existing-floor

Floor
created on 13.10.2023

Thermal protection

U = 0,17 W/(m²K)

GEG 2020 Bestand*: U<0,3 W/(m²K)

excellent insufficient

Moisture proofing

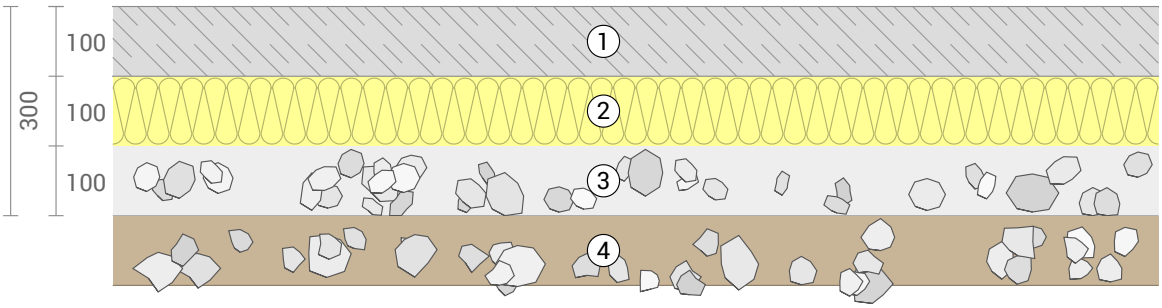
No condensate

excellent insufficient

Heat protection

Component is adjacent to earth:
TAV and phase non relevant
Thermal capacity inside: 197 kJ/m²K

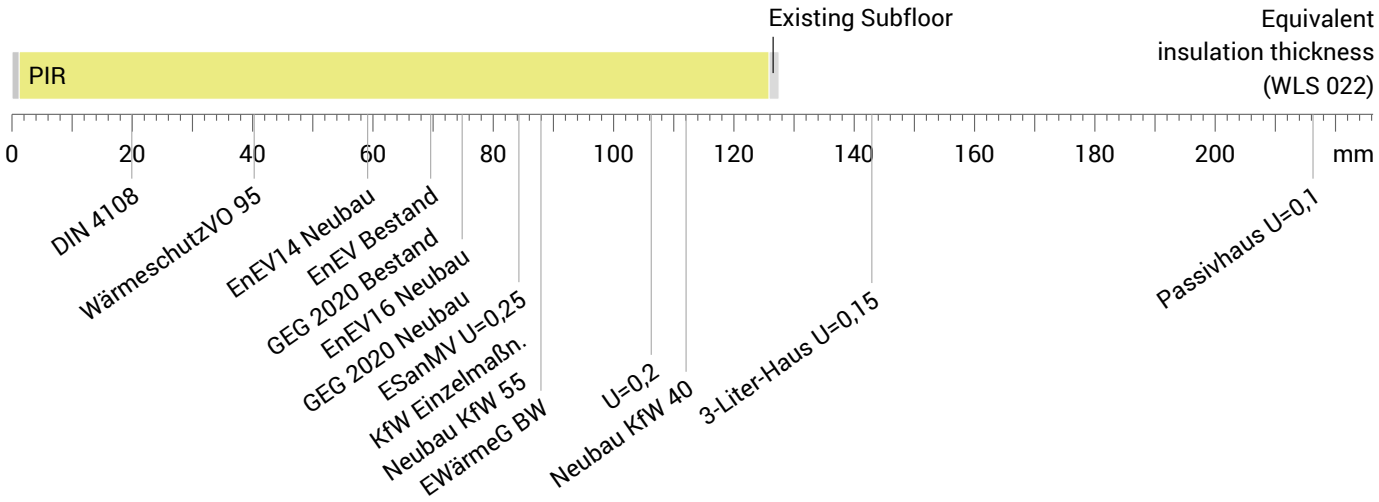
excellent insufficient



1 Reinforced concrete (100 mm)
2 PIR (100 mm)
3 Existing Subfloor (100 mm)
4 Soil

Impact of each layer and comparison to reference values

For the following figure, the thermal resistances of the individual layers were converted in millimeters insulation. The scale refers to an insulation of thermal conductivity 0,022 W/mK.

