Cyprus standard timber wall OSB in/out plastered

Exterior wall
created on 2.2.2022

Thermal protection

U = 0,304 W/(m²K)

GEG 2020 Bestand*: U<0,24 W/(m²K)

excellent — insufficient

Moisture proofing

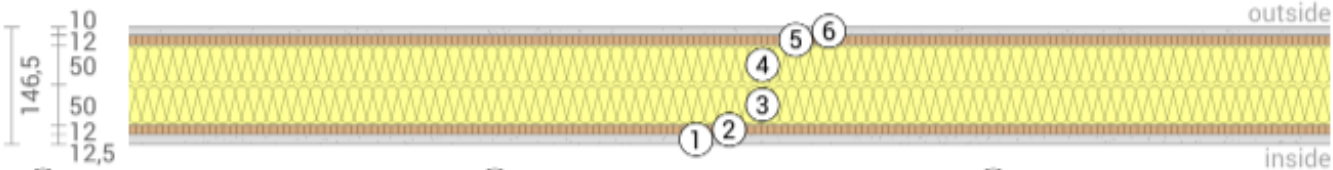
No condensate

excellent — insufficient

Heat protection

Temperature amplitude damping: 5,1
phase shift: 6,0 h
Thermal capacity inside: 22 kJ/m²K

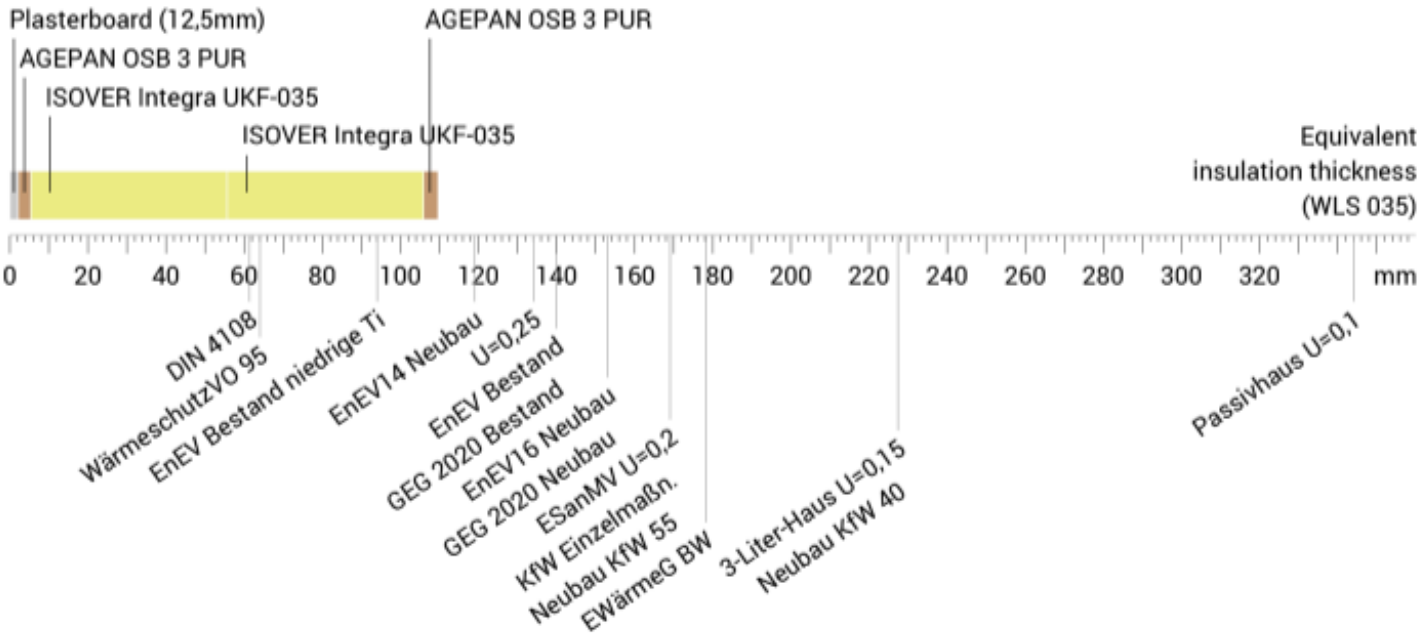
excellent — insufficient



1. Plasterboard (12,5 mm)
2. AGEPAN OSB 3 PUR (12 mm)
3. ISOVER Integra UKF-035 (50 mm)
4. ISOVER Integra UKF-035 (50 mm)
5. AGEPAN OSB 3 PUR (12 mm)
6. External plaster (10 mm)

