COREWOOD
- KERNEN TIL ET GODT BYGGERI

Terrændæk, 400 mm Super EPS.

Floor
created on 15.10.2024

Thermal protection

U = 0,07 W/(m²K)

EnEV Bestand*: U<0,3 W/(m²K)

excellent insufficient

Moisture proofing

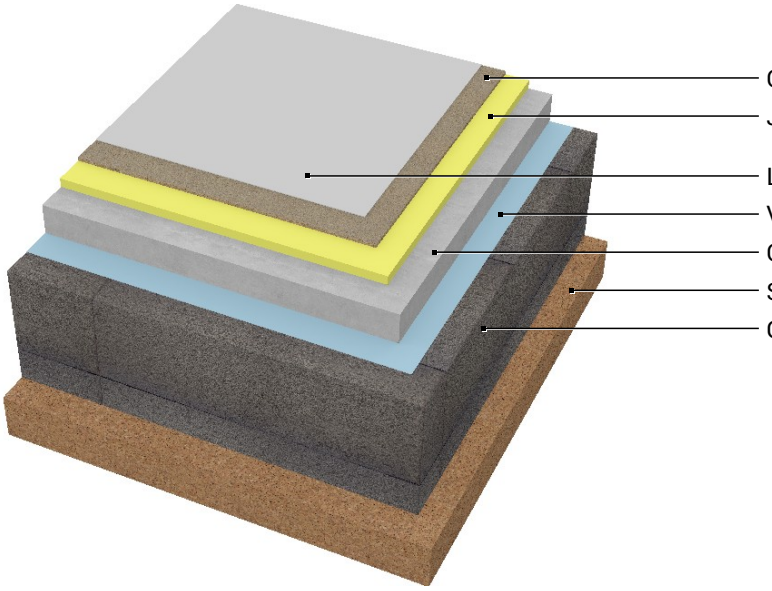
Drying reserve: 106 g/m²a
Dries 5 days
Condensate: 5,4 g/m²

excellent insufficient

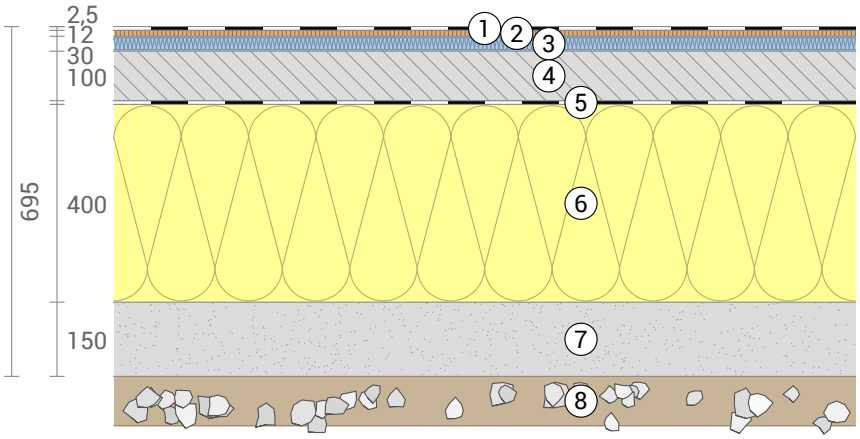
Heat protection

Component is adjacent to earth:
TAV and phase non relevant
Thermal capacity inside: 233 kJ/m²K

excellent insufficient



- Chip board / particle board (12 mm)
- Jackopor gulvvarmeplader (30 mm)
- Linoleum
- Vapor barrier sd=100m
- Concrete (100 mm)
- Sand (150 mm)
- Graphite Polystyrene (400 mm)



1. Linoleum
2. Chip board / particle board (12 mm)
3. Jackopor gulvvarmeplader (30 mm)
4. Concrete (100 mm)
5. Vapor barrier sd=100m
6. Graphite Polystyrene (400 mm)
7. Sand (150 mm)
8. Soil

Inside air :	20,0°C / 50%		Thickness: 69,5 cm
Ground:	0,0°C / 100%	sd-value: 132,0 m	Weight: 558 kg/m²
Surface temperature.:	19,7°C / 0,1°C		Heat capacity: 556 kJ/m²K

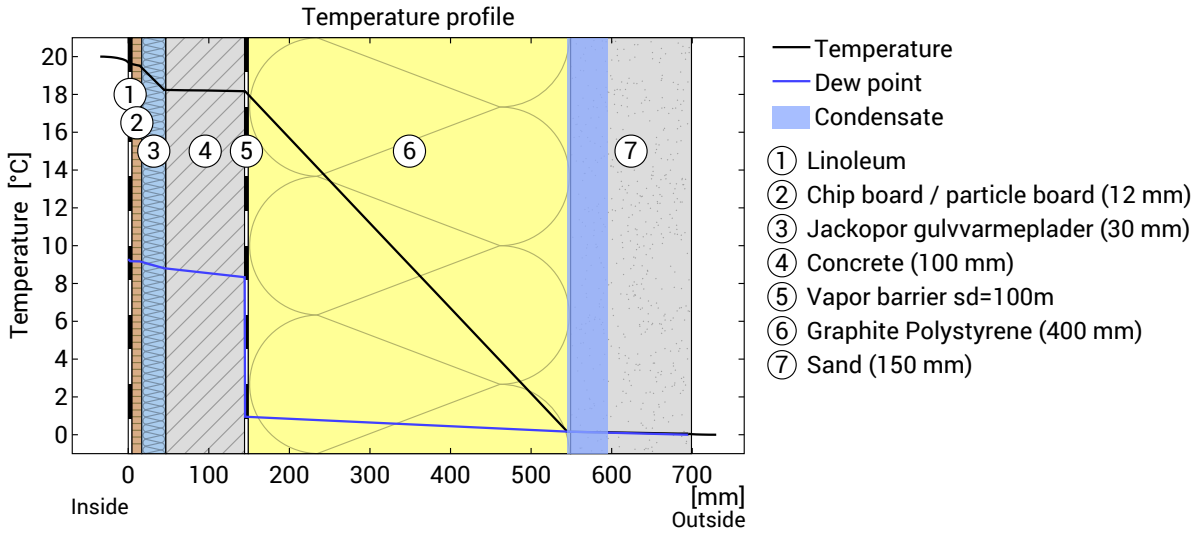
☑ EnEV Bestand ☑ BEG Einzelmaßn. ☑ GEG 2020/24 Bestand ☑ GEG 2023/24 Neubau

*Comparison of the U-value with den Höchstwerten aus EnEV 2014 Anlage 3 Tabelle 1 (EnEV Bestand); den techn. Mindestanforderungen für BEG Einzelmaßnahmen; den Höchstwerten aus GEG Anlage 7 (GEG 2020-2024 Bestand); 70% des U-Werts der Referenzausführung aus GEG 2023/2024 Anlage 1 (GEG Neubau)

COREWOOD
- KERNEN TIL ET GODT BYGGERI

Terrændæk, 400 mm Super EPS., U=0,07 W/(m²K)

Temperature profile



Temperature and dew-point temperature in the component. The dew-point indicates the temperature, at which water vapour condensates. As long as the temperature of the component is everywhere above the dew-point temperature, no condensation occurs. If the curves have contact, condensation occurs at the corresponding position.

Layers (from inside to outside)

#		Material	λ [W/mK]	R [m²K/W]	Temperatur [°C] min	max	Weight [kg/m²]
		Thermal contact resistance*		0,170	19,7	20,0	
1	0,25 cm	Linoleum	0,170	0,015	19,6	19,7	3,0
2	1,2 cm	Chip board / particle board	0,140	0,086	19,5	19,6	7,8
3	3 cm	Jackopor gulvvarmeplader	0,033	0,909	18,2	19,5	0,9
4	10 cm	Concrete	2,000	0,050	18,2	18,2	240,0
5	0,05 cm	Vapor barrier sd=100m	0,220	0,002	18,2	18,2	0,1
6	40 cm	Graphite Polystyrene (GPS)	0,031	12,903	0,2	18,2	6,0
7	15 cm	Sand (earth-moist)	2,000	0,075	0,1	0,2	300,0
		Thermal contact resistance*		0,000	0,0	0,1	
8		Soil			0,0	0,0	118,2
	69,5 cm	Whole component		14,211			557,8

*Thermal contact resistances according to DIN 6946 for the U-value calculation. Rsi=0,25 and Rse=0,04 according to DIN 4108-3 were used for moisture proofing and temperature profile.

