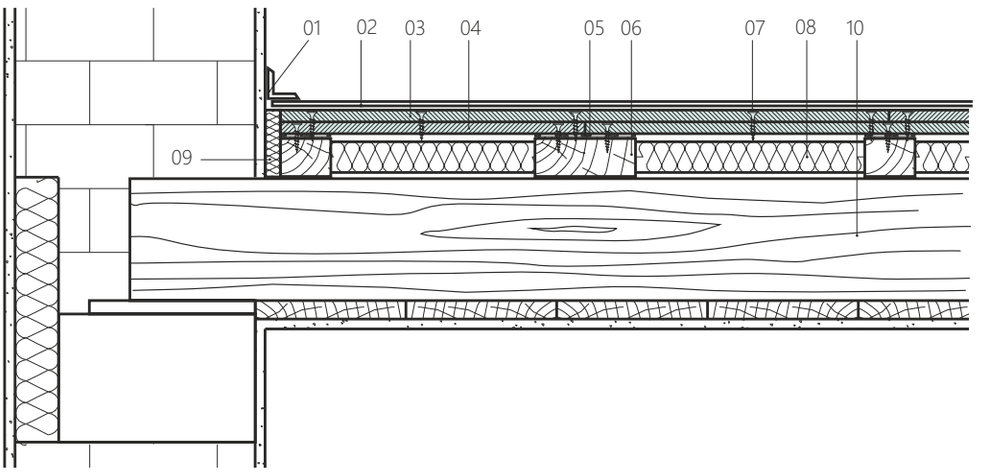
- *The total load capacity is achieved only after screw-jointing of both CETRIS® board layers! For this procedure to be effective, it is necessary to ensure perfect interaction of both CETRIS® boards (at best joined with screws for perfect transmission of shear and tensile stress). If the layers are not perfectly bonded, each of them behaves as a separate layer, which results in the risk of significant sags.*

- *The first (lower) layer of the CETRIS® boards of thickness 18 mm inclusive are not fully walkable in the case of a beam spacing of 625 mm and above. During assembly, the workers may move only at the locations of the beams (joists).*

6.8.1 Description of the Construction

The classic fixed structure of the floors consists of the single or bi-directional beams (wooden prisms – pillows, steel beams, and the like). The beams are covered with CETRIS® cement-bonded particleboards in two layers screwed. Due to static action, the largest CETRIS® board dimensions are suitable. The first layer of CETRIS® boards is laid tightly without gaps and anchored with screws to the beams. The shorter sides of the boards are laid on the beams. The second layer of CETRIS® boards is laid with an overlap in both directions, such that the shorter side again lies on the beams (the overlap is equal in the perpendicular direction to the beams over a length of one field and half the board width in the direction of the joists). The boards in the second layer are again laid tightly without gaps and anchored with screws to ensure the interaction 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. The floor is finished around the walls with a dilation joint with a width of 15 mm. The beams must have an adequate load-bearing capacity, set on a load-bearing construction. It is necessary to mainly verify their deflection. If the load-bearing construction is flat, the beams should be installed on the full length of the structure.

Two-layer CETRIS® board floors on beams



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

6.8.2 Load Tables

In the case of compliance with the technological procedure for laying the boards (and especially joining of the two layers) the design of this floor type may be based in the static calculation of the load-bearing capacity for CETRIS® floor boards. Joint action of the two CETRIS® board layers must be ensured by their mutual jointing - by screwing or riveting (the maximum distance of the joining elements in the longitudinal and transverse direction is 300 mm).

In the case of perfectly secured joint action of both layers the load-bearing capacity of the two-layer floor is equal to the load-bearing capacity of the single-layer CETRIS® PD (CETRIS® PDB) floor glued in the tongue and groove connections of the same total thickness, reduced by 25% for safety reasons. Other calculation assumptions and load tables are given in Chapter 6.7 CETRIS® PD and CETRIS® PDB Floor Systems on Joists.

Load-bearing capacity of two-layer CETRIS® board cladding in the case unidirectional assembly on beams
Max. deflection L/300, max. flexural tensile stress 3.6 N/mm^2, loaded area 100 x 100 mm

Span	Maximum load F (kN)													
(m)	Th. 24 mm	Th. 26 mm	Th. 28 mm	Th. 30 mm	Th. 32 mm	Th. 34 mm	Th 36 mm	Th. 38 mm	Th. 40 mm	Th 42 mm	Th. 44 mm	Th. 46 mm	Th 48 mm	Th 50 mm
	12+12	12+14	14+14	16+14	16+16	18+16	18+18	20+18	20+20	22+20	22+22	24+22	24+24	26+24
0,200	2,589	3,039	3,525	4,047	4,605	5,199	5,830	6,496	7,198	7,937	8,711	9,522	10,369	11,251
0,250	2,258	2,651	3,075	3,531	4,018	4,537	5,087	5,669	6,282	6,927	7,603	8,311	9,050	9,821
0,300	2,030	2,384	2,766	3,176	3,615	4,082	4,578	5,102	5,654	6,235	6,844	7,481	8,147	8,841
0,350	1,862	2,187	2,538	2,915	3,318	3,747	4,202	4,683	5,190	5,724	6,283	6,868	7,480	8,118
0,400	1,731	2,033	2,359	2,710	3,085	3,485	3,908	4,356	4,829	5,325	5,846	6,392	6,961	7,555
0,450	1,624	1,908	2,214	2,544	2,897	3,272	3,670	4,092	4,536	5,003	5,492	6,005	6,540	7,099
0,500	1,534	1,802	2,093	2,405	2,739	3,094	3,471	3,870	4,290	4,732	5,196	5,681	6,189	6,717
0,550	1,456	1,712	1,988	2,285	2,603	2,941	3,300	3,679	4,079	4,500	4,942	5,404	5,887	6,390
0,600	1,388	1,632	1,896	2,180	2,483	2,806	3,149	3,512	3,894	4,297	4,719	5,160	5,622	6,103
0,650	1,327	1,561	1,814	2,085	2,376	2,686	3,015	3,363	3,729	4,115	4,520	4,943	5,386	5,848
0,700	1,271	1,496	1,739	2,000	2,279	2,577	2,893	3,227	3,580	3,951	4,340	4,747	5,173	5,616
0,750	1,170	1,436	1,670	1,921	2,190	2,477	2,781	3,103	3,443	3,800	4,175	4,567	4,977	5,405
0,800	1,057	1,355	1,606	1,848	2,108	2,384	2,678	2,988	3,316	3,660	4,022	4,401	4,796	5,209
0,850	0,957	1,229	1,546	1,780	2,031	2,298	2,581	2,881	3,197	3,530	3,879	4,245	4,627	5,026
0,900	0,867	1,117	1,408	1,716	1,958	2,216	2,490	2,780	3,085	3,407	3,745	4,099	4,469	4,854
0,950	0,787	1,016	1,283	1,593	1,889	2,138	2,403	2,684	2,980	3,291	3,618	3,960	4,318	4,691
1,000	0,714	0,924	1,170	1,455	1,782	2,064	2,321	2,592	2,879	3,180	3,497	3,828	4,175	4,537
1,050	0,648	0,841	1,068	1,330	1,631	1,973	2,242	2,505	2,782	3,074	3,381	3,702	4,038	4,388
1,100	0,587	0,765	0,974	1,216	1,493	1,809	2,165	2,420	2,689	2,972	3,269	3,581	3,906	4,246
1,150	0,532	0,696	0,888	1,111	1,368	1,659	1,988	2,339	2,600	2,874	3,162	3,464	3,779	4,108
1,200	0,481	0,632	0,809	1,015	1,252	1,522	1,826	2,167	2,513	2,779	3,058	3,350	3,656	3,976
1,250	0,433	0,572	0,736	0,927	1,145	1,395	1,676	1,992	2,344	2,686	2,957	3,241	3,537	3,847
1,300	0,388	0,515	0,666	0,841	1,042	1,272	1,532	1,823	2,147	2,507	2,859	3,134	3,421	3,722
1,350	0,346	0,464	0,602	0,763	0,949	1,161	1,400	1,669	1,969	2,302	2,668	3,030	3,308	3,599
1,400	0,309	0,417	0,544	0,693	0,865	1,061	1,282	1,531	1,809	2,117	2,457	2,830	3,198	3,480
1,450	0,275	0,374	0,492	0,630	0,789	0,970	1,176	1,406	1,664	1,950	2,266	2,613	2,992	3,364
1,500	0,243	0,335	0,444	0,572	0,719	0,888	1,079	1,293	1,533	1,799	2,093	2,416	2,770	3,155