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 0,035 W/mK.



Inside air :	20,0°C / 50%			Thickness:	14,6 cm
Outside air:	7,0°C / 80%		sd-value: 4,5 m	Weight:	0 kg/m²
Surface temperature.:	19,5°C / 7,2°C			Heat capacity:	50 kJ/m²K

*Vergleich mit dem Höchstwert gemäß GEG 2020 für erstmaligen Einbau, Ersatz oder Erneuerung von Außenwänden (Anlage 7, Zeile 1a,1b).

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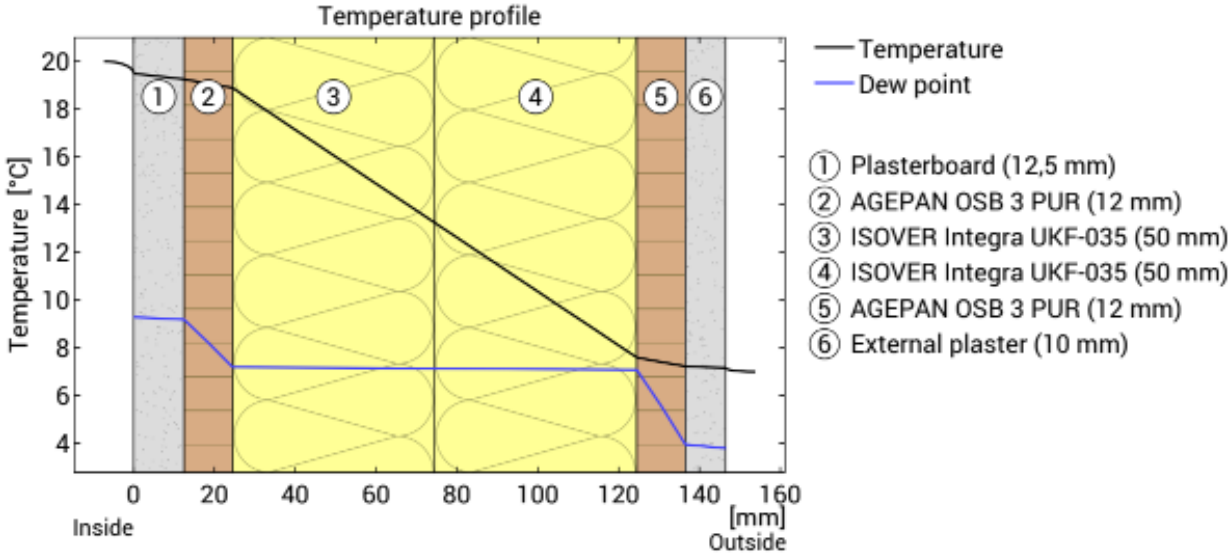
Temperature profile



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	Temperatur [°C] max	Weight [kg/m²]
		Thermal contact resistance*		0,130	19,5	20,0	
1	1,25 cm	Plasterboard (12,5mm)	0,210	0,060	19,3	19,5	9,9
2	1,2 cm	AGEPAN OSB 3 PUR	0,130	0,092	18,9	19,3	7,2
3	5 cm	ISOVER Integra UKF-035	0,035	1,429	13,2	18,9	no information
4	5 cm	ISOVER Integra UKF-035	0,035	1,429	7,6	13,2	no information
5	1,2 cm	AGEPAN OSB 3 PUR	0,130	0,092	7,2	7,6	7,2
6	1 cm	External plaster	0,540	0,019	7,2	7,2	14,0
		Thermal contact resistance*		0,040	7,0	7,2	
	14,65 cm	Whole component		3,290			>38

*Assuming free circulating air at the inside surface.

