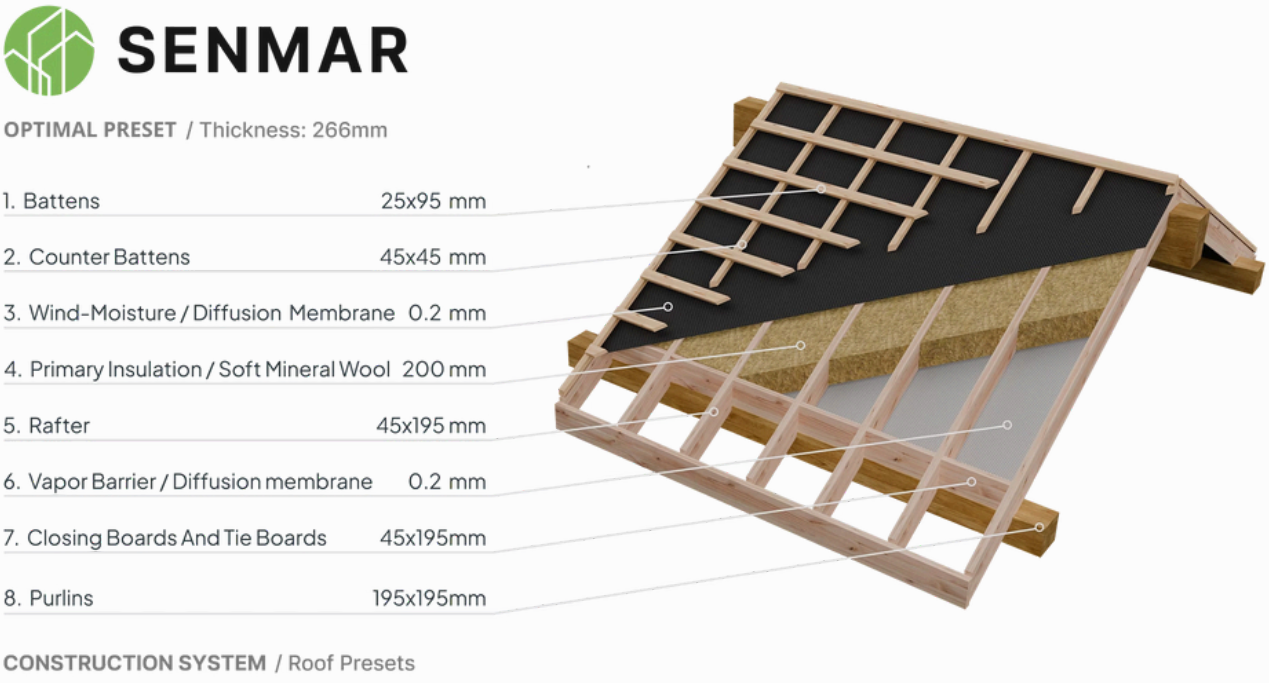
# Technical Data Sheet
# **Optimal Roof**

The Optimal Roofsystem is engineered forefficiency in moderate climates.