The load capacity of two-layer CETRIS® board cladding in the case unidirectional assembly on a grid
Max. deflection L/300, max. flexural tensile stress 3.6 N/mm², loaded area 100 x 100 mm

Span	Maximum load F (kN)								
(m)	Th. 24 mm	Th 26 mm	Th. 28 mm	Th 30 mm	Th. 32 mm	Th. 34 mm	Th. 36 mm	Th 38 mm	Th. 40 mm
	12+12	12+14	14+14	16+14	16+16	18+16	18+18	20+18	20+20
0,200	3,375	3,961	4,595	5,275	6,002	6,773	7,593	8,461	9,376
0,250	2,857	3,354	3,890	4,466	5,082	5,734	6,430	7,164	7,939
0,300	2,512	2,949	3,420	3,927	4,469	5,042	5,653	6,300	6,981
0,350	2,265	2,659	3,084	3,542	4,030	4,547	5,099	5,682	6,297
0,400	2,079	2,441	2,832	3,252	3,701	4,175	4,682	5,218	5,783
0,450	1,935	2,272	2,636	3,027	3,445	3,886	4,358	4,857	5,383
0,500	1,819	2,136	2,478	2,846	3,239	3,654	4,098	4,568	5,063
0,550	1,724	2,024	2,349	2,698	3,071	3,464	3,885	4,331	4,800
0,600	1,644	1,931	2,241	2,574	2,930	3,305	3,707	4,133	4,581
0,650	1,576	1,852	2,149	2,469	2,811	3,171	3,557	3,965	4,395
0,700	1,518	1,783	2,070	2,379	2,708	3,055	3,427	3,820	4,235
0,750	1,467	1,724	2,001	2,300	2,619	2,954	3,314	3,695	4,096
0,800	1,422	1,671	1,941	2,230	2,540	2,865	3,215	3,584	3,974
0,850	1,382	1,625	1,887	2,169	2,470	2,786	3,127	3,487	3,866
0,900	1,346	1,583	1,839	2,114	2,408	2,716	3,048	3,399	3,770
0,950	1,314	1,545	1,795	2,064	2,352	2,653	2,977	3,321	3,683
1,000	1,285	1,511	1,756	2,019	2,301	2,595	2,913	3,249	3,604
1,050	1,258	1,480	1,720	1,978	2,254	2,543	2,854	3,184	3,532
1,100	1,233	1,451	1,687	1,940	2,211	2,494	2,801	3,125	3,467
1,150	1,185	1,424	1,656	1,905	2,172	2,450	2,751	3,070	3,406
1,200	1,122	1,399	1,627	1,873	2,135	2,409	2,705	3,019	3,350
1,250	1,064	1,371	1,601	1,842	2,101	2,370	2,663	2,972	3,298
1,300	1,011	1,304	1,576	1,814	2,069	2,305	2,623	2,928	3,250
1,350	0,961	1,242	1,552	1,787	2,039	2,122	2,536	2,887	3,204
1,400	0,914	1,184	1,501	1,762	2,011	1,959	2,343	2,774	3,162
1,450	0,870	1,130	1,436	1,738	1,984	1,814	2,171	2,572	3,018
1,500	0,829	1,080	1,374	1,715	1,959	1,830	2,173	2,555	2,980