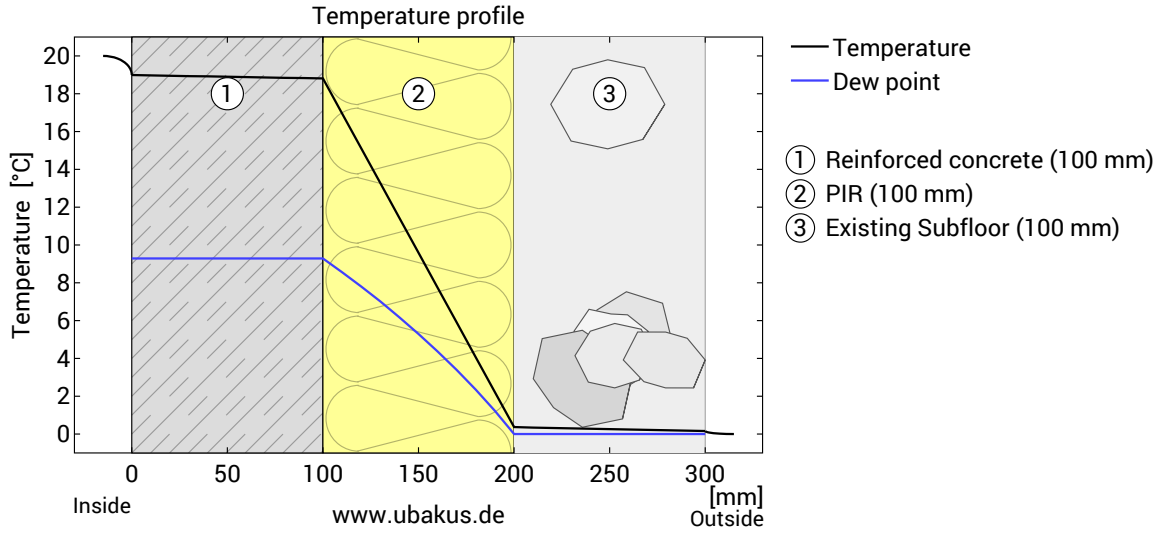


Inside air :	20,0°C / 50%			Thickness:	30,0 cm
Ground:	0,0°C / 100%	sd-value:	100013,0 m	Weight:	453 kg/m²
Surface temperature.:	19,0°C / 0,2°C			Heat capacity:	427 kJ/m²K

*Vergleich mit dem Höchstwert gemäß GEG 2020 für erstmaligen Einbau, Ersatz oder Erneuerung von Decken nach unten gegen Erdreich oder unbeheizte Räume (Anlage 7, Zeile 5a,5b).

existing-floor, U=0,17 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	19,0	20,0	
1	10 cm	Reinforced concrete (1%)	2,300	0,043	18,8	19,0	230,0
2	10 cm	PIR	0,022	4,545	0,4	18,8	3,0
3	10 cm	Existing Subfloor	2,000	0,050	0,2	0,4	220,0
		Thermal contact resistance*		0,000	0,0	0,2	
4		Soil			0,0	0,0	51,0
	30 cm	Whole component		4,810			453,0

*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):	19,0°C	19,0°C	19,0°C
Surface temperature outside (min / average / max):	0,2°C	0,2°C	0,2°C

existing-floor, U=0,17 W/(m²K)

Moisture proofing

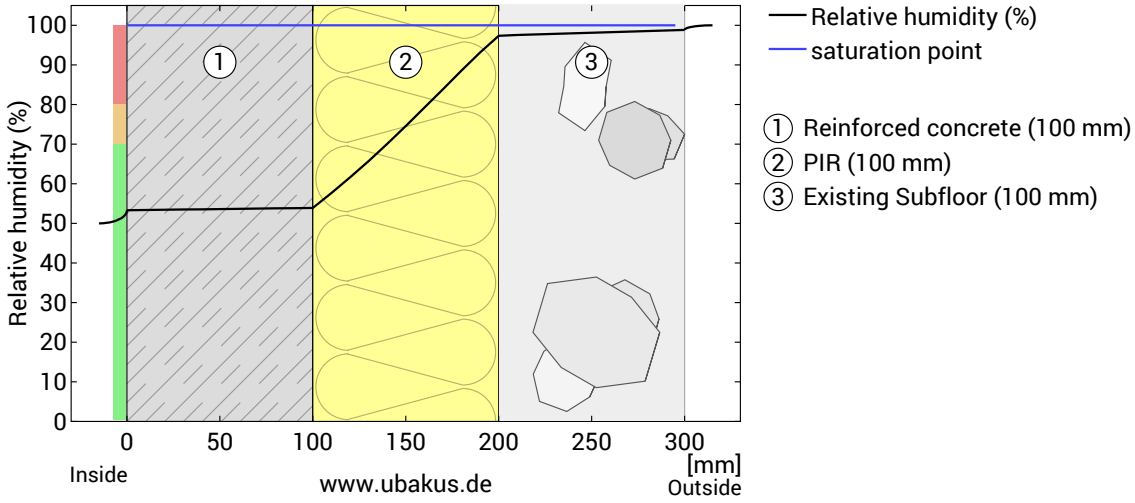
For the calculation of the amount of condensation water, the component was exposed to the following constant climate for 90 days: inside: 20°C und 50% Humidity; outside: 0°C und 100% Humidity (Climate according to user input).

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

#		Material	sd-value [m]	Condensate [kg/m²]	[Gew.-%]	Weight [kg/m²]
1	10 cm	Reinforced concrete (1%)	8,00	-		230,0
2	10 cm	PIR	100000	-		3,0
3	10 cm	Existing Subfloor	5,00	-		220,0
	30 cm	Whole component	100.013,00	0		453,0

Humidity

The temperature of the inside surface is 19,0 °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.



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.