Technical Data Sheet
Passive Roof

The Passive Roof system is an engineered solution providing superior thermal protection.

It features significant external, over-rafter insulation to create a continuous thermal layer, minimizing thermal bridging. The insulation thickness is specified according to regional climatic demands.
The primary technical advantage is an optimized thermal envelope that reduces heat gain in summer and heat loss in winter, leading to significant energy savings.
This system is engineered for robust performance in climates with harsh winters or very hot summers, ensuring year-round comfort and efficiency.

Roof Assembly Composition

SENMAR

PASSIVE PRESET / Thickness: 461mm

1. Battens	25x95 mm
2. Counter Battens	45x45 mm
3. Wind-Moisture / Diffusion Membrane	0.2 mm
4. Primary Insulation / Soft Mineral Wool	400 mm
5. Rafters	45x390 mm
6. Vapor Barrier / Diffusion Membrane	0.2 mm
7. Closing Boards And Tie Boards	45x195mm
8. Purlins	195x195mm

CONSTRUCTION SYSTEM / Roof Presets

Thermal Performance Metrics
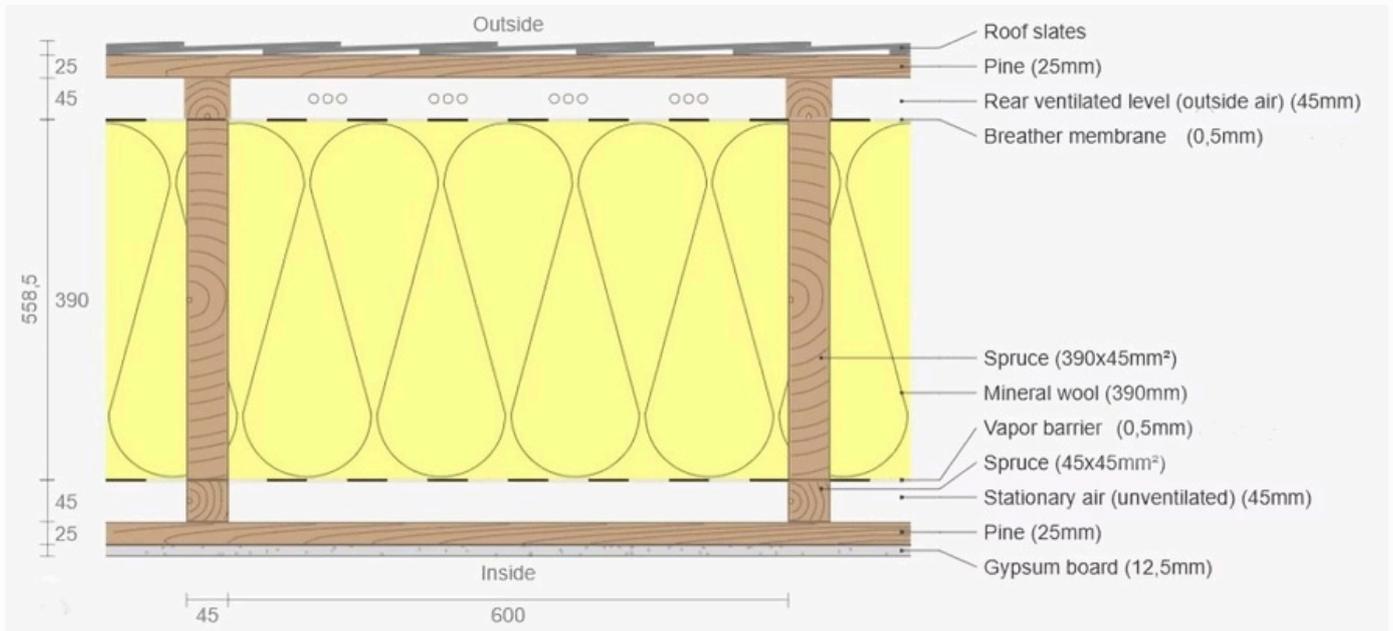
U-Value: Thermal Transmittance

U-value measures how well a building component (like a wall, roof, or window) prevents heat from passing through it. It indicates the rate of heat transfer through a material or assembly for a given temperature difference. A lower U-value signifies better insulation, meaning less heat loss or gain.

U-Value: 0,102 W/(m²K)

Contribution to the greenhouse effect:

insufficient   excellent

Condensate: 100 kg/m²

Moisture content of wood: + 100,0%

Drying time: -

insufficient   excellent

Thickness: 55,85 cm
Weight: 84 kg/m²

Interior surface 19,3ºC (52%)

Drying reserve: 9067 g/m²a

insufficient   excellent

Temp. amplitude damping (1/TAV): 27,2

Phase shift: 9.2h

Heat storage capacity: 43 kJ/m²K

insufficient   excellent

R-Value: Thermal Resistance

R-value measures how well a material resists heat flow. A higher R-value indicates better insulation, meaning the material is more effective at preventing heat from passing through it. This is crucial for building insulation, where it helps to keep homes warmer in the winter and cooler in the summer, reducing energy consumption and costs.

