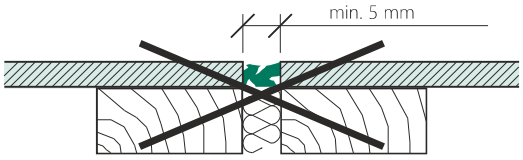
Construction of the dilatation joint

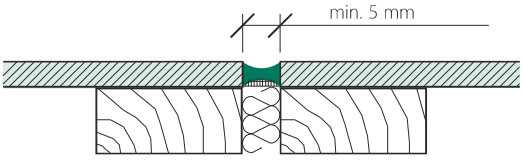
The width to depth ratio of the joint is 1:1, for larger joint widths 2:3. The dilatation joints to be filled must be dry and dust-free. Better adhesion may be achieved by priming the joint sides with the prescribed primer (or diluted filler), after which it is necessary to wait for the coat to dry completely. 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:

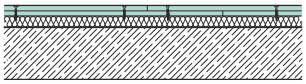
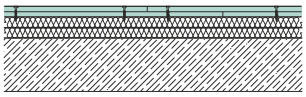
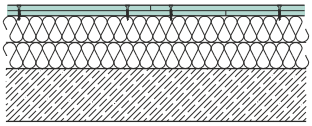
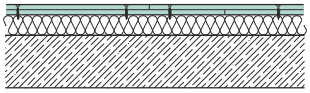
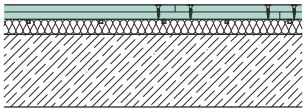
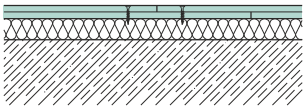
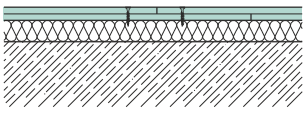
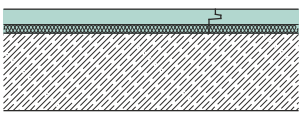
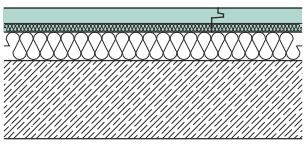
A – wear layers – may consist of a carpet, parquets, PVC, paving

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/m², 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/m² (classes A and B), or 5.0 kN/m² (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 ∂dF ≤ 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/m² 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/m² 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 normalizedcont act 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 normalizedcont act 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.

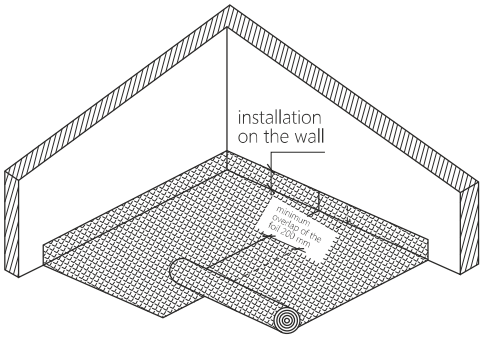
4 – If the sub-base contains high residual humidity, or in the case of risk of increased infiltration of humidity through the ceiling construction, cover the load-bearing ceiling construction with PE foil with 200 mm overlaps between the strips and overlapping the vertical constructions at least to the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

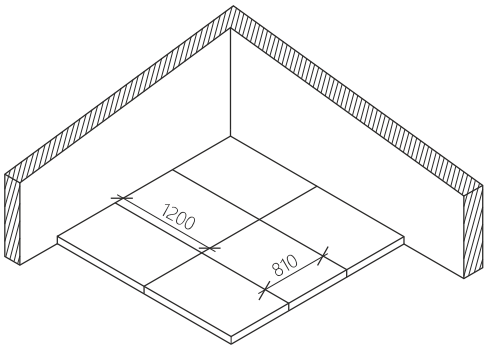
6 – Specify the direction of the upper CETRIS® board layer on which the direction of the bottom boards depends. When laying the layers, it is necessary to observe the principle that the individual layers must cross each other. It is necessary to ensure that the joints of the insulation boards and the 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.