Surface temperature inside (min / average / max):	19,7°C	19,7°C	19,7°C
Surface temperature outside (min / average / max):	0,1°C	0,1°C	0,1°C

Terrændæk, 400 mm Super EPS., U=0,07 W/(m²K)

Moisture proofing

For the calculation of the amount of condensation water, the component was exposed to the following constant climate for 90 days: inside: 20°C und 50% Humidity; outside: 0°C und 100% Humidity (Climate according to user input).

Under these conditions, a total of 0,0054 kg of condensation water per square meter is accumulated.This quantity dries in summer in 5 days (Drying season according to DIN 4108-3:2018-10).

Drying reserve according to Ubakus 2D-FE method: 106 g/(m²a)
At least required by DIN 68800-2: 100 g/(m²a)

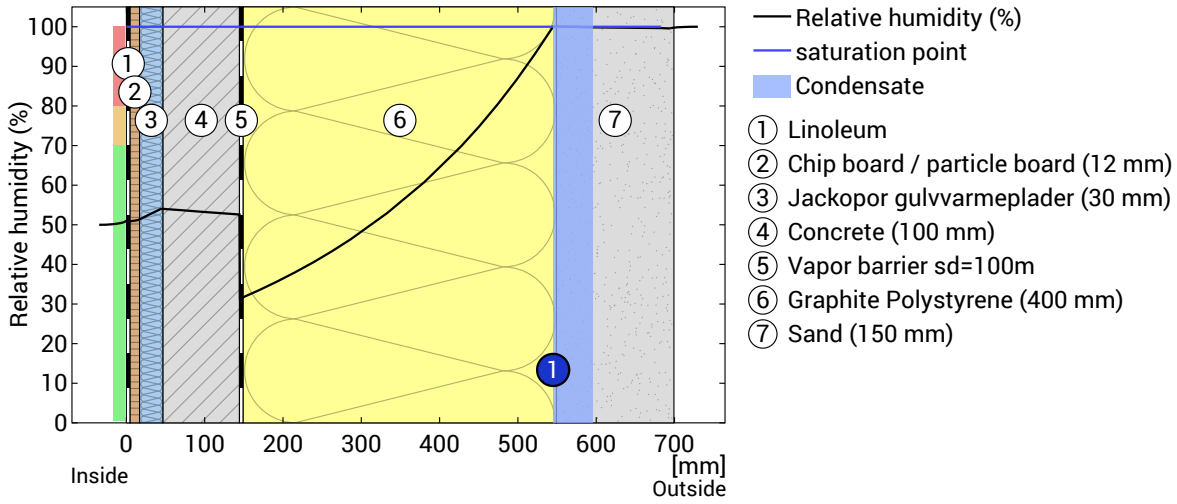
#		Material	sd-value [m]	Condensate [kg/m²]	[Gew.-%]	Weight [kg/m²]
1	0,25 cm	Linoleum	2,00	-		3,0
2	1,2 cm	Chip board / particle board	0,18	-	-	7,8
3	3 cm	Jackopor gulvvarmeplader	6,30	-		0,9
4	10 cm	Concrete	8,00	-		240,0
5	0,05 cm	Vapor barrier sd=100m	100,00	-		0,1
6	40 cm	Graphite Polystyrene (GPS)	8,00	0,0054		6,0
7	15 cm	Sand (earth-moist)	7,50	0,0054		300,0
	69,5 cm	Whole component	131,98	0,0054		557,8

Condensation areas

1 Condensate: 0,005 kg/m² Affected layers: Sand (earth-moist), Graphite Polystyrene (GPS)

Humidity

The temperature of the inside surface is 19,7 °C leading to a relative humidity on the surface of 51%.Mould formation is not expected under these conditions.
The following figure shows the relative humidity inside the component.



Notes: Calculation using the Ubakus 2D-FE method. Convection and the capillarity of the building materials were not considered. The drying time may take longer under unfavorable conditions (shading, damp / cool summers) than calculated here.

COREWOOD
- KERNEN TIL ET GODT BYGGERI

1. Ydervæg, med dampbremseplade på træskelet og installationsvæg.

Exterior wall
created on 15.10.2024

Thermal protection

U = 0,12 W/(m²K)

EnEV Bestand*: U<0,24 W/(m²K)

excellent — insufficient

Moisture proofing

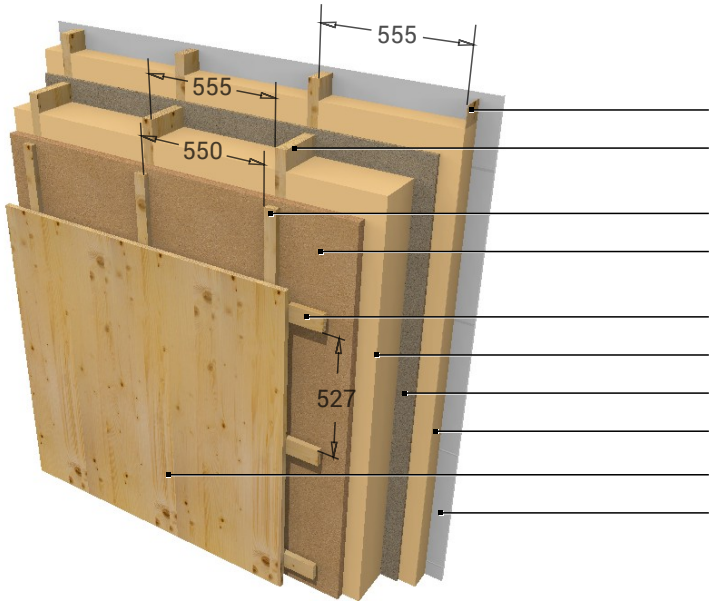
Drying reserve: 3373 g/m²a
No condensate

excellent — insufficient

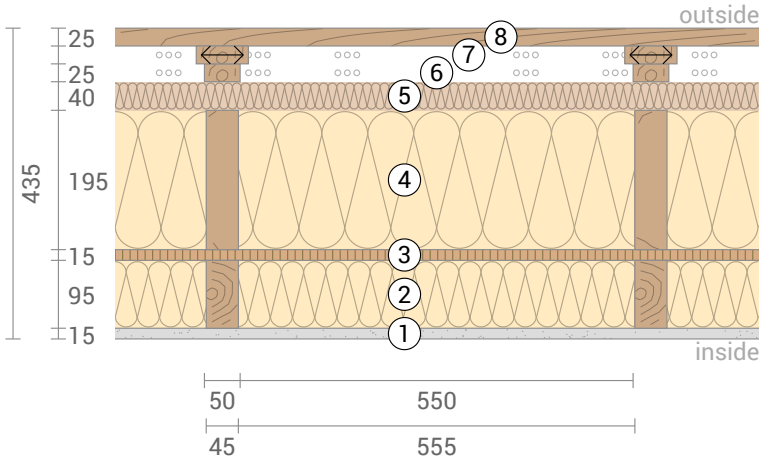
Heat protection

Temperature amplitude damping: 83
phase shift: 16,2 h
Thermal capacity inside: 52 kJ/m²K

excellent — insufficient



- Spruce (95x45)
- Spruce (195x45)
- Spruce (25x50)
- Woodfiber Safe el.lign. (40 mm)
- Spruce (25x73)
- Træfiber granulat, f.eks. Thermocell (195 mm)
- LivingBoard, P5 (15 mm)
- Træfiberisolering, f.eks. Thermocell Feelingwood (95
- Western red cedar (25 mm)
- RigidurH (15 mm)



1. RigidurH (15 mm)
2. Træfiberisolering, f.eks. Thermocell Feelingwood (95 mm)
3. LivingBoard, P5 (15 mm)
4. Træfiber granulat, f.eks. Thermocell (195 mm)
5. Woodfiber Safe el.lign. (40 mm)
6. Rear ventilated level (25 mm)
7. Rear ventilated level (25 mm)
8. Western red cedar (25 mm)

<-> Layers marked by arrows are perpendicular to the main axis.