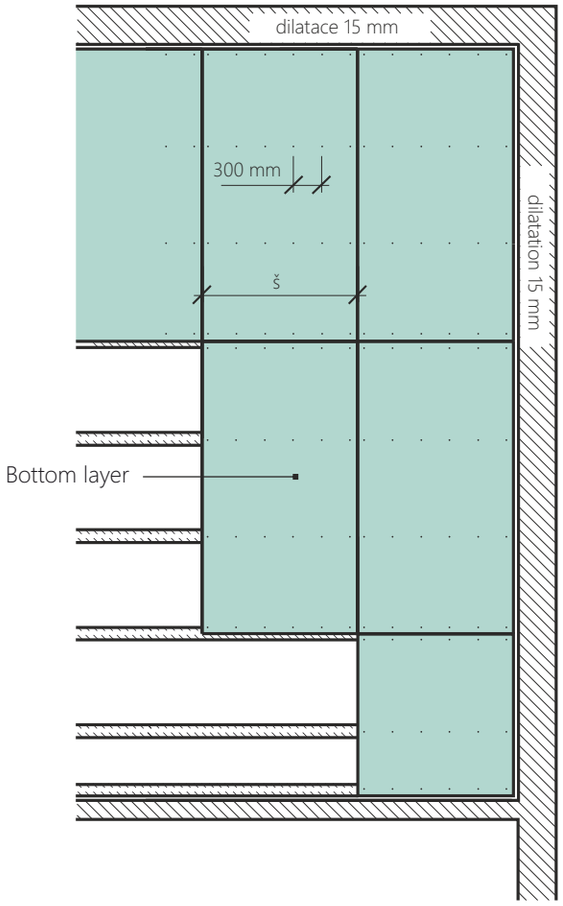
6.8.3 Laying of CETRIS® Boards

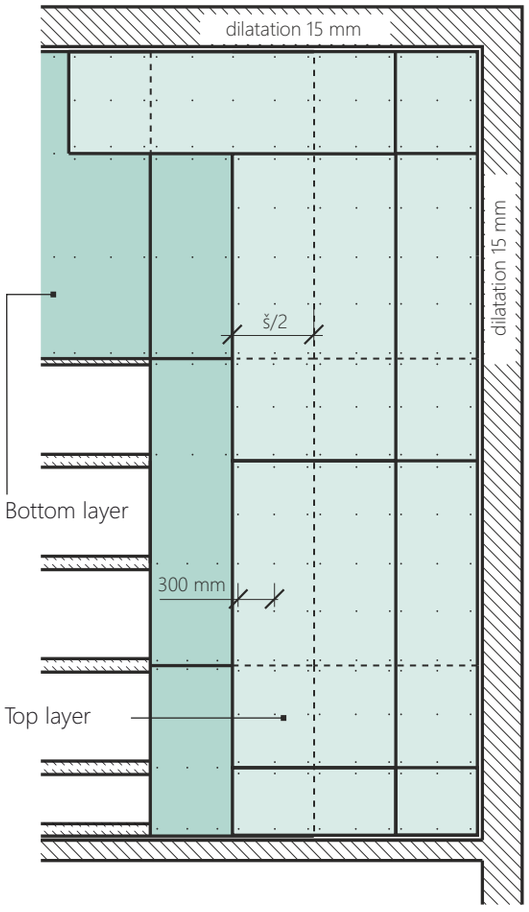
1. The CETRIS® board floor is laid as the final construction after completion of the "wet" building construction processes (after erection of the partition walls, after plastering, etc.). In a case where a light partition (plasterboard, CETRIS® on a grid) is to be installed, its weight must be supported by a floor beam. In this case, it is necessary to consider the possibility of noise transmission via the floor from one room to another.
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. For the wooden beams, it applies that the width of the beams at the contact point of two CETRIS® boards must be at least 80 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) to reduce sound transmission. At the same time, the beams can be height-adjusted using supports or wedges. We anchor the balanced beams in the base, for a wooden base, we use screws, for concrete, we use drive-in dowels.
3. It is recommended to separate the CETRIS® board from the beams with a separating layer (unwoven fabric, felt, rubber, soft PE foil) to prevent potential knocking of the floor. It suffices to lay a strip of the same width as the beam along its full length.
4. The first layer of CETRIS® boards is again laid tight against each other with a cross-joint. The boards are set and screw-jointed immediately. In the case of single-direction beams the first CETRIS® board layer is laid with the longer side perpendicular to the beams and the shorter side supported by the beams. The maximum screw spacing is 300 mm in the direction of the joists; the screws must be min. 25 mm and max. 50 mm from the board edge. Around the vertical joints (walls, pillars, etc.) it is necessary to keep a dilatation joint of minimum width 15 mm.
5. In the second layer, the CETRIS® boards are laid with an overlap such that the shorter side again lies on the beams (the overlap is equal to the length of one field). The boards are again laid tight against each other with cross joint. The board is set and screw-jointed immediately with the bottom layer. The maximum screw spacing in the longitudinal and transverse directions is 300 mm (400 mm in the case of the CETRIS® ® boards of thickness 26 mm and above). The screws must be min. 25 mm and max. 50 mm from the board edge. Around the vertical joints (walls, pillars, etc.) it is necessary to keep dilatation joint of minimum width 15 mm.

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

6. Around the doors, the CETRIS® boards are laid in such a manner as to avoid the creation of a joint.
7. If additional thermal insulation is applied between the beams by backfill (e.g. LIAPOR) up to the beam height, it is recommended to overfill the space between the beams to allow for additional compaction. It is suitable to place full surface paper cardboard on the backfill to prevent penetration of the grain into the floor boards during their installation and also to prevent squeaking of the floor.