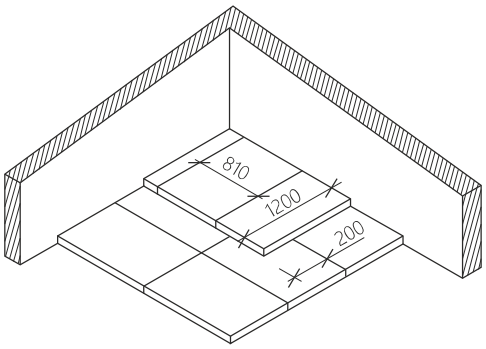
Installation of the foil



Laying of the first layer of insulation boards



Laying of the second layer of insulation boards

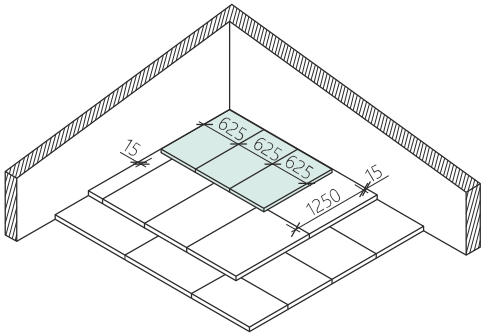


8 – When using two insulation board layers, the second layer is laid on the first layer with a minimum displacement (overlap) of 200 mm. Regarding the height of the insulation, it is recommended to eliminate the effect of the unfavourable deformations by using load-distributing elements as the base. 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.

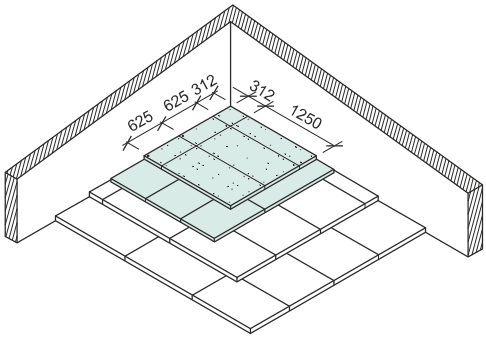
9 – Start CETRIS® board laying with a whole board opposite the door. The boards are laid tightly with a cross joint

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.

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.

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.

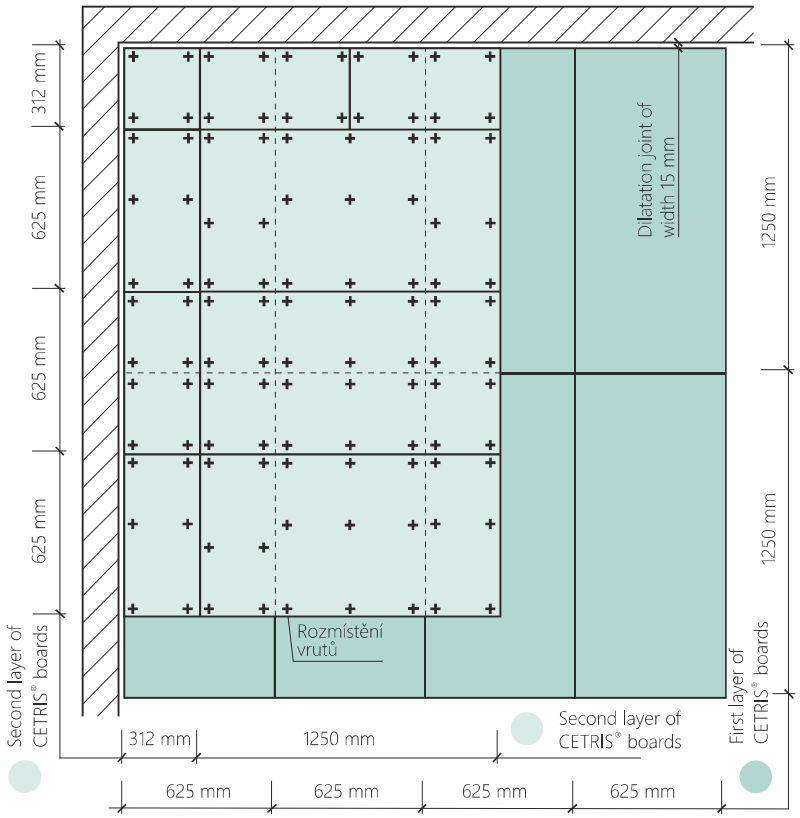
13 – It is recommended to use electric screwdrivers to drive the screws. When joining the CETRIS® boards, it is necessary to locally press the boards down, ideally with the weight of the worker. This prevents the lifting of the upper layer of the boards and potential contamination of the joints with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