Inside air :	20,0°C / 50%			Thickness:	43,5 cm
Outside air:	-5,0°C / 80%	sd-value:	2,7 m	Weight:	66 kg/m²
Surface temperature.:	18,8°C / -4,9°C	Drying reserve:	3373 g/m²a	Heat capacity:	86 kJ/m²K

☑ EnEV Bestand ☑ BEG Einzelmaßn. ☑ GEG 2020/24 Bestand ☑ GEG 2023/24 Neubau

*Comparison of the U-value with den Höchstwerten aus EnEV 2014 Anlage 3 Tabelle 1 (EnEV Bestand); den techn. Mindestanforderungen für BEG Einzelmaßnahmen; den Höchstwerten aus GEG Anlage 7 (GEG 2020-2024 Bestand); 70% des U-Werts der Referenzausführung aus GEG 2023/2024 Anlage 1 (GEG Neubau)

1. Ydervæg, med dampbremseplade på træskelet og installationsvæg., U=0,12 W/(m²K)

LCA

Heat loss: 10 kWh/m² per heating season

Amount of heat that escapes through one square meter of this component during the heating period. Please note: Due to internal and solar gains, the heating demand is lower than the heat loss.

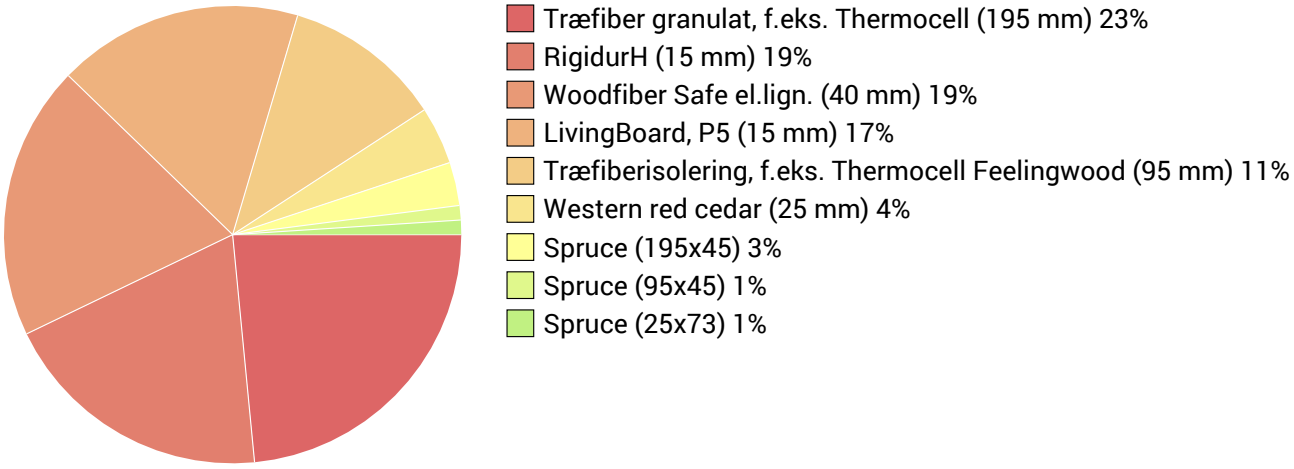
Primary energy (non renewable): 99 kWh/m²

Non-renewable primary energy (= energy from fossil fuels and nuclear energy) that was used to produce the new building materials ("cradle to gate").

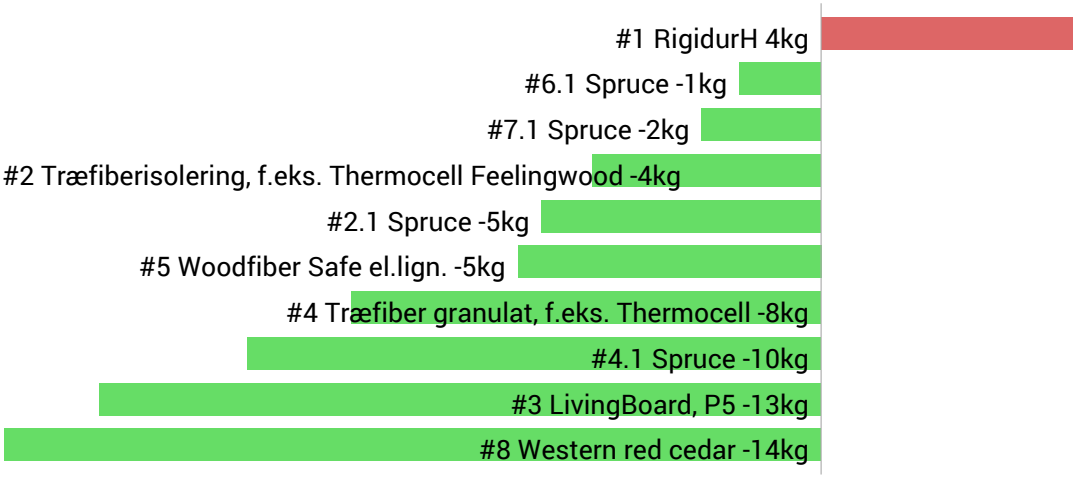
Green house gas potential: -59 kg CO2 Äqv./m²

For the production of the building materials used, more greenhouse gases were withdrawn from the atmosphere than emitted.

Composition of non-renewable primary energy of production:

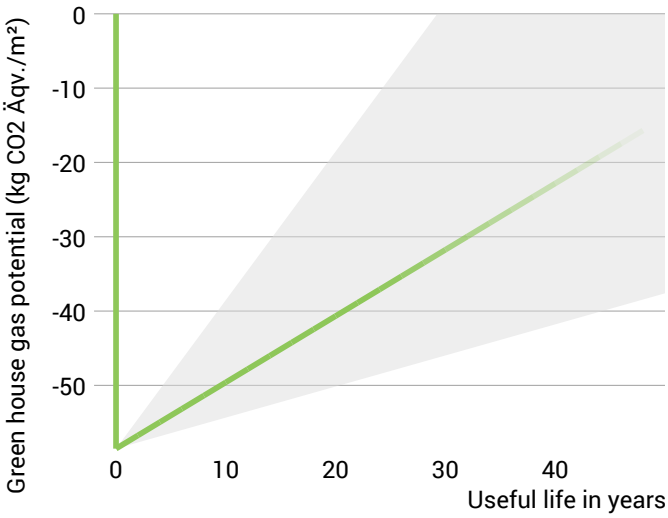


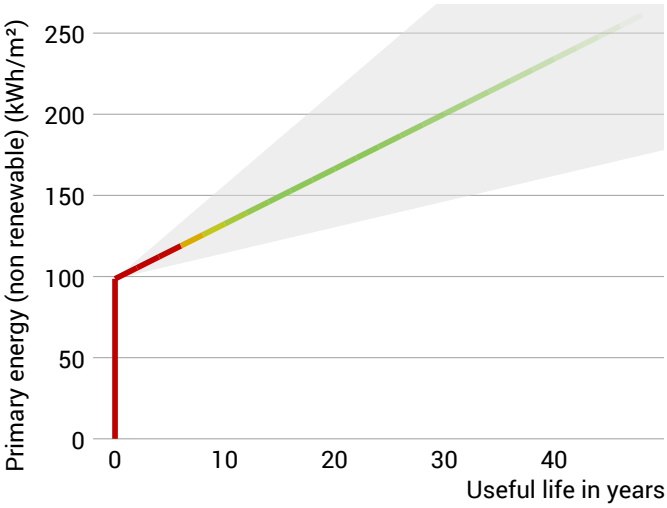
Composition of the greenhouse potential of production:



1. Ydervæg, med dampbremseplade på træskelet og installationsvæg., U=0,12 W/(m²K)

Global warming potential and primary energy for construction and use





The **left figure** shows the global warming potential of the production of the component in the vertical part of the curve. Greenhouse gas emissions (through heating) arising during use of the building are indicated by the upward curve.

The **figure at the bottom left** shows the non-renewable primary energy expenditure for the production of the component in the vertical part of the curve. The primary energy required during use of the building (through heating) is represented by the upward curve.

The longer the component is used unchanged, the more environmentally friendly it is, because the production costs contribute less to the total emissions (indicated by the color of the curve).

Due to unknown solar and internal gains, the heating demand can only be estimated. Accordingly, primary energy consumption and global warming potential during the use phase are only vaguely known. For the estimation it was assumed that solar and internal profits contribute with 4 kWh/a/m² component area. The light gray area indicates the area in which the curve is located with great certainty. For heat generation, a primary energy input of 0,60 kWh per kWh of heat and a global warming potential of 0,16 kg CO2 eqv/m² per kWh of heat was used. Heat source: Heat pump (air-water).