Laying of double-layer CETRIS® board floors on joists





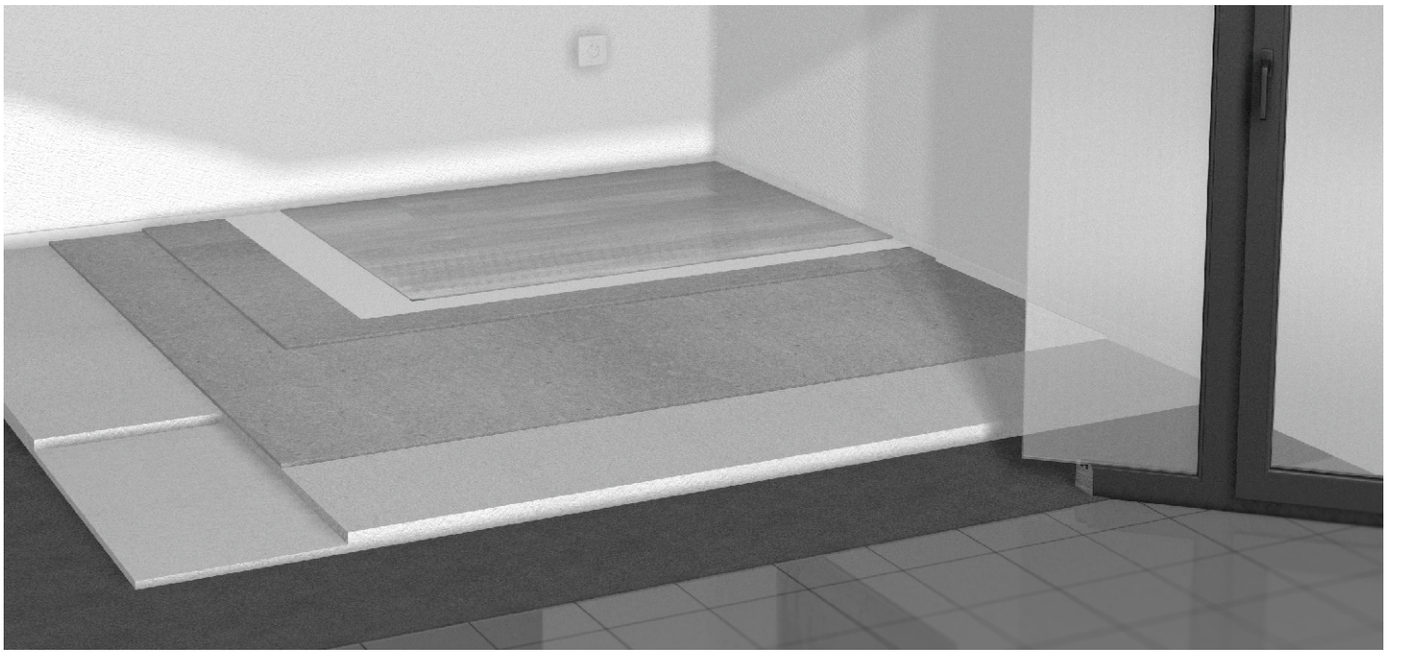
6.9 Floorings

6.9.1 Preparation of the Surface of CETRIS® Floor Boards for Laying the Wear Layers

After completion of a CETRIS® 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 laying the wear layer. The method of elimination of potential irregularities is different for each floor finish type.

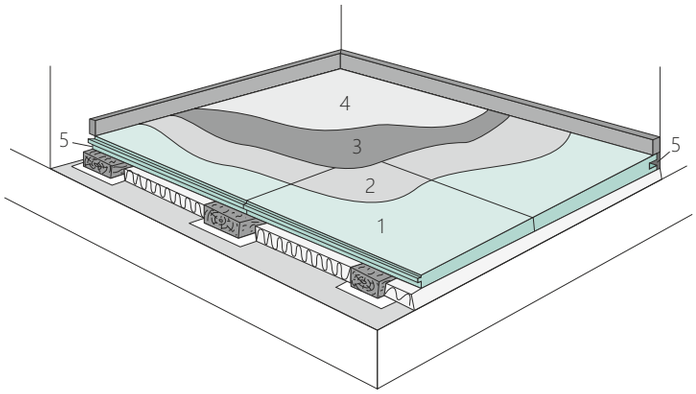
The surface is levelled by sanding the joints or application of plaster.

- The joints of the CETRIS® board need not be processed under glued wooden parquets, boards or paving.
- If the parquets are laid as floating flooring and potential unevenness does not prevent their laying, then priming is not necessary. However, it is recommended to place separation foil of unwoven textile or MIRELON foam polystyrene between the parquets and the CETRIS® boards (to minimise creaking).
- In the case of full area filler or glue applications, the CETRIS® boards must be primed. It is recommended to apply the primer to the dry and clean surface of the boards immediately after laying them. Priming is application of a coat to the CETRIS® board surfaces, which penetrates into the sub-surface layers of the board and simultaneously fulfils 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). Properly 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, carpet), it is suitable to spread elastic filler over the entire CETRIS® board floor with emphasis on the joints of the boards, unused pre-drilled holes, and eventually also the individual connecting screws. Larger irregularities should be sanded before application of the filler.
- Priming and subsequent gluing of the floorings and paving should be done only using the complete systems of individual manufacturers, which are certified for use on cement bonded boards (MAPEI, Schönox, Basf, Botament, Henkel, Sika ...). It is not recommended to use a combination of materials from several manufacturers.
- The recommended maximum paving format is 200 × 200 mm. Paving must not be installed diagonally. When using larger format paving (max. 333 × 333 mm), it is recommended to increase the load capacity of the floor by 20 % (e.g. by reduction of the axial spacing of the supports, increase of CETRIS® board thickness), or application of other solutions, see Chapter 6.8.
- If floorings are not laid within 48 hours, it is recommended to apply a protective coating to the CETRIS® board floor, at best a primer (type according to the flooring – e.g. MAPEI Primer S, Schönox KH, Botact 11, etc.).
- The specific cases, which occur when laying the floorings should be consulted with the manufacturer of the building chemicals. During application of the individual materials, it is necessary to keep the principles stated on the packs, respectively, in the technical data sheets of the products.



6.9.2 PVC, Carpet

Under thin-layer floorings (PVC, carpet, etc.), it is necessary to apply filler to the full surface of the CETRIS® boards with emphasis on the contact joints. The unused pre-drilled holes or individual joining elements must also be filled. Larger irregularities should be sanded with an angle sander before application of the filler.



Composition of the layers when laying PVC, carpets:

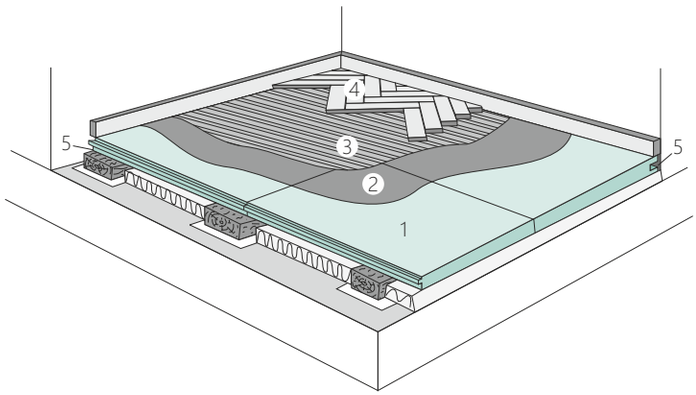
1 *CETRIS® cement bonded particleboard*
2 *priming*
3 *levelling plaster*
4 *PVC, carpet*
5 *dilatation joint*

Products for gluing PVC, carpets:

PVC, carpet			
System structure	Penetration	Levelling compound	Adhesive filler
MAPEI	MAPEPRIM SP	FIRERPLAN v tl.min. 3 mm	ROLLCOLL
SCHÖNOX	Schönox KH	Schönox SP, AM	Schönox Unitech, Tex-Object
BASF	Penetrace PGM	Mastertop 515	-
THOMSIT	Thomsit R 777, R 766	Thomsit FA 97	Thomsit K 188, T 440
UZIN	UZIN PE 360	UZIN NC 170 Level Star	UZIN UZ 57, LE 44, KE 66
MUREXIN	Murexin D7	Murexin NH 75 tl.min. 3 mm	Murexin D 321

6.9.3 Wooden Parquets

Before gluing the wooden parquets, it is necessary to prime the dry floor. If the parquets are laid as a floating flooring layer, priming is not necessary, but it is suitable to insert separating foil made of non-woven fabric or foam polyethylene (to reduce creaking) between the parquets and CETRIS® boards.



