

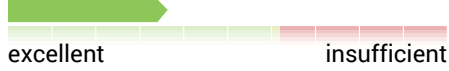
# new-floor

Floor  
created on 13.10.2023

## Thermal protection

$U = 0,17 \text{ W}/(\text{m}^2\text{K})$

GEG 2020 Bestand\*:  $U < 0,3 \text{ W}/(\text{m}^2\text{K})$



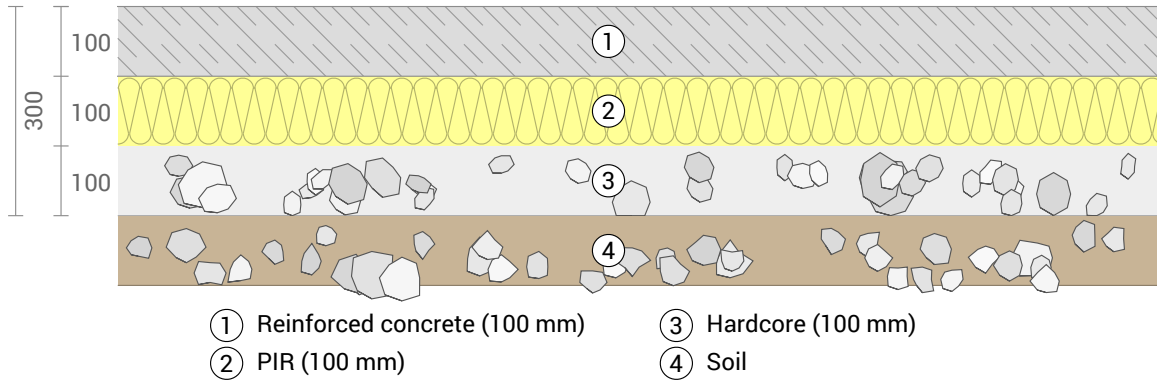
## Moisture proofing

No condensate



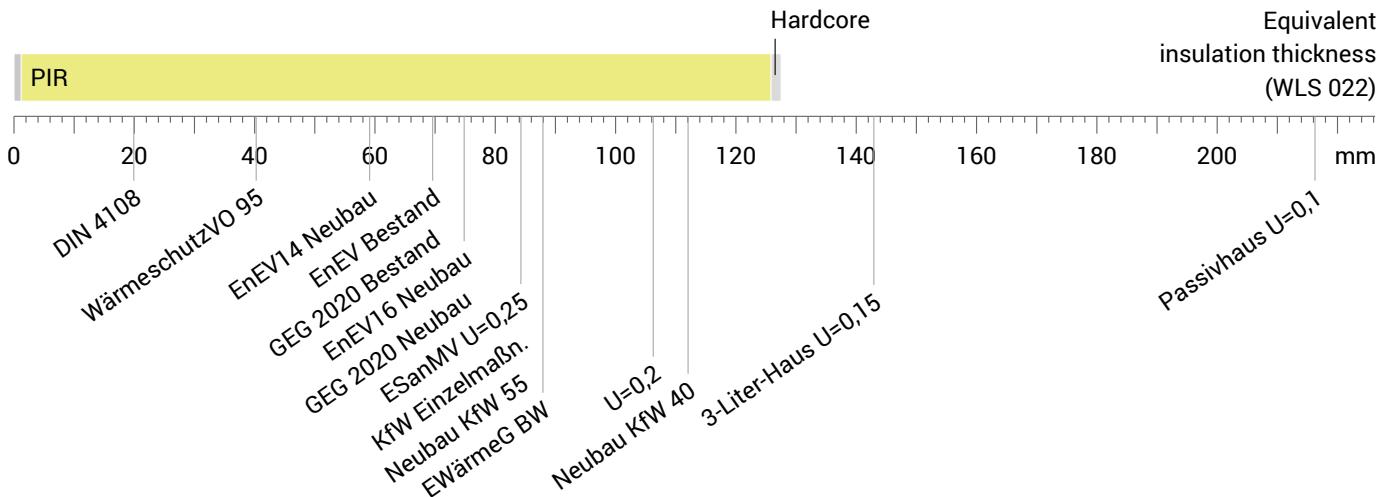
## Heat protection

Component is adjacent to earth:  
TAV and phase non relevant  
Thermal capacity inside:  $197 \text{ kJ}/\text{m}^2\text{K}$



## 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  $0,022 \text{ W}/\text{mK}$ .



Inside air :                       $20,0^\circ\text{C} / 50\%$   
Ground:                          $0,0^\circ\text{C} / 100\%$   
Surface temperature.:  $19,0^\circ\text{C} / 0,2^\circ\text{C}$