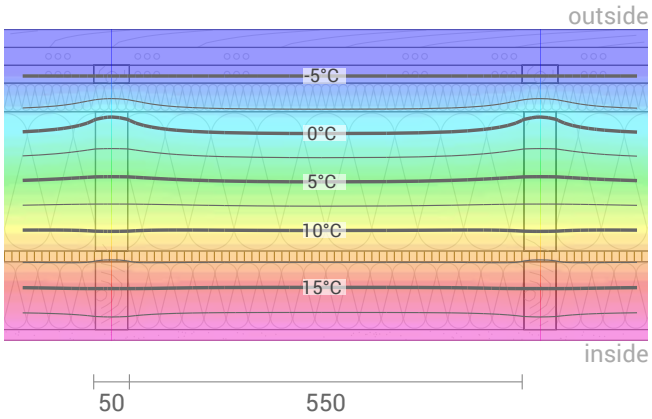
Hints

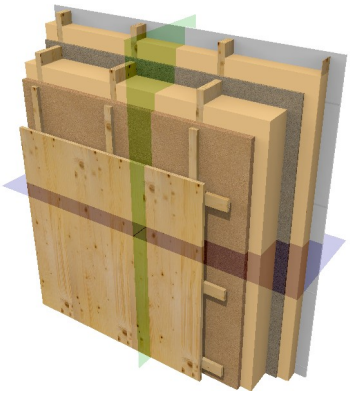
Calculated for the location DIN V 18599, heating period from Mid of October to End of April. The calculation is based on monthly average temperatures. Source: DIN V 18599-10:2007-02

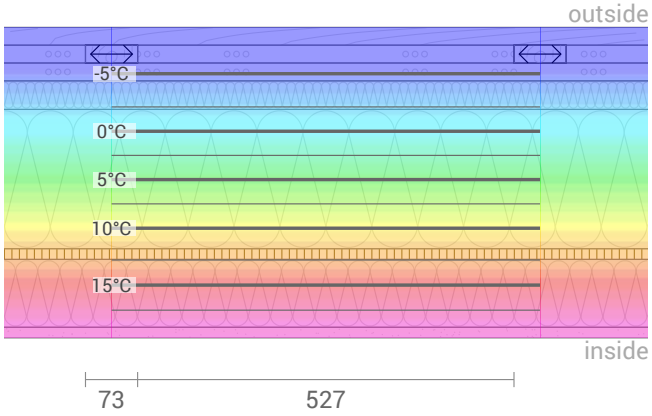
The climate and energy data on which this calculation is based can, in some cases, show considerable fluctuations and, in individual cases, deviate considerably from the actual value.

1. Ydervæg, med dampbremseplade på træskelet og installationsvæg., U=0,12 W/(m²K)

Temperature profile







Top left: Temperature profile in the blue section (see right illustration). Bottom left: Temperature profile in the green section.

Layers (from inside to outside)

#		Material	λ [W/mK]	R [m²K/W]	Temperatur [°C] min	max	Weight [kg/m²]
		Thermal contact resistance*		0,130	18,8	20,0	
1	1,5 cm	RigidurH	0,350	0,043	18,5	19,3	18,0
2	9,5 cm	Træfiberisolering, f.eks. Thermocell Feelingwood	0,038	2,500	12,4	19,2	3,5
	9,5 cm	Spruce (7,5%)	0,130	0,731	12,6	18,7	3,2
3	1,5 cm	LivingBoard, P5	0,120	0,125	11,7	12,7	10,2
4	19,5 cm	Træfiber granulat, f.eks. Thermocell	0,037	5,270	-2,3	12,1	7,2
	19,5 cm	Spruce (7,5%)	0,130	1,500	-0,4	11,8	6,6
5	4 cm	Woodfiber Safe el.lign.	0,042	0,952	-4,9	-0,3	5,6
		Thermal contact resistance*		0,130	-5,0	-4,8	
6	2,5 cm	Rear ventilated level (outside air)			-5,0	-5,0	0,0
7	2,5 cm	Rear ventilated level (outside air)			-5,0	-5,0	0,0
8	2,5 cm	Western red cedar			-5,0	-5,0	9,4
	43,5 cm	Whole component		8,068			66,0

*Thermal contact resistances according to DIN 6946 for the U-value calculation. Rsi=0,25 and Rse=0,04 according to DIN 4108-3 were used for moisture proofing and temperature profile.

Surface temperature inside (min / average / max):	18,8°C	19,2°C	19,3°C
Surface temperature outside (min / average / max):	-4,9°C	-4,9°C	-4,8°C

1. Ydervæg, med dampbremseplade på træskelet og installationsvæg., U=0,12 W/(m²K)

Moisture proofing

For the calculation of the amount of condensation water, the component was exposed to the following constant climate for 90 days: inside: 20°C und 50% Humidity; outside: -5°C und 80% Humidity. This climate complies with DIN 4108-3.

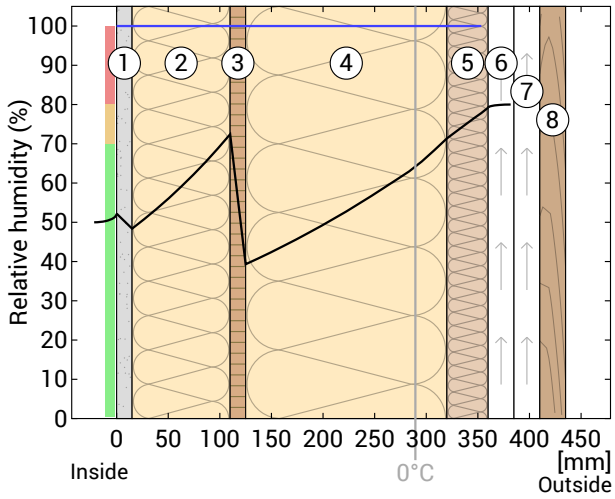
This component is free of condensate under the given climate conditions.

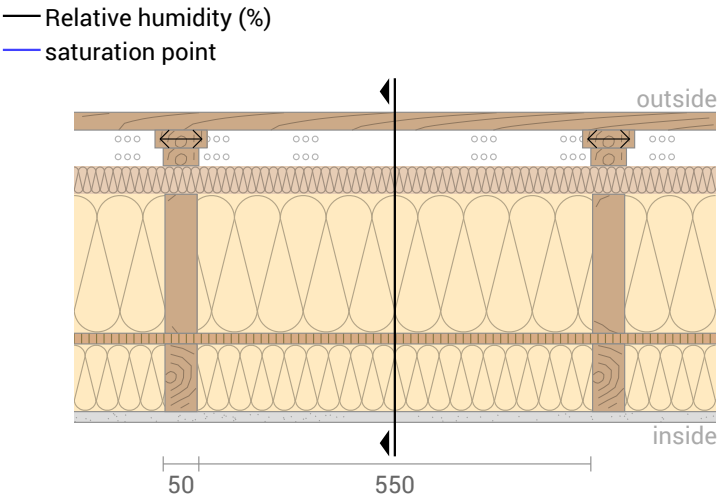
Drying reserve according to DIN 4108-3:2018: 3373 g/(m²a)
At least required by DIN 68800-2: 100 g/(m²a)

#		Material	sd-value [m]	Condensate [kg/m²]	[Gew.-%]	Weight [kg/m²]
1	1,5 cm	RigidurH	0,29	-		18,0
2	9,5 cm	Træfiberisolering, f.eks. Thermocell Feelingwood	0,10	-		3,5
	9,5 cm	Spruce (7,5%)	1,90	-	-	3,2
3	1,5 cm	LivingBoard, P5	1,50	-	-	10,2
4	19,5 cm	Træfiber granulat, f.eks. Thermocell	0,59	-		7,2
	19,5 cm	Spruce (7,5%)	9,75	-	-	6,6
5	4 cm	Woodfiber Safe el.lign.	0,12	-		5,6
	43,5 cm	Whole component	2,73	0		66,0

Humidity

The temperature of the inside surface is 18,8 °C leading to a relative humidity on the surface of 54%.Mould formation is not expected under these conditions.
The following figure shows the relative humidity inside the component.