R-Value: 9,522 m²KW

Contribution to the greenhouse effect:

insufficient   excellent

Condensate: 100 kg/m²

Moisture content of wood: + 100,0%

Drying time: -

insufficient   excellent

Thickness: 55,85 cm
Weight: 84 kg/m²

Interior surface 19,3ºC (52%)

Drying reserve: 9067 g/m²a

insufficient   excellent

Temp. amplitude damping (1/TAV): 27,2

Phase shift: 9.2h

Heat storage capacity: 43 kJ/m²K

insufficient   excellent

Hygrothermal Analysis
Relative Humidity & Moisture Control

- ① Gypsum board (12,5 mm)
- ② Pine (25 mm)
- ③ Stationary air (45 mm)
- ④ Vapor barrier
- ⑤ Mineral wool (390 mm)
- ⑥ Breather membrane
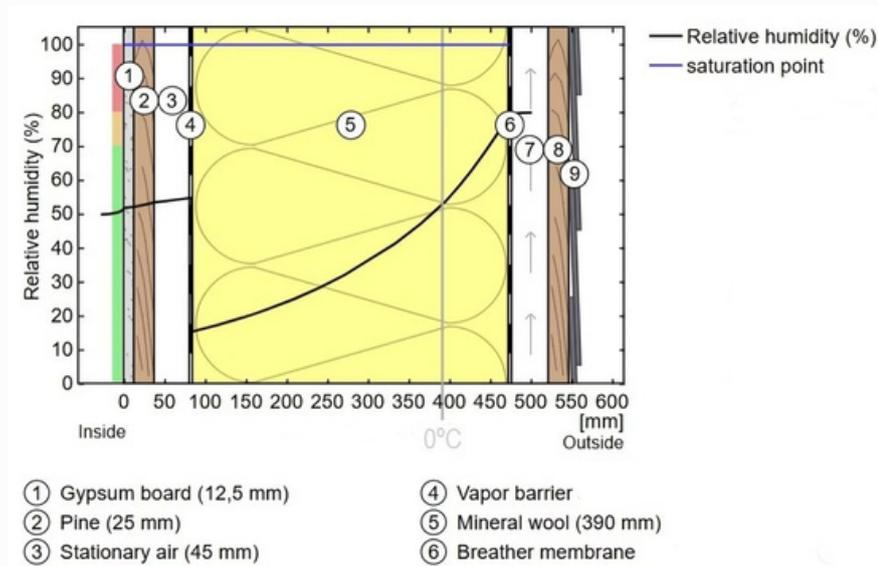
Drying reserve Drying reserve according

to DIN 4108-
3:2018: **9067 g/(m²a)**
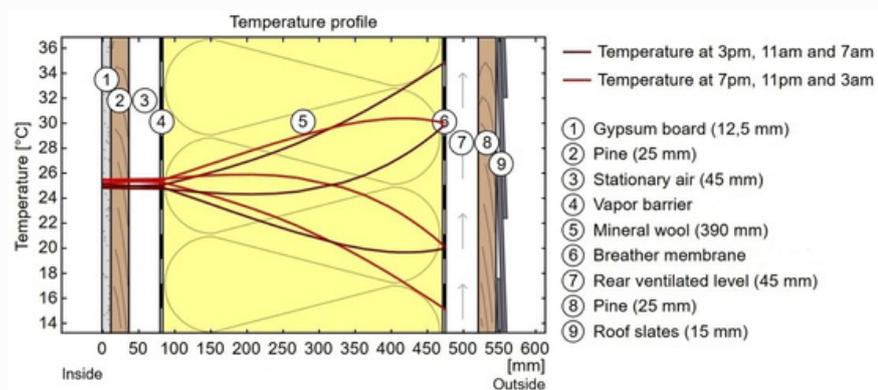At least required by DIN 68800-2: **100 g/(m²a)**
Mould protection The temperature of

the inside surface is
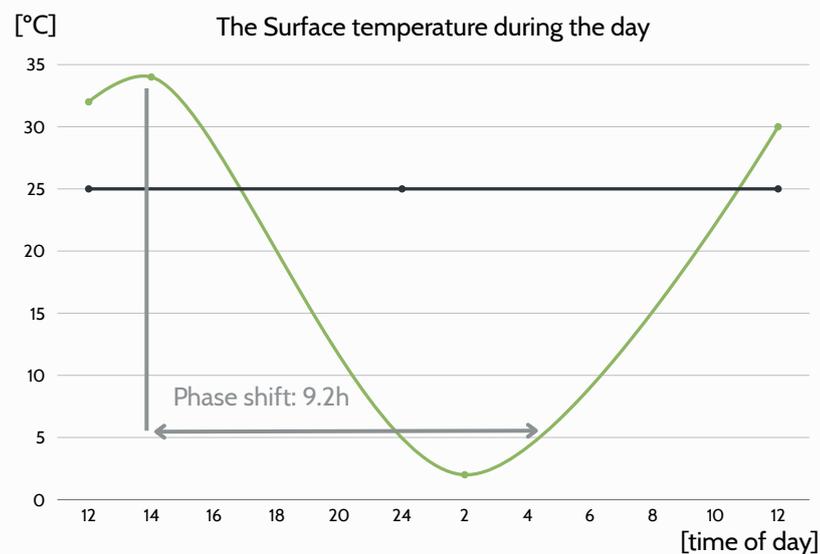19,3 °C leading to a relative humidity on the surface of 52 %.
Mould formation **is not expected** under these conditions.

Temperature & Condensation Risk

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

Surface Temperature Analysis

— Outside
— Inside

- phase shift: **9,2 h**
- Heat storage capacity (whole component): **57 kJ/m²K**
- Amplitude attenuation: **27,2**
- Thermal capacity of inner layers: **43 kJ/m²K**
- TAD: **0,037**