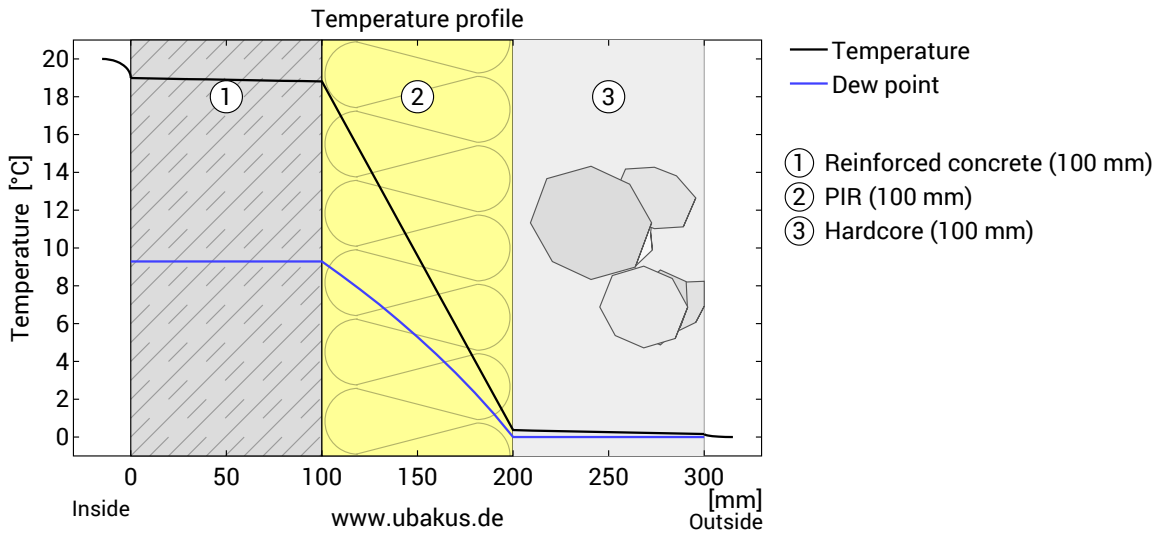
sd-value:  $100013,0 \text{ m}$

Thickness:                       $30,0 \text{ cm}$   
Weight:                            $453 \text{ kg}/\text{m}^2$   
Heat capacity:                    $427 \text{ kJ}/\text{m}^2\text{K}$

\*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).

new-floor, U=0,17 W/(m<sup>2</sup>K)

## 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	$\lambda$ [W/mK]	R [m <sup>2</sup> K/W]	Temperatur [°C]		Weight [kg/m <sup>2</sup> ]
				min	max	
	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 Hardcore	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. R<sub>si</sub>=0,25 and R<sub>se</sub>=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

new-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).

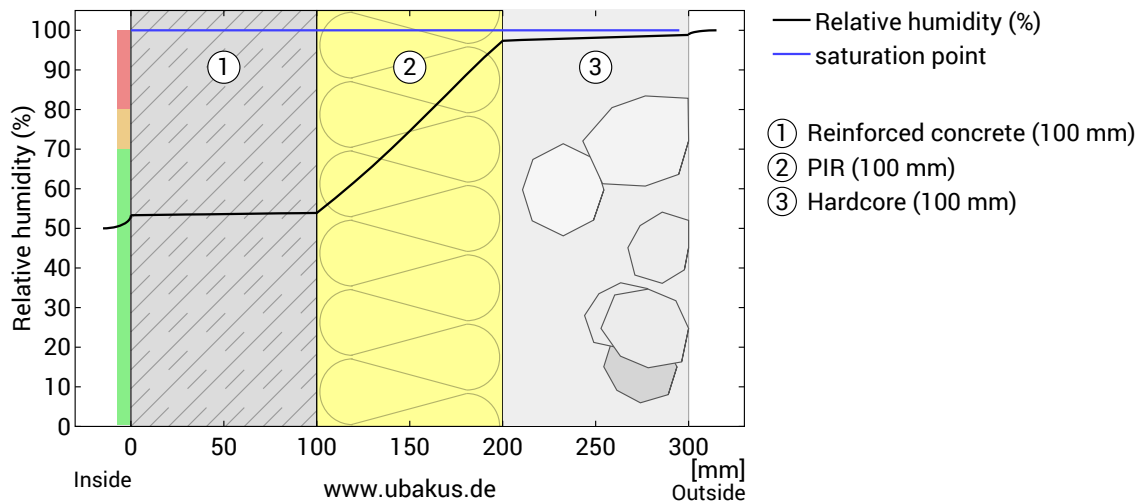
This component is free of condensate under the given climate conditions.

#	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 Hardcore	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.