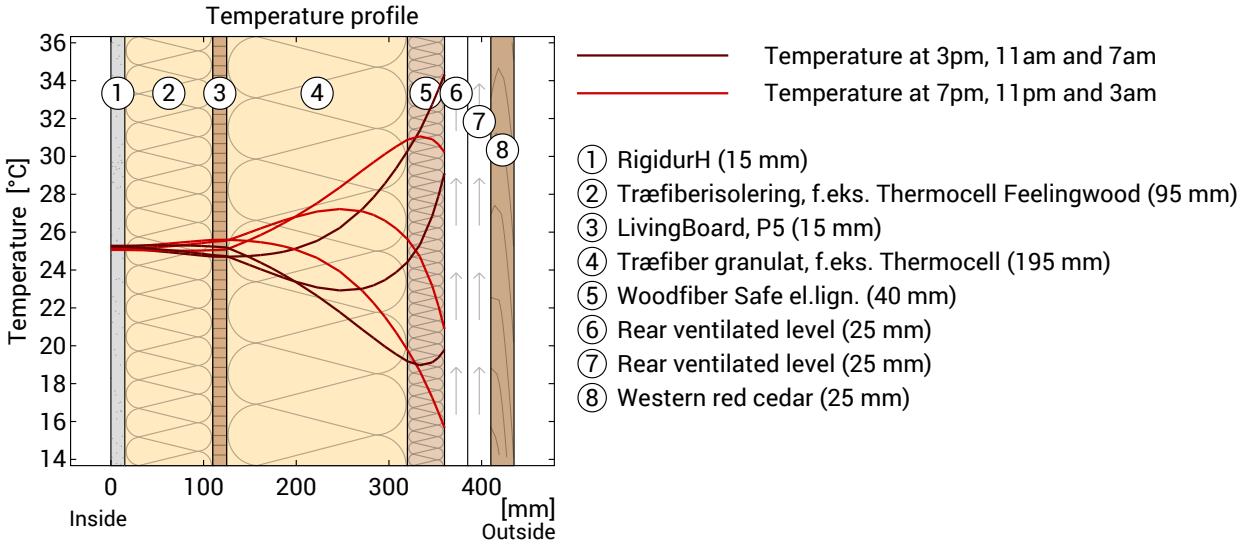
① RigidurH (15 mm)
② Træfiberisolering, f.eks. Thermoce...
③ LivingBoard, P5 (15 mm)
④ Træfiber granulat, f.eks. Thermoce...
⑤ Woodfiber Safe el.lign. (40 mm)
⑥ Rear ventilated level (25 mm)
⑦ Rear ventilated level (25 mm)
⑧ Western red cedar (25 mm)

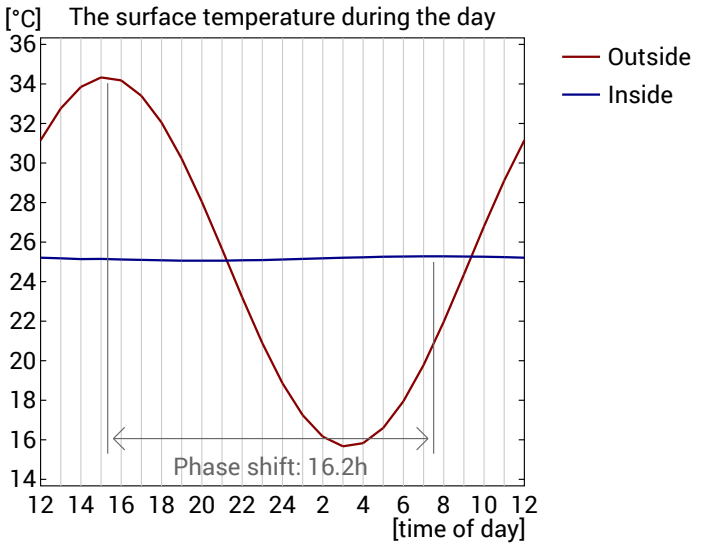
Layers marked with <-> run parallel to the illustrated cutting plane and were not taken into account in the moisture protection calculation.
Notes: Calculation using the Ubakus 2D-FE method. Convection and the capillarity of the building materials were not considered. The drying time may take longer under unfavorable conditions (shading, damp / cool summers) than calculated here.

1. Ydervæg, med dampbremseplade på træskelet og installationsvæg., U=0,12 W/(m²K)

Heat protection

The following results are properties of the tested component alone and do not make any statement about the heat protection of the entire room:





Top: Temperature profile within the component at different times. From top to bottom, brown lines: at 3 pm, 11 am and 7 am and red lines at 7 pm , 11 pm and 3 am.
Bottom: Temperature on the outer (red) and inner (blue) surface in the course of a day. The arrows indicate the location of the temperature maximum values . The maximum of the inner surface temperature should preferably occur during the second half of the night.

Phase shift*	16,2 h	Heat storage capacity (whole component):	86 kJ/m²K
Amplitude attenuation **	83,3	Thermal capacity of inner layers:	52 kJ/m²K
TAV ***	0,012		

* The phase shift is the time in hours after which the temperature peak of the afternoon reaches the component interior.
** The amplitude attenuation describes the attenuation of the temperature wave when passing through the component. A value of 10 means that the temperature on the outside varies 10x stronger than on the inside, e.g. outside 15-35 °C, inside 24-26 °C.
*** The temperature amplitude ratio TAV is the reciprocal of the attenuation: TAV = 1 / amplitude attenuation

Note: The heat protection of a room is influenced by several factors, but essentially by the direct solar radiation through windows and the total amount of heat storage capacity (including floor, interior walls and furniture). A single component usually has only a very small influence on the heat protection of the room.

The calculations presented above have been created for a 1-dimensional cross-section of the component.

COREWOOD
- KERNEN TIL ET GODT BYGGERI

Tagkonstruktion, 365 mm bjælkespær og installationsloft.

Roof construction
created on 16.10.2024

Thermal protection

U = 0,09 W/(m²K)

EnEV Bestand*: U<0,24 W/(m²K)

excellent insufficient

Moisture proofing

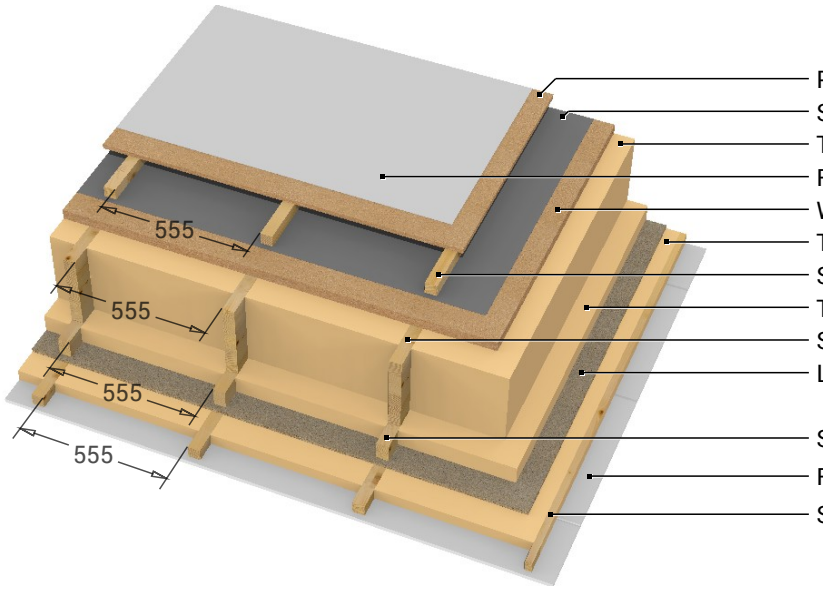
Drying reserve: 6754 g/m²a
No condensate

excellent insufficient

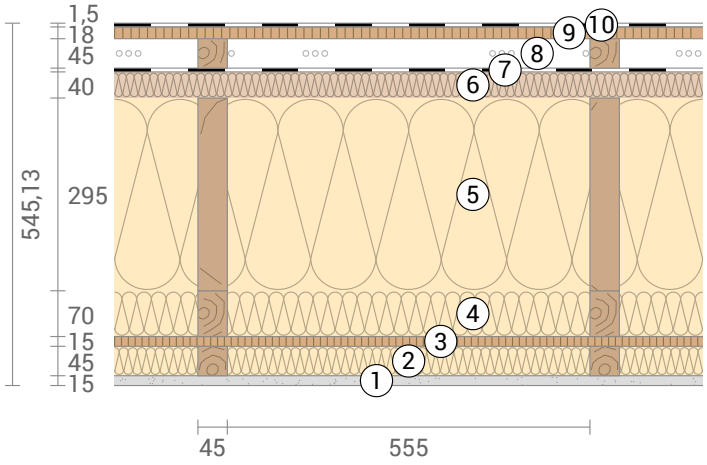
Heat protection

Temperature amplitude damping: >100
phase shift: non relevant
Thermal capacity inside: 64 kJ/m²K

excellent insufficient



Plywood 500kg/m³ (18 mm)
STEICOmulti UDB
Træfiber granulat, f.eks. Thermocell (295 mm)
Rhepanol tagmembran
Woodfiber Top el.lign. (40 mm)
Træfiberisolering, f.eks. Thermocell Feelingwood (45
Spruce (45x45)
Træfiber granulat, f.eks. Thermocell (70 mm)
Spruce (295x45)
LivingBoard, P5 (15 mm)
Spruce (70x45)
RigidurH (15 mm)
Spruce (45x45)