Composition of the layers when laying wooden parquets:

1 *CETRIS® cement bonded particleboard*
2 *priming*
3 *adhesive filler*
4 *wooden parquet flooring*
5 *dilatation joint*

Products for wooden parquets:

Wooden parquet flooring		
System structure	Penetration	Adhesive cement
MAPEI	not required	LIGNOBOND
SCHÖNOX	not required	SMP Classic, HARD ELASTIC
THOMSIT	Thomsit R 777	Thomsit P 600, P685
SIKA	not required	Sika Bond T52, T54, T55
LEAR	Unixin A170	Unixin P230
UZIN	UZIN PE 414 TURBO	UZIN MK 100
MUREXIN	not required	Object X-bond MS-K 509

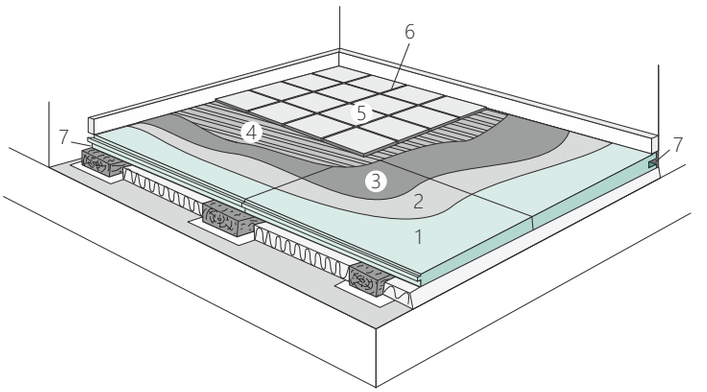
6.9.4 Ceramic Paving

Gluing of ceramics to CETRIS® boards is reliable exclusively using flexible glues. Gluing must be done using a toothed spatula with a minimum tooth size of 8 mm; two-sided gluing is used – "floating and buttering". When gluing the paving, it is necessary to carefully solve the issue of dilatation joints, which must correspond with the dilatations in the base and must be designed with regard to the dimensions and shape of the room.

Composition of the layers when laying ceramic paving:

1 *CETRIS® cement bonded particleboard*
2 *priming*
3 *hydro-insulating compound*
4 *bonding cement*
5 *ceramic paving*
6 *joint filler*
7 *dilatation joint*

Flexible filler must be used for the full area filling of the paving joints. The given compositions are suitable also for anchoring heating (resistant) mats and subsequent gluing of the ceramic paving. In rooms without water stress, it is not necessary to use hydro insulation.



Ceramic paving products:

Ceramic paving				
System structure	Penetration	Hydro insulation (bandaging of corners, dilatation)	Adhesive filler	Joint filler (dilatation joint filling)
MAPEI	not required	KERALASTIC min. 1 mm (MAPEBAND)	KERALASTIC	ULTRACOLOR (MAPESIL AC)
SCHÖNOX	Schönox KH (1:3)	Schönox HA in combination with a sealing tape Schönox ST and accessories Schönox ST-IC – inner corner, Schönox EA – outer corner including insulating collars Schönox ST-D.	Schönox PFK plus	Schönox WD FLEX Schönox SU
BASF	PCI-Gisogrund	PCI-Lastogun	PCI-Nanolight	PCI-Flexfuge
BOTAMENT	Botact D 11	Botact MD 28Botact SB 78	Botact M 21 (lower loads) Botact M 29 (higher loads)	Botact M 30 Botact S 5
CERESIT	Ceresit CT 17	Ceresit CL 51 (Ceresit CL 52)	Ceresit CM 16 (lower loads) Ceresit CM 17 (higher loads)	Ceresit CE 43 (Ceresit CS 25)
SIKA	not required	SikaBond T 8	SikaBond T 8	Sikaflex11 FC
UZIN	codexFliesengrund	codex PowerFlex Turbo (Multimoll TOP 4)	codex Power CX3	codex BrillantFlex Basic (codex quadrosil)
MUREXIN	Deep primer LF 1	Liquid sealing foil 1 KS (Self-adhesive sealing tape DBS 50)	codex Power CX 3	codex BrillantFlex Basic (codex quadrosil)

Note: When using BASF products, it is recommended to cover the CETRIS® board joints with reinforcing textile of width 300 mm and anchor to the base with staples.

6.9.5 Ceramic Paving with Hydro Insulating Foil

For places with water stress (social facilities of residential objects) it is necessary to secure adequate hydro insulation (flexible hydro insulating plaster or hydro insulating foil), which reliably protects the CETRIS® boards against potential penetration of water. 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 it is capable of bridging cracks.

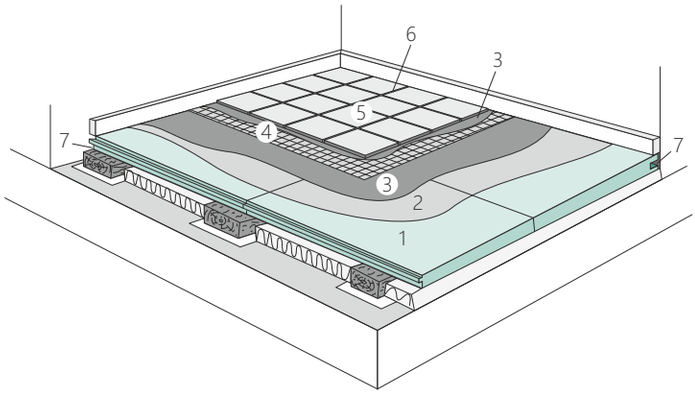
Suitable types:

- Schlűter® DITRA
- Botact insulating and separating foils
- Murexin Rapid 1K sealing foil

Hydro-insulating layer of Schlűter® DITRA foil

1 CETRIS® cement bonded particleboard
2 priming
3 gluing filler
4 hydro-insulation – mat
5 ceramic paving
6 joint filler
7 dilatation joint

The foil is laid on the gluing filler bed and the joints and corners are treated with accessories. Immediately after gluing the foil–mat, it is possible to lay the paving on a thin glue bed. The gluing filler used must be elastic and hydraulically hardening.