Surface temperature inside (min / average / max):	19,5°C	19,5°C	19,5°C
Surface temperature outside (min / average / max):	7,2°C	7,2°C	7,2°C

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Moisture proofing

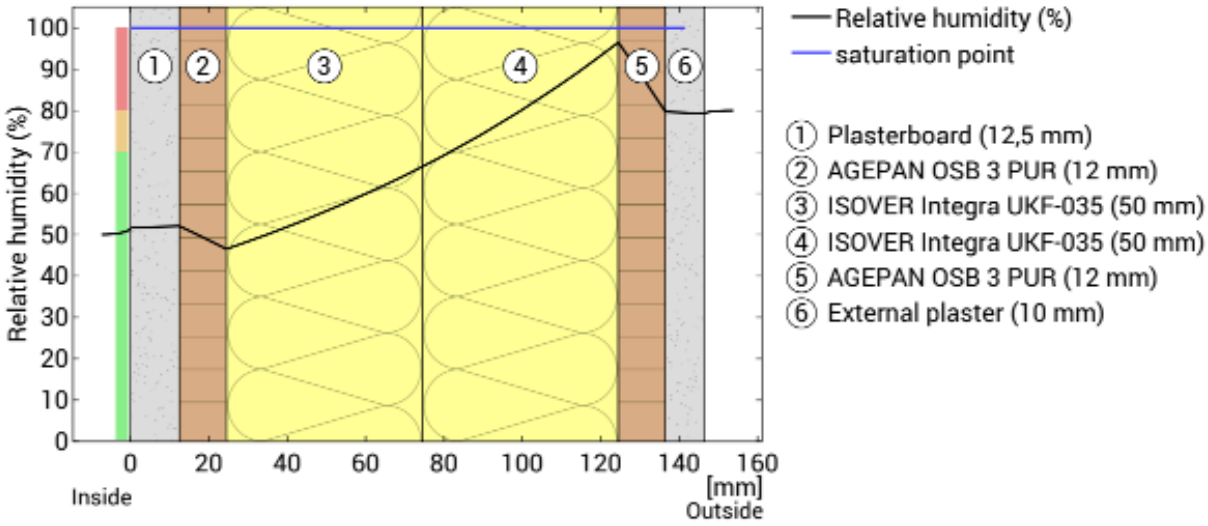
For the calculation of the amount of condensation water, the component was exposed to the following constant climate for 90 days: inside: 20°C und 50% Humidity; outside: 7°C und 80% Humidity (Climate according to user input).

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

#		Material	sd-value [m]	Condensate [kg/m²]	[Gew.-%]	Weight [kg/m²]
1	1,25 cm	Plasterboard (12,5mm)	0,10	-		9,9
2	1,2 cm	AGEPAN OSB 3 PUR	1,80	-	-	7,2
3	5 cm	ISOVER Integra UKF-035	0,05	-		no information
4	5 cm	ISOVER Integra UKF-035	0,05	-		no information
5	1,2 cm	AGEPAN OSB 3 PUR	2,40	-	-	7,2
6	1 cm	External plaster	0,11	-		14,0
	14,65 cm	Whole component	4,51			>38

Humidity

The temperature of the inside surface is 19,5 °C leading to a relative humidity on the surface of 52%.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.