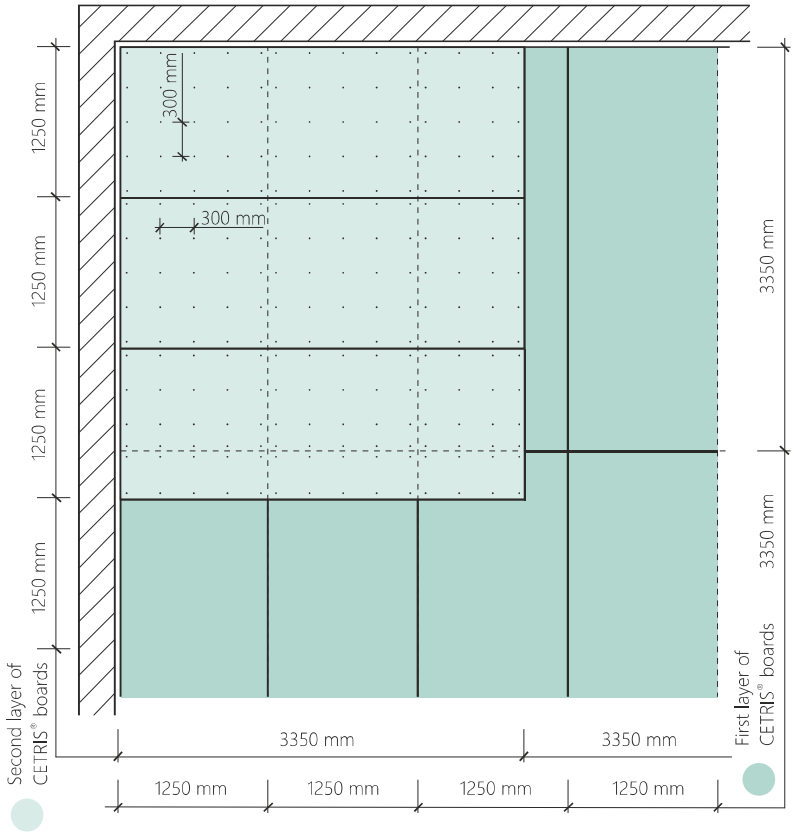
16 – As the CETRIS® board layers are glued together, the POLYCET Heat floor is not ready for walking traffic immediately after laying. Walking and application of the wear layer on the laid floor is possible no sooner than 48 hours after assembly.

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).

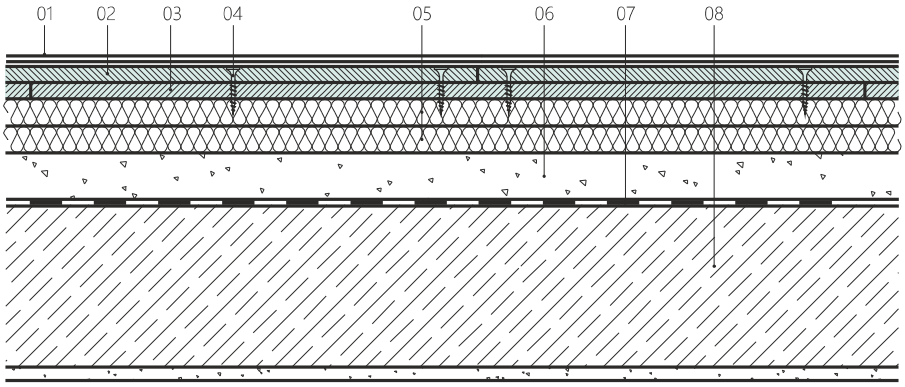
Installation of CETRIS® boards of format 1,250 x 625 mm - IZOCET, POLYCET floating floorsFirst layer of CETRIS® boards