6.9.6 System Solution under the Ceramic Paving

System solution for impact noise absorption under the ceramic paving

This composition includes pressed boards of polymer fibre bonded with latex. By insertion of these boards in the floor composition, even in low thicknesses (6 mm), it is possible to 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 on a layer of gluing filler and pressed in – ideally with a hard roller. To prevent formation of acoustic bridges it is necessary to cover the contact joints with self-sticking cover tape.

Note: To ensure the uniform distribution of the load, it is not possible to use floor tile formats smaller than 150×150 mm, or 240×115 mm.

System solution under the ceramic paving – reduction of impact noise

System structure	Priming	Bonding of the boards	Board/mat	Gluing filler	Joint filler (elastic filler)
BOTAMENT	BOTACT D 11	Special quick-drying filler BOTACT M 26	BOTACT – separation board for impact sound absorption	BOTACT M 26 or BOTACT M 29	Elastic joint filler BOTACT M 30 or MULTIFUGE (BOTACT S 5 / BOTACT S 3)
SCHÖNOX	Schönox KH (1:3)	SCHÖNOX TT S8,SCHÖNOX TT S8 RAPID	SCHÖNOX TS 3 mm	SCHÖNOX TT S8,SCHÖNOX TT S8 RAPID	SCHÖNOX UF PREMIUM,SCHÖNOX WD FLEX (SCHÖNOX SMP,SCHÖNOX ES)
MUREXIN	Deep base LF 1	Flex KGF 65	Uni board Top Akustik	Flex KGF 65	Joint filling grout FM 60 (silicone sanitary filler SIL 60)

System solution for increased base stability

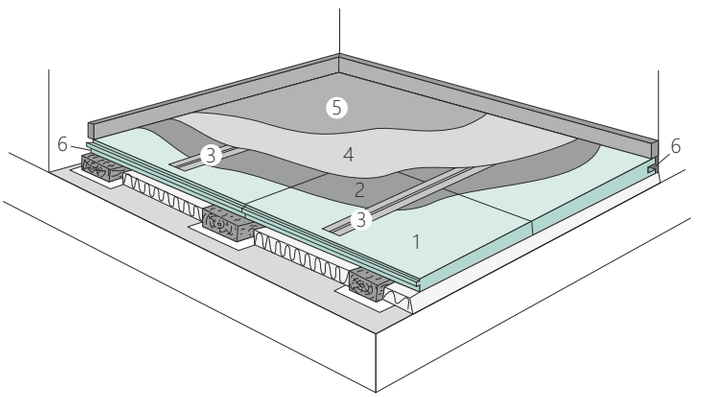
This solution is ideal for reduction of the risk of cracks in critical bases with preservation of the very low construction height of the floor. The floor composition includes a sandwich separating mat Botact, under the walking surface of the floor covering with integrated reinforcing fabric. Particularly in the rehabilitation of old houses the minimum floor height (0.7 mm) and weight of the geo textile fleece are undisputed advantages. The mat is laid on a layer of gluing filler with an overlap of 40 mm and pressed into the gluing filler – ideally with a hard roller.

Note: The minimum thickness of the ceramic paving must be 8 mm; the formats chosen must be in the size range 150×150 mm to 300×300 mm and must not be laid "over joints". This mat is not intended for bridging of dilatation joints!

System solution under the ceramic paving for increased base stability					
System structure	Priming	Bonding of the boards	Board/mat	Gluing filler	Joint filler (elastic filler)
BOTAMENT	BOTACT D 11	BOTACT M 21 Special quick-drying filler BOTACT M 24 (in moist spaces BOTACT MD 1)	BOTACT – thin separating mat	BOTACT M 26 or BOTACT M 29	Elastic joint filler BOTACT M 30 or MULTIFUGE (BOTACT S 5 / BOTACT S 3)
SCHÖNOX	Schönox KH (1:3)	SCHÖNOX TT S8, SCHÖNOX TT S8 RAPID	SCHÖNOX REMOTEX	SCHÖNOX TT S8, SCHÖNOX TT S8 RAPID	SCHÖNOX UF PREMIUM, SCHÖNOX WD FLEX (SCHÖNOX SMP, SCHÖNOX ES)

6.9.7 Self-levelling Electrostatically Conductive Cast Floor

The self-levelling electrostatically conductive cast floor, so-called, "anti-static" is used mainly in spaces with a high concentration of computers – halls, offices, etc. This floor can be applied to rooms with wheeled office chairs. The board joints must be covered with reinforcing textile of width 300 mm and anchored to the base with staples. The laying of this composition must be entrusted to a professionally trained company and consulted with the manufacturer.

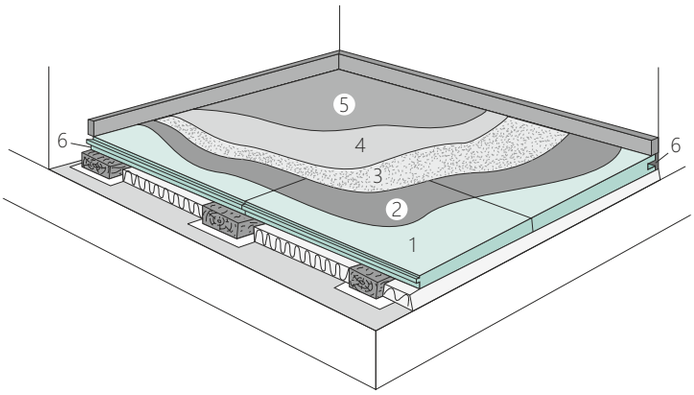


1 *CETRIS® cement bonded particleboard*
2 *priming*
3 *conductive tape*
4 *conductive paint*
5 *cast upper abrasive layers*
6 *dilatation joint*

Self-levelling electrostatically conductive cast floor				
System composition	Primer	Conductive tape	Conductive paint	Cast upper abrasive layers
BASF	MASTERTOP P 678 (Conipur 78) + Quartz sand fill of fraction 0.4 – 0.8 mm	PCI-Kupferband	MASTERTOP CP 687 W AS(Conipur 287 W-AS)	MASTERTOP BC 375 AS (Conipur 275 AS)
MUREXIN	Epoxy antistatic primer Aquapox ASG 170	Copper strip KB 20	not required	Epoxy antistatic coating ASD 130

6.9.8 Cast Comfort and Decorative Elastic Floor

This cast comfort and decorative elastic floor is intended mainly for use in spaces where an elastic surface, easy to maintain surface is required (nurseries, pensioners homes, sports surfaces with a light load). The board joints must be covered with reinforcing textile of width 300 mm and anchored to the base with staples. The laying of this composition must be entrusted to a professionally trained company and consulted with the manufacturer.