1. RigidurH (15 mm)
2. Træfiberisolering, f.eks. Thermocell Feelingwood (45 mm)
3. LivingBoard, P5 (15 mm)
4. Træfiber granulat, f.eks. Thermocell (70 mm)
5. Træfiber granulat, f.eks. Thermocell (295 mm)
6. Woodfiber Top el.lign. (40 mm)
7. STEICOmulti UDB
8. Rear ventilated level (45 mm)
9. Plywood 500kg/m³ (18 mm)
10. Rhepanol tagmembran

Inside air :	20,0°C / 50%			Thickness:	54,5 cm
Outside air:	-5,0°C / 80%	sd-value:	2,5 m	Weight:	77 kg/m²
Surface temperature.:	19,1°C / -4,9°C	Drying reserve:	6754 g/m²a	Heat capacity:	108 kJ/m²K

☑ EnEV Bestand ☑ BEG Einzelmaßn. ☑ GEG 2020/24 Bestand ☑ GEG 2023/24 Neubau

*Comparison of the U-value with den Höchstwerten aus EnEV 2014 Anlage 3 Tabelle 1 (EnEV Bestand); den techn. Mindestanforderungen für BEG Einzelmaßnahmen; den Höchstwerten aus GEG Anlage 7 (GEG 2020-2024 Bestand); 70% des U-Werts der Referenzausführung aus GEG 2023/2024 Anlage 1 (GEG Neubau)

COREWOOD
- KERNEN TIL ET GODT BYGGERI

Tagkonstruktion, 365 mm bjælkespær og installationsloft., U=0,09 W/(m²K)

LCA

Heat loss: 7 kWh/m² per heating season

Amount of heat that escapes through one square meter of this component during the heating period. Please note: Due to internal and solar gains, the heating demand is lower than the heat loss.

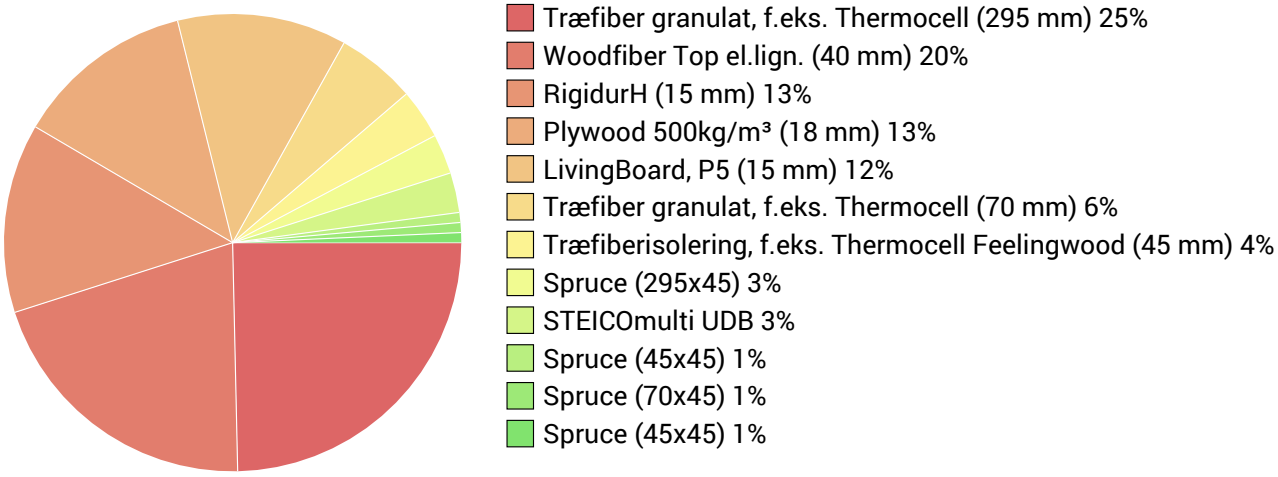
Primary energy (non renewable): >142 kWh/m²

Non-renewable primary energy (= energy from fossil fuels and nuclear energy) that was used to produce the new building materials ("cradle to gate").

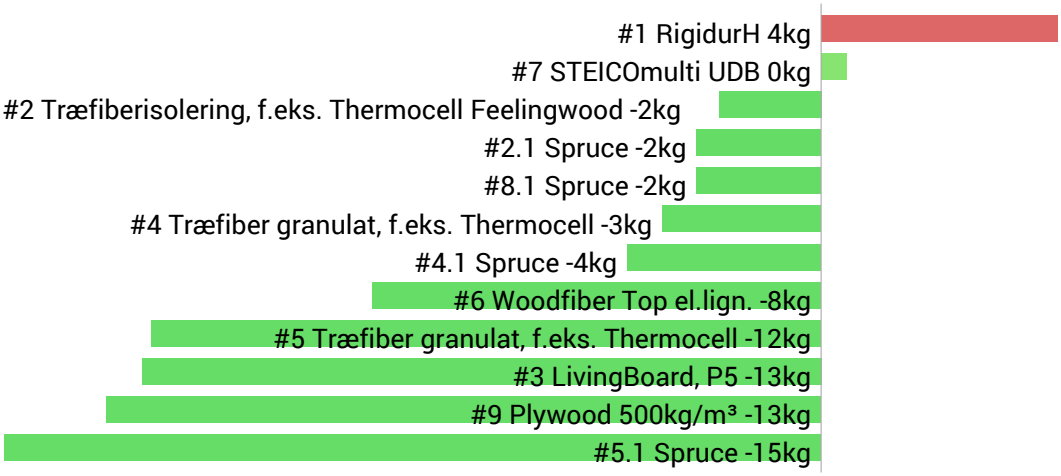
Green house gas potential: -70 (?) kg CO2 Äqv./m²

For the production of the building materials used, more greenhouse gases were withdrawn from the atmosphere than emitted.

Composition of non-renewable primary energy of production:



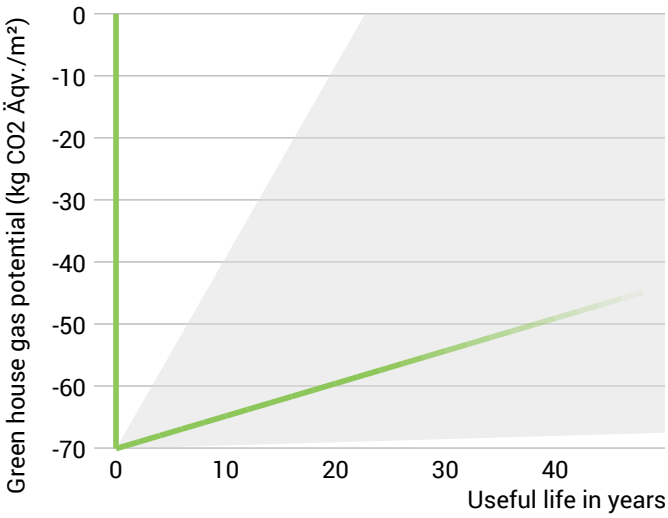
Composition of the greenhouse potential of production:

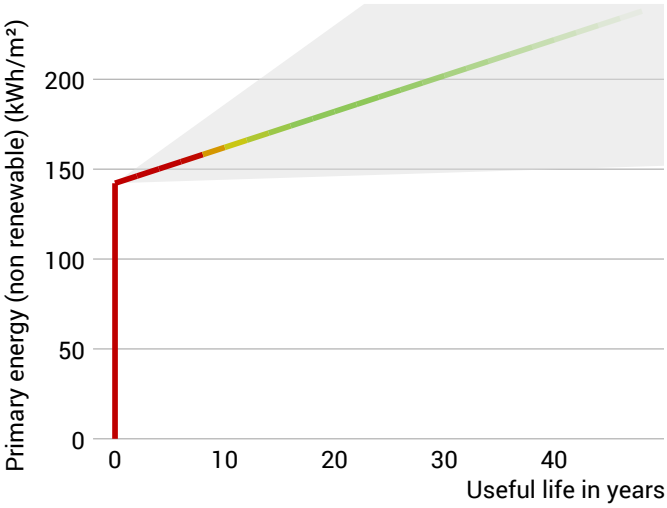


Attention: At least one layer could not be considered because its primary energy content and / or global warming potential is unknown.