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

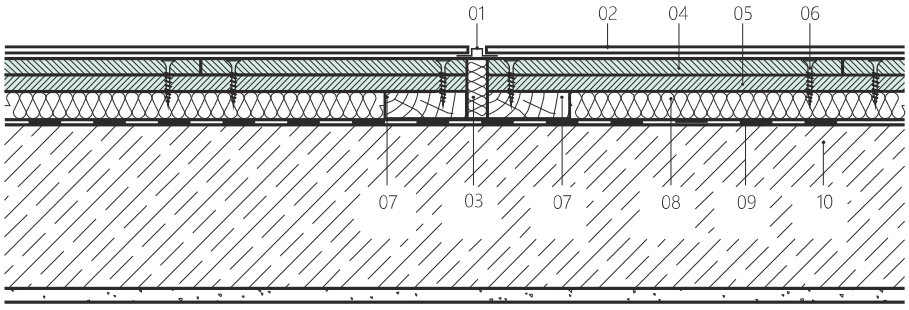


Levelling of the base, increase of the construction height of the IZOCET system - vertical section



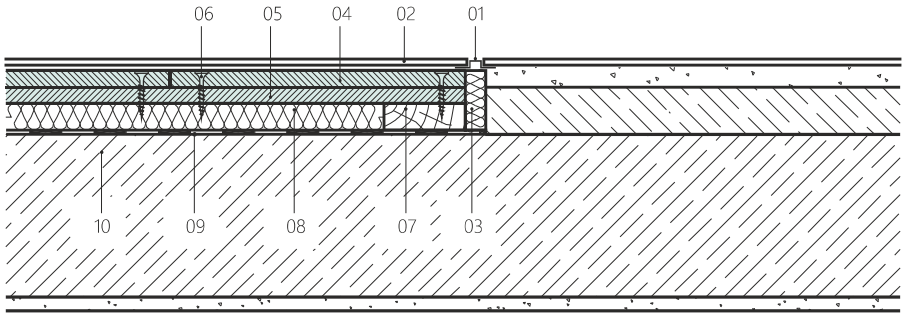
01 wear layer
02 CETRIS® board of thickness 12 mm, upper
03 CETRIS® board of thickness 12 mm, lower
04 screw 4.2 × 35 mm
05 insulation wood-fibre board of thickness 19 mm
06 sub-base mixtures (Fermacell, BACHL, Perlit, Cemwood 2000, Silipert) – max. thickness 40 mm
07 vapour barrier
08 ceiling construction

Dilatation joint in the IZOCET area - vertical section



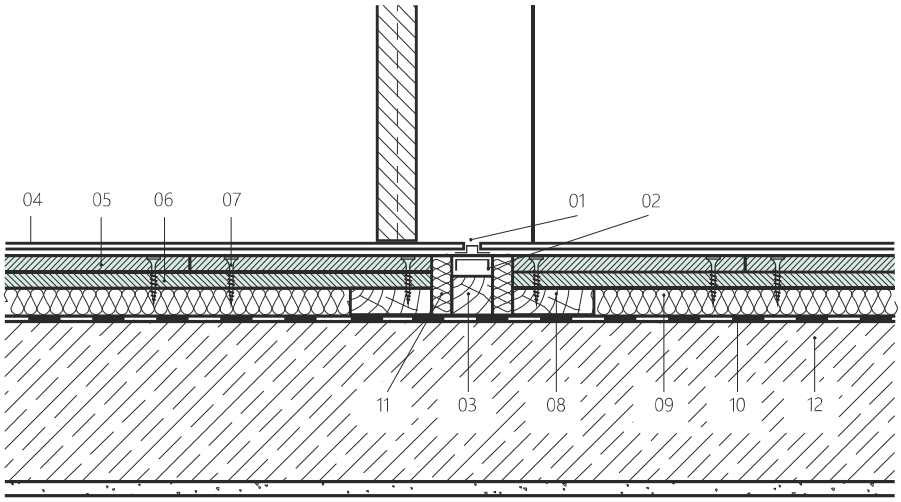
01 Schlűter DILEX dilatation profile
02 wear layer
03 dilatation (15 mm)
04 CETRIS® board of thickness 12 mm, upper
05 CETRIS® board of thickness 12 mm, lower
06 screw 4.2 × 35 mm
07 base wooden lath
08 insulation wood-fibre board of thickness 19 mm
09 vapour barrier
10 ceiling construction