1 *CETRIS® cement bonded particleboard*
2 *priming*
3 *quartz sand backfill*
4 *abrasive layer*
5 *protective UV coating*
6 *dilatation joint*

Cast comfort and decorative elastic floor			
System composition	Primer	Abrasive layers	rotective UV coating
BASF	MASTERTOP P 678 (Conipur 78) + Silica sand backfill, fraction size 0.4 – 0.8 mm	MASTERTOP BC 375 A (Conipur 225 A)	MASTERTOP TC 467 nebo P (Conipur 67)
MUREXIN	Epoxy resin EP 90 with Silica sand backfill, fraction size 0.3 – 0.9 mm	Polyurethane film HIRES PU 300	Closing polyurethane paint PU 40

6.10 Floor Heating

6.10.1 Floor Heating under CETRIS® Foor Boards

The solution of a light floor construction with hot-water heating is described on page 60. Description and variants of the POLYCET floor, POLYCET Heat floor.

6.10.2 Electrical Floor Heating (Mats) Laid on CETRIS® Boards

Technological procedure

1. CETRIS® floor boards are primed with "weber.podklad haft".

2. Do a test measurement of the heating circuit resistance and the insulation resistance of the heating mat before laying.

3. At the point of the electric mat controller, create a groove in the floor perpendicular to the wall for application of the floor sensor. The temperature sensor shall be in a flexible protective tube, or so-called, goose neck piping of diameter 16 or 20 mm over a distance of 500 mm, perpendicular to the wall. The recommended groove depth is 20 mm in the floor to prevent incessant raising of the floor during laying of the flooring. The end of the protective tube is blinded to prevent the entry of levelling filler during its application and the floor temperature sensor is subsequently fixed. The floor temperature sensor in the protective tube must be pushed up to the blinding cap and must be free in case of the necessity to replace it due to a fault.

4. The AEG model HMA TE 50 150 heating mat is laid on a clean, flat, non-primed surface. This floor heating system has an output of 150 W/m2 with small heating cable spacing for quick, uniform, comfort heat build-up and distribution with simple and quick installation and designing. The mat is self-adhesive with one connecting cable. We recommend laying the electric mats in such a manner that the connecting cold end is as near as possible to the controller. Unroll the mat and adjust according to the required shape of the heated space. The mat width is 500 mm and during application of the individual rows, always cut the carrier grid as required at the centre of the cable arch and turn it at the required angle for completion of the laying process.

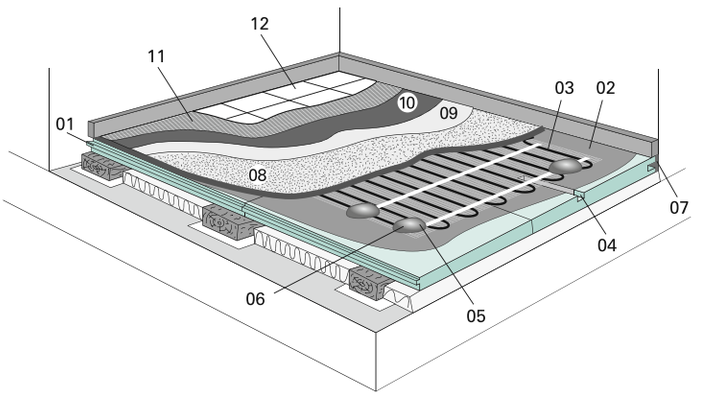
   At the installation point of the floor temperature sensor, ensure that the floor temperature sensor is at the middle of the heating loop in parallel to the heating cables. If the heating cable were laid on the temperature sensor, this would result in earlier cut-off of the entire heated surface.

5. In the installation box, connect the cold power supply end of the mat, temperature sensor and 230 V power supply to the AEG FTD 730 controller. An integral part of the controller is also the NTC floor sensor. After laying the top floorings, it is necessary to wait for 24 hours before connection to the source system and select the heat build-up.

6. If necessary, fix the unwound heating mat with quick-drying repair filler weber.bat to prevent it rising to the surface during the subsequent operation. Do a test measurement of the heating circuit resistance to ascertain that the heating circuit is not broken or interrupted by any inattentiveness during the application. Leave the repair filler to cure for at least 3 hours and then prime with weber.podklad floor primer diluted in the ratio of 1 : 3.

7. Cast the mat with Weber floor 4320 self-levelling cement filler with fibres for floor heating in a minimum thickness of 8 mm above the resistance heating cable. The material is mixed with water in the prescribed ratio. We treat the cast floor with floor flooring sabers or rakes to ensure that the material spreads on the floor in the desired thickness. If necessary, we use a pin roller to deaerate the material just after levelling. Application of the flooring material is followed by a technological break of at least 24 hours in the case of laying paving, or at least 72 hours in the case of laying vinyl.

01 CETRIS® cement bonded particleboard
02 priming
03 mat
04 groove for temperature sensor
05 local anchoring of the cable
06 priming of the local anchoring
07 dilatation joint
08 self-levelling plaster
09 priming
10 hydro insulation
11 glue
12 paving



Further procedure depends on the type of flooring:

Ceramic tile variant – moist areas – hydro insulation is a necessity in the composition

- after curing of weber.floor 4320, prime the entire base with weber.podklad A and start applying the first layer of Terizol polymer cement hydro insulation compound, mixed in the prescribed ratio with water, using a toothed steel finisher with a tooth size of 4 × 4 mm. At the same time, in the first layer of Terizol, we apply weber.BE 14 joint tape. The application of the first layer of Terizol must be followed by a technological break of at least 6 hours for the Terizol to cure.