Tagkonstruktion, 365 mm bjælkespær og installationsloft., U=0,09 W/(m²K)

Global warming potential and primary energy for construction and use





The **left figure** shows the global warming potential of the production of the component in the vertical part of the curve. Greenhouse gas emissions (through heating) arising during use of the building are indicated by the upward curve.

The **figure at the bottom left** shows the non-renewable primary energy expenditure for the production of the component in the vertical part of the curve. The primary energy required during use of the building (through heating) is represented by the upward curve.

The longer the component is used unchanged, the more environmentally friendly it is, because the production costs contribute less to the total emissions (indicated by the color of the curve).

Due to unknown solar and internal gains, the heating demand can only be estimated. Accordingly, primary energy consumption and global warming potential during the use phase are only vaguely known. For the estimation it was assumed that solar and internal profits contribute with 4 kWh/a/m² component area. The light gray area indicates the area in which the curve is located with great certainty. For heat generation, a primary energy input of 0,60 kWh per kWh of heat and a global warming potential of 0,16 kg CO2 eqv/m² per kWh of heat was used. Heat source: Heat pump (air-water).

Hints

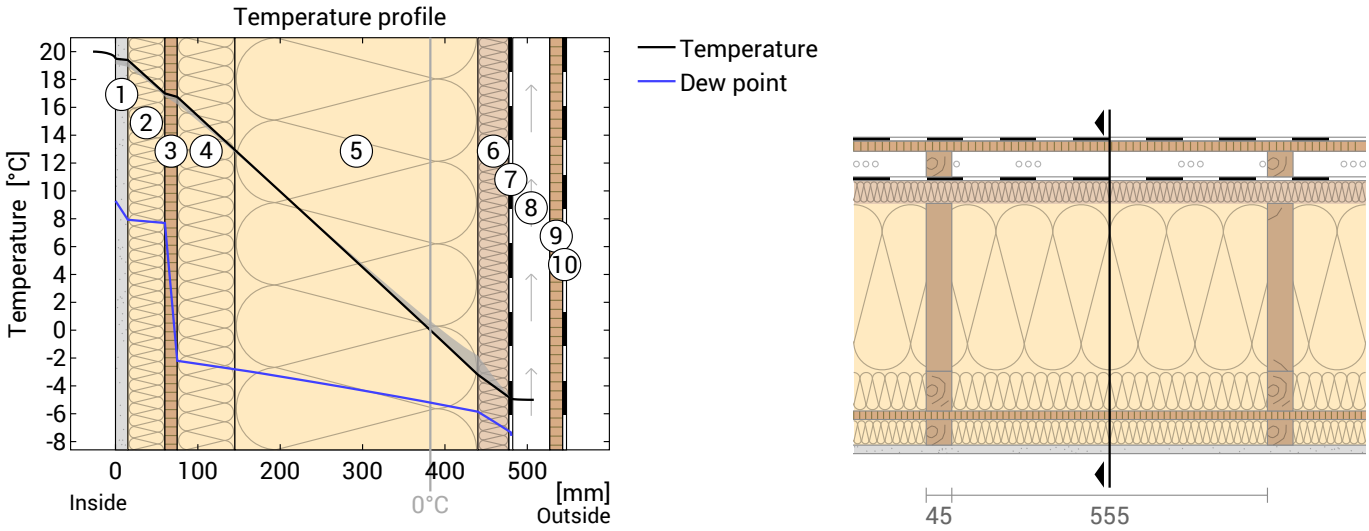
Attention: At least one layer could not be considered because its primary energy content and / or global warming potential is unknown.

Calculated for the location DIN V 18599, heating period from Mid of October to End of April. The calculation is based on monthly average temperatures. Source: DIN V 18599-10:2007-02

The climate and energy data on which this calculation is based can, in some cases, show considerable fluctuations and, in individual cases, deviate considerably from the actual value.

Tagkonstruktion, 365 mm bjælkespær og installationsloft., U=0,09 W/(m²K)

Temperature profile



① RigidurH (15 mm)
② Træfiberisolering, f.eks. Thermoce...
③ LivingBoard, P5 (15 mm)
④ Træfiber granulat, f.eks. Thermoce...
⑤ Træfiber granulat, f.eks. Thermoce...
⑥ Woodfiber Top el.lign. (40 mm)
⑦ STEICOmulti UDB
⑧ Rear ventilated level (45 mm)
⑨ Plywood 500kg/m³ (18 mm)
⑩ Rhepanol tagmembran

Left: Temperature and dew-point temperature at the place marked in the right figure. The dew-point indicates the temperature, at which water vapour condensates. As long as the temperature of the component is everywhere above the dew point, no condensation occurs. If the curves have contact, condensation occurs at the corresponding position.
Right: The component, drawn to scale.

Layers (from inside to outside)

#		Material	λ [W/mK]	R [m²K/W]	Temperatur [°C] min	max	Weight [kg/m²]
		Thermal contact resistance*		0,100	19,1	20,0	
1	1,5 cm	RigidurH	0,350	0,043	18,9	19,5	18,0
2	4,5 cm	Træfiberisolering, f.eks. Thermocell Feelingwood	0,038	1,184	16,8	19,4	1,7
	4,5 cm	Spruce (7,5%)	0,130	0,346	16,9	19,0	1,5
3	1,5 cm	LivingBoard, P5	0,120	0,125	16,2	17,0	10,2
4	7 cm	Træfiber granulat, f.eks. Thermocell	0,037	1,892	12,8	16,8	2,6
	7 cm	Spruce (7,5%)	0,130	0,538	12,8	16,3	2,4
5	29,5 cm	Træfiber granulat, f.eks. Thermocell	0,037	7,973	-3,2	12,9	10,9
	29,5 cm	Spruce (7,5%)	0,130	2,269	-1,9	12,8	10,0
6	4 cm	Woodfiber Top el.lign.	0,048	0,833	-4,9	-1,8	8,8
7	0,063 cm	STEICOmulti UDB	0,170	0,004	-4,9	-4,9	0,2
		Thermal contact resistance*		0,100	-5,0	-4,9	
8	4,5 cm	Rear ventilated level (outside air)			-5,0	-5,0	0,0
9	1,8 cm	Plywood 500kg/m³			-5,0	-5,0	9,0
10	0,15 cm	Rhepanol tagmembran			-5,0	-5,0	0,4
	54,513 cm	Whole component		10,626			77,1

*Thermal contact resistances according to DIN 6946 for the U-value calculation. Rsi=0,25 and Rse=0,04 according to DIN 4108-3 were used for moisture proofing and temperature profile.

Surface temperature inside (min / average / max):	19,1°C	19,4°C	19,5°C
Surface temperature outside (min / average / max):	-4,9°C	-4,9°C	-4,9°C

Tagkonstruktion, 365 mm bjælkespær og installationsloft., U=0,09 W/(m²K)

Moisture proofing

For the calculation of the amount of condensation water, the component was exposed to the following constant climate for 90 days: inside: 20°C und 50% Humidity; outside: -5°C und 80% Humidity. This climate complies with DIN 4108-3.