Transition to another IZOCET floor - vertical section



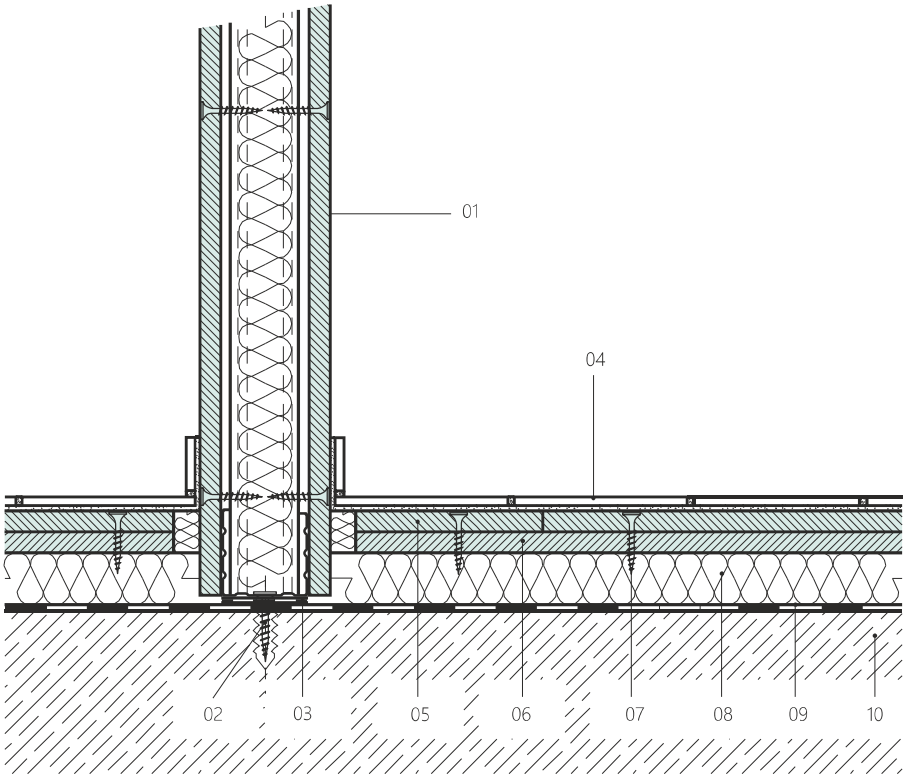
01 Schlűter DILEX dilatation profile
02 wear layer
03 dilatation (15 mm)
04 CETRIS® board of thickness 12 mm, upper
05 CETRIS® board of thickness 12 mm, lower
06 screw 4.2 × 35 mm
07 base wooden lath
08 insulation wood-fibre board of thickness 19 mm
09 vapour barrier
10 ceiling construction