- After 6 hours, we continue with the second layer of Terizol, which is also applied using a toothed finisher endways to the previous grooves. After this operation, the product is left to cure for at least 12 hours.

- As soon as the curing time lapses, we can continue and lay the ceramic tiles on weber.for duoflex glue.

Ceramic paving variant - application without hydro insulating layer

- The glue for tiles and paving must be mixed in the prescribed ratio with water and is applied using a steel finisher with a tooth size of 8 × 8 mm.

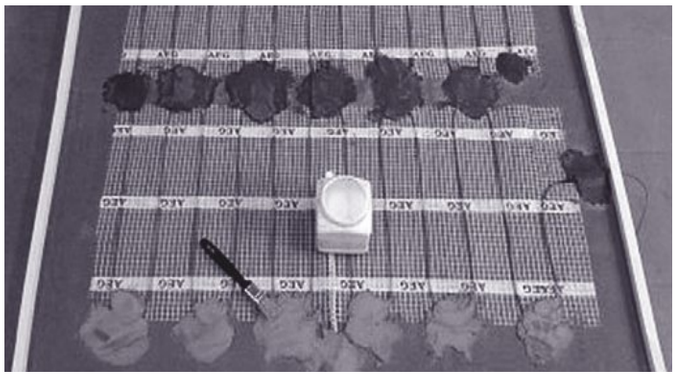
- After the paving glue curing time, approx. 24 hours, the joints between the tiles are cleaned and joint-filling with weber.color comfort filler is done using a rubber finisher. After slight hardening of the filler, the tiles are cleaned using a foam finisher and clean water. The paving is walkable approx. 24 hours after joint-filling. We fill any corner and dilatation joints with weber.color silicone or the modified silicone weber.color POLY.

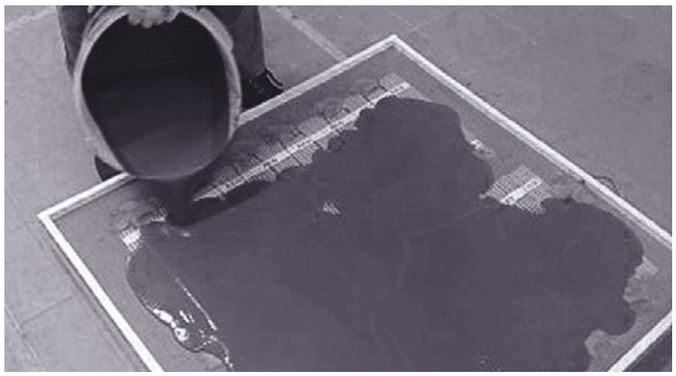
Vinyl flooring

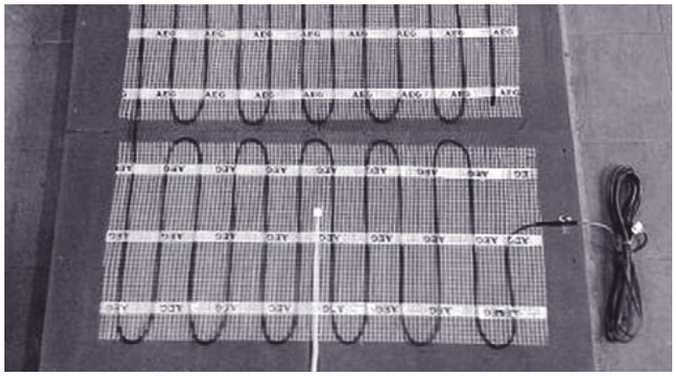
The self-levelling layer is ground as necessary using floor grinding machine; dust and impurities must be vacuum cleaned from the base. The vinyl is subsequently glued using Weber. floor UNI glue. Before first use of the floor heating system, it is necessary to let the entire strata to cure for a minimum of 7 days!

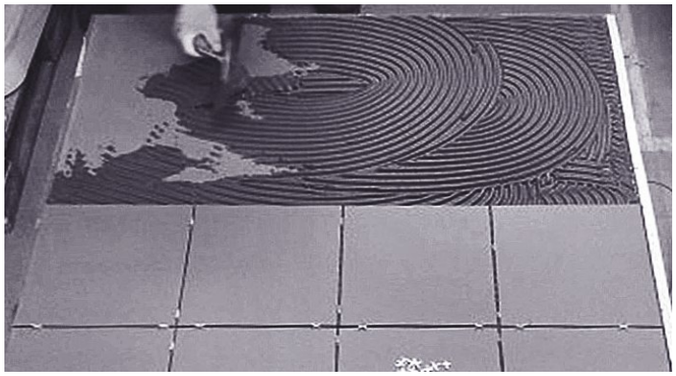
Electrical floor heating on CETRIS® boards

System composition	Primer	Heating mat, including the installation tube with a temperature sensor and connection to the temperature controller	Local anchoring of the heating cable curves	Primer	Self-levelling plaster with fibre	Primer	Glue	Hydro insulation (bathroom)	Joint-filling grout
Ceramic floor	weber. base haft	AEG type HMA TE 50 150/1 Controller AEG type FTD 730	weber.bat repair material	weber. base floor	weber. floor 4320	weber. base A	weber. for duoflex	weber Terizol	weber. color comfort
Vinyl flooring						-	Weber. floor UNI	-	-









6.10.3 Electric Floor Heating (Foil)

The carbon heating foil transforms 99% of the electric energy into infrared heat radiation. Thanks to this high efficiency and simple, quick and precision control, the electric heating foil is one of the most effective sources of heat for households. It is an ideal choice for most heating installations.

In combination with the CETRIS® floor systems, it is possible to use different variants of the heating foils:

- Direct heating system - electric heating foil for use directly under the wear layer (e.g. Nexwarm ONE STEP, HEATMAX PTC). A suitable base is a CETRIS® PD (PDB) board floor, also light floating floor systems (IZOCET, POLYCET, CETRIS® PDI).
- the heating foil for installation under the accumulation distribution layer (e.g. HEATMAX CARBON FABRIC, Heatflow...). In this case, the foil is laid on insulation and the walkable layer, which simultaneously forms the accumulation element can be created from CETRIS® boards.

Recommended composition – two layers of CETRIS® boards of minimum total thickness 28 mm – e.g. bottom (first) layer of CETRIS® PD board of thickness 16 mm, second layer of CETRIS® BASIC board of thickness 12 mm.