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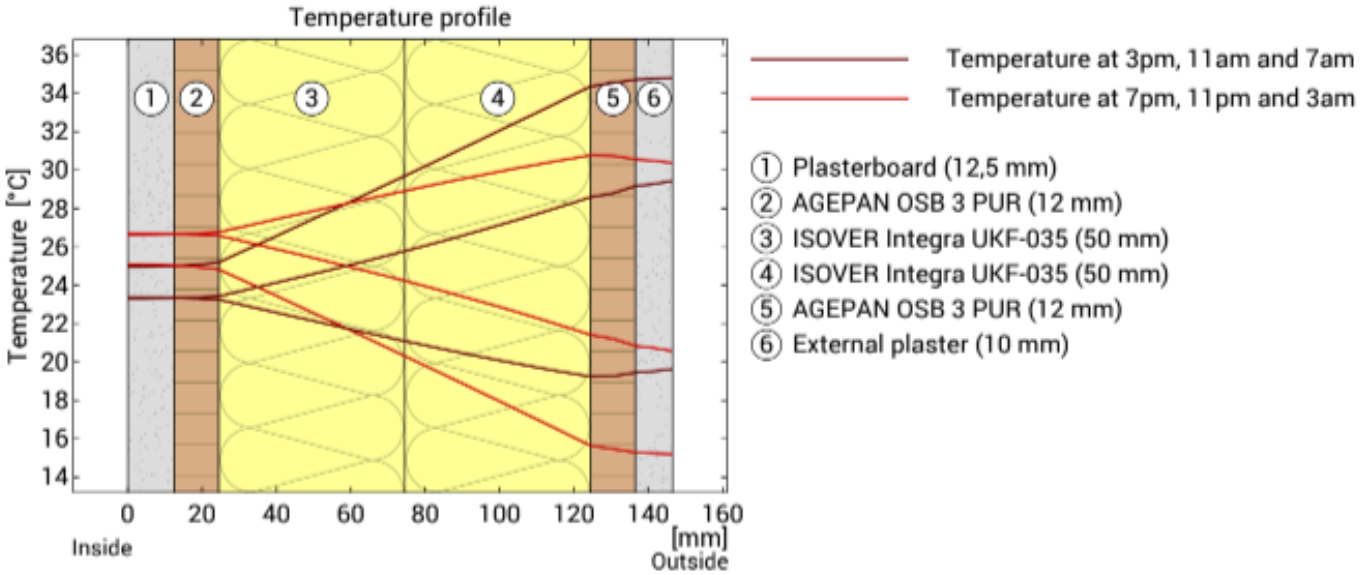
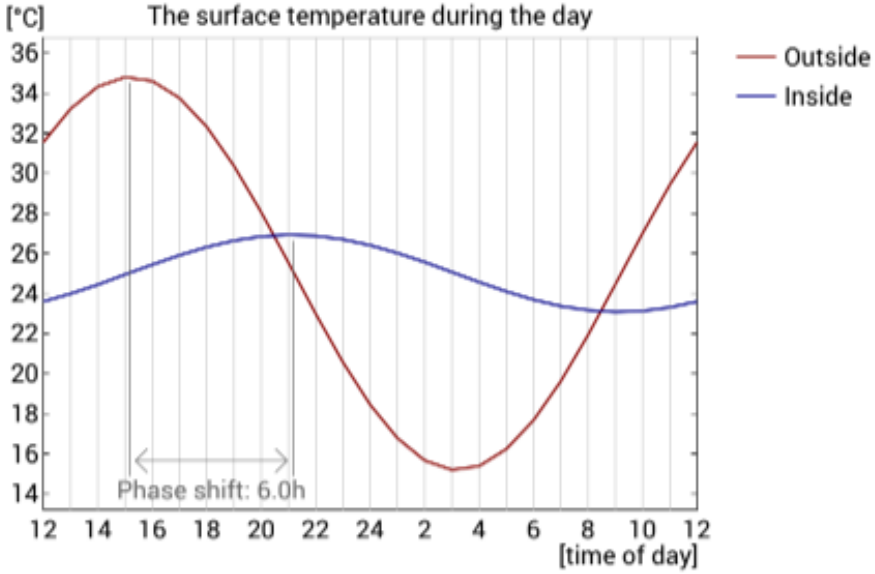
Heat protection

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*	6,0 h	Heat storage capacity (whole component):	50 kJ/m²K
Amplitude attenuation **	5,1	Thermal capacity of inner layers:	22 kJ/m²K
TAV ***	0,196		

* 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.