Threshold free transition for the IZOCET floor - vertical section



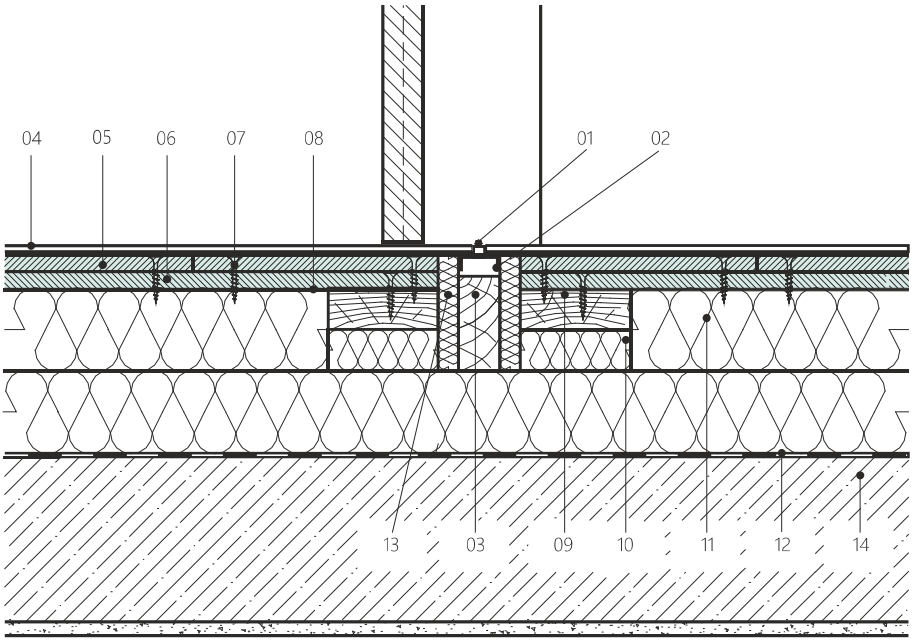
01 Schlüter DILEX dilatation profile
02 threshold connection
03 wooden threshold base profile
04 wear layer
05 CETRIS® board of thickness 12 mm, upper
06 CETRIS® board of thickness 12 mm, lower
07 screw 4.2 × 35 mm
08 base wooden lath
09 insulation wood-fibre board of thickness 19 mm
10 vapour barrier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

Connection of IZOCET floor to a partition wall - vertical section



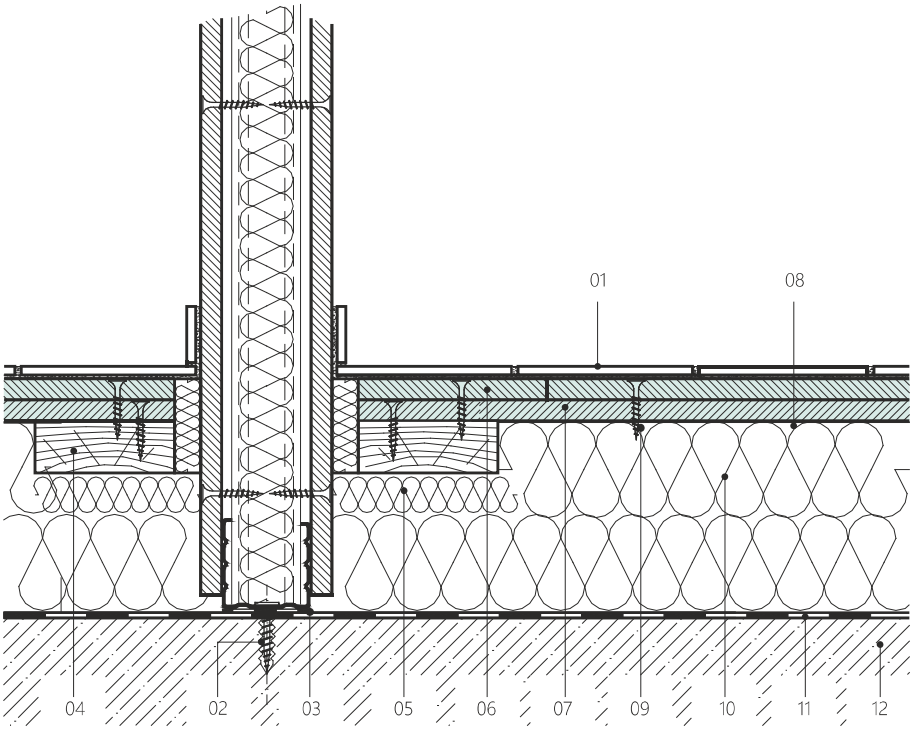
01 partition wall
02 dowel
03 sealing washer
04 base wooden lath
05 CETRIS® board of thickness 12 mm, upper
06 CETRIS® board of thickness 12 mm, lower
07 screw 4.2 × 35 mm
08 insulation wood-fibre board of thickness 19 mm
09 vapour barrier
10 ceiling construction