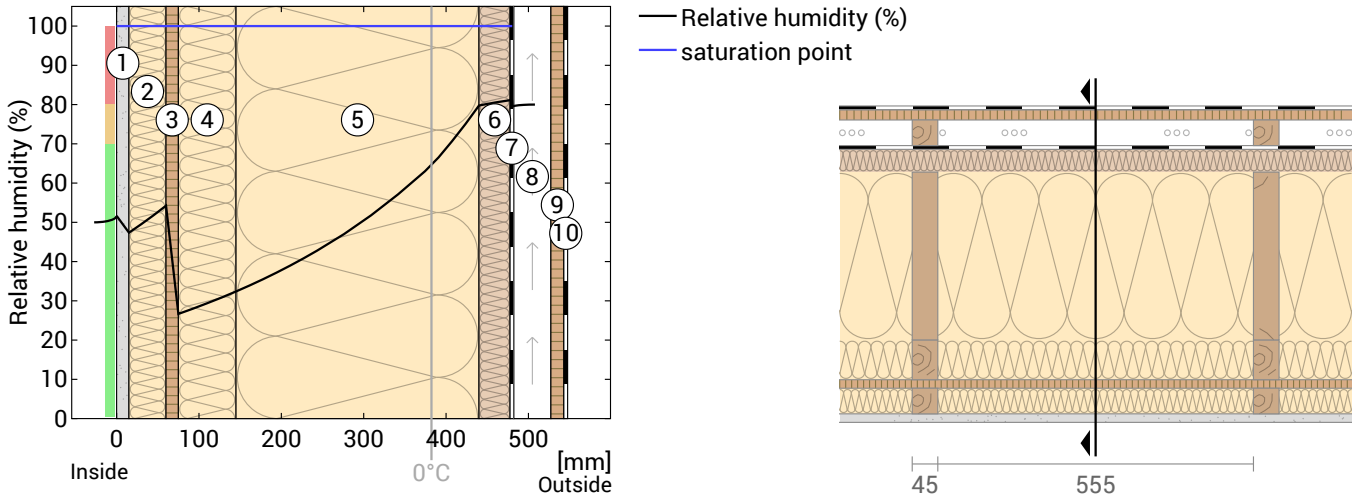
This component is free of condensate under the given climate conditions.

Drying reserve according to DIN 4108-3:2018: 6754 g/(m²a)
At least required by DIN 68800-2: 250 g/(m²a)

#		Material	sd-value [m]	Condensate [kg/m²]	[Gew.-%]	Weight [kg/m²]
1	1,5 cm	RigidurH	0,29	-		18,0
2	4,5 cm	Træfiberisolering, f.eks. Thermocell Feelingwood	0,05	-		1,7
	4,5 cm	Spruce (7,5%)	0,90	-	-	1,5
3	1,5 cm	LivingBoard, P5	1,50	-	-	10,2
4	7 cm	Træfiber granulat, f.eks. Thermocell	0,07	-		2,6
	7 cm	Spruce (7,5%)	1,40	-	-	2,4
5	29,5 cm	Træfiber granulat, f.eks. Thermocell	0,30	-		10,9
	29,5 cm	Spruce (7,5%)	14,75	-	-	10,0
6	4 cm	Woodfiber Top el.lign.	0,12	-		8,8
7	0,063 cm	STEICOmulti UDB	0,02	-		0,2
	54,513 cm	Whole component	2,47	0		77,1

Humidity

The temperature of the inside surface is 19,1 °C leading to a relative humidity on the surface of 53%.Mould formation is not expected under these conditions.
The following figure shows the relative humidity inside the component.



① RigidurH (15 mm)
② Træfiberisolering, f.eks. Thermoce...
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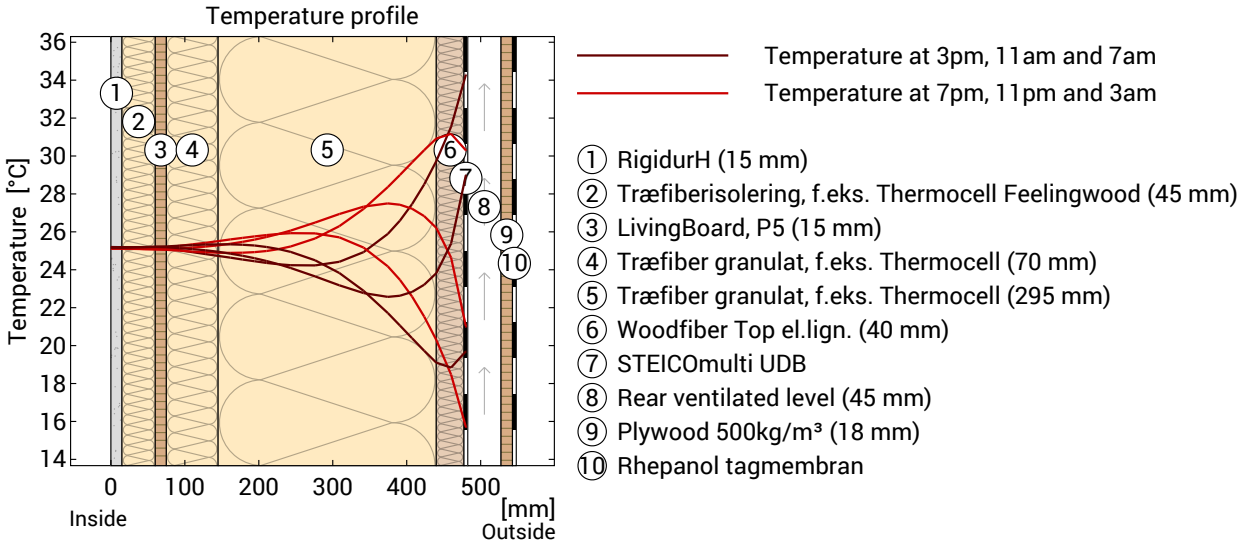
⑦ STEICOmulti UDB
⑧ Rear ventilated level (45 mm)
⑨ Plywood 500kg/m³ (18 mm)
⑩ Rhepanol tagmembran

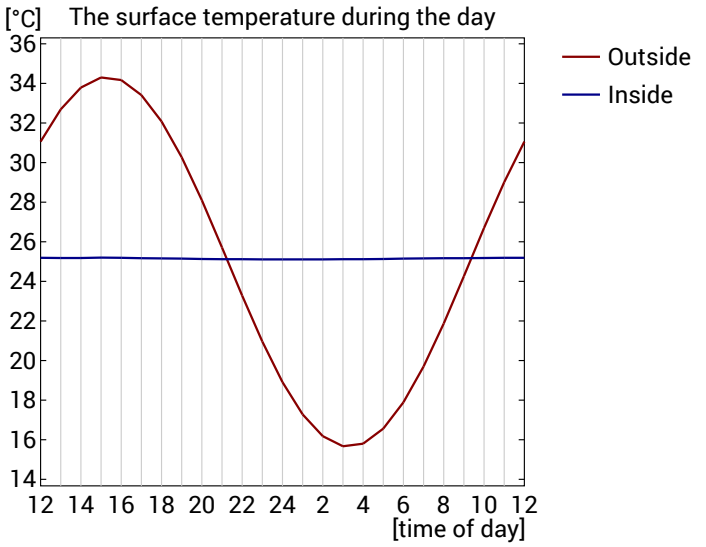
Notes: Calculation using the Ubakus 2D-FE method. Convection and the capillarity of the building materials were not considered. The drying time may take longer under unfavorable conditions (shading, damp / cool summers) than calculated here.

Tagkonstruktion, 365 mm bjælkespær og installationsloft., U=0,09 W/(m²K)

Heat protection

The following results are properties of the tested component alone and do not make any statement about the heat protection of the entire room:





Top: Temperature profile within the component at different times. From top to bottom, brown lines: at 3 pm, 11 am and 7 am and red lines at 7 pm , 11 pm and 3 am.
Bottom: Temperature on the outer (red) and inner (blue) surface in the course of a day. The arrows indicate the location of the temperature maximum values . The maximum of the inner surface temperature should preferably occur during the second half of the night.

Phase shift*	non relevant	Heat storage capacity (whole component):	108 kJ/m²K
Amplitude attenuation **	>100	Thermal capacity of inner layers:	64 kJ/m²K
TAV ***	0,005		

* The phase shift is the time in hours after which the temperature peak of the afternoon reaches the component interior.
** The amplitude attenuation describes the attenuation of the temperature wave when passing through the component. A value of 10 means that the temperature on the outside varies 10x stronger than on the inside, e.g. outside 15-35 °C, inside 24-26 °C.
*** The temperature amplitude ratio TAV is the reciprocal of the attenuation: TAV = 1 / amplitude attenuation

Note: The heat protection of a room is influenced by several factors, but essentially by the direct solar radiation through windows and the total amount of heat storage capacity (including floor, interior walls and furniture). A single component usually has only a very small influence on the heat protection of the room.

The calculations presented above have been created for a 1-dimensional cross-section of the component.