Threshold free transition for the POLYCET floor - vertical section



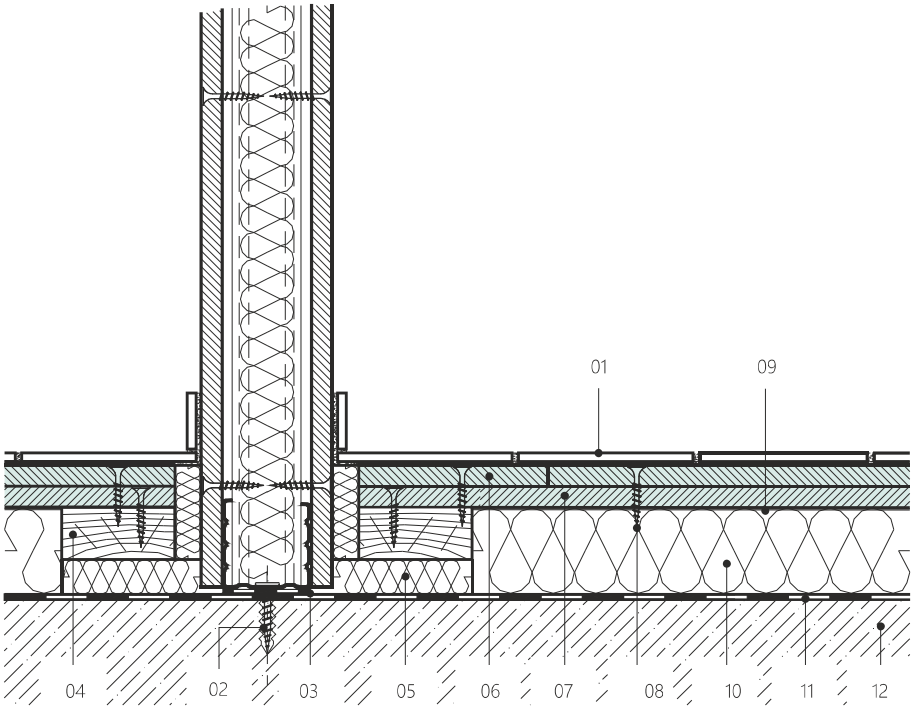
01 Schlűter DILEX dilatation profile
02 threshold connection
03 wooden threshold base profile
04 wear layer
05 CETRIS® board of thickness 12 mm, upper
06 CETRIS® board of thickness 12 mm, lower
07 screw 4.2 × 35 mm
08 separation layers – foam foil of thickness 2 mm
09 wooden base lath 80 × 30 mm
10 EPS 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



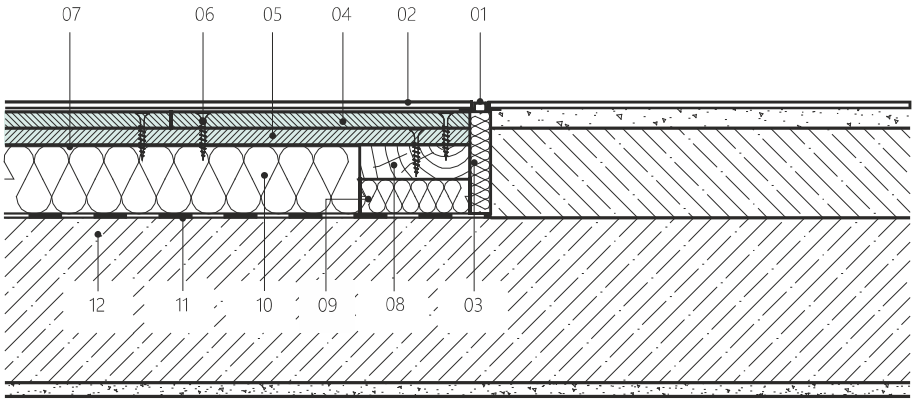
01 wear layer
02 dowel
03 sealing washer
04 wooden base lath 80 × 30 mm
05 EPS insulation
06 CETRIS® board of thickness 12 mm, upper
07 CETRIS® board of thickness 12 mm, lower
08 separation layers – foam foil 2 mm
09 screw 4.2 × 35 mm
10 EPS insulation board EPS 100Z (two layers)
11 vapour barrier
12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

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



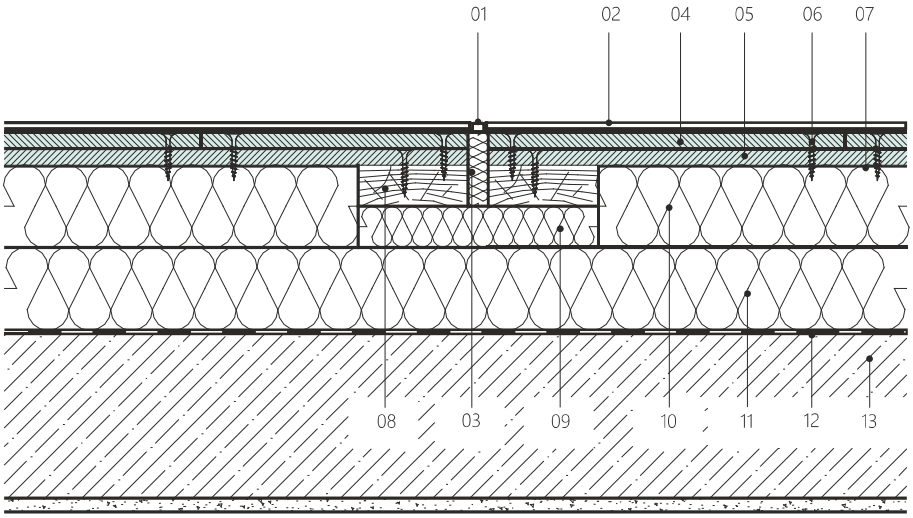
01 wear layer
02 dowel
03 sealing washer
04 wooden base lath 80 × 30 mm
05 EPS insulation
06 CETRIS® board of thickness 12 mm, upper
07 CETRIS® board of thickness 12 mm, lower
08 screw 4.2 × 35 mm
09 separation layers – foam foil 2 mm
10 EPS insulation
11 vapour barrier
12 ceiling construction

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.

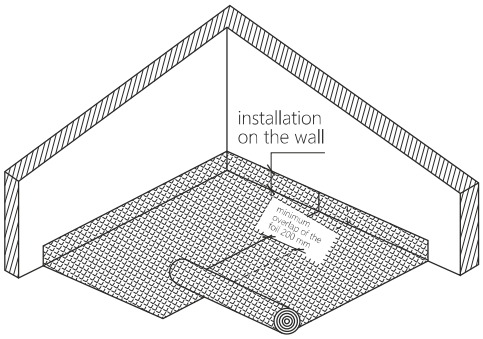
3 – Before laying the floor construction the floor parts should be acclimatised for a minimum period of 48 hours at the minimum temperature of 18° C and a relative air humidity of max. 70%. The acclimatisation approximates the manufacturing humidity of the board to the balanced humidity of the application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

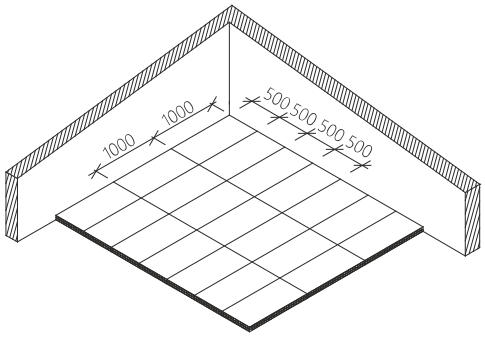
11 – After joining both layers of CETRIS® PDI boards, use a knife to cut-off the edge strip and the insulation foil at the required height.

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.

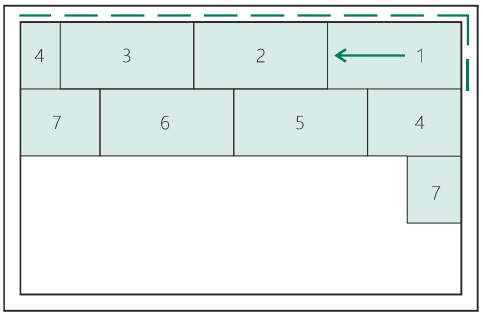
13 – Full loading of the floor or performance of other operations (laying the floor covering) on the floor can be done only after complete curing of the polyurethane glue (min. 24 hours). Remove the excessive glue with a spatula after curing of the glue. A screw-jointed floor is immediately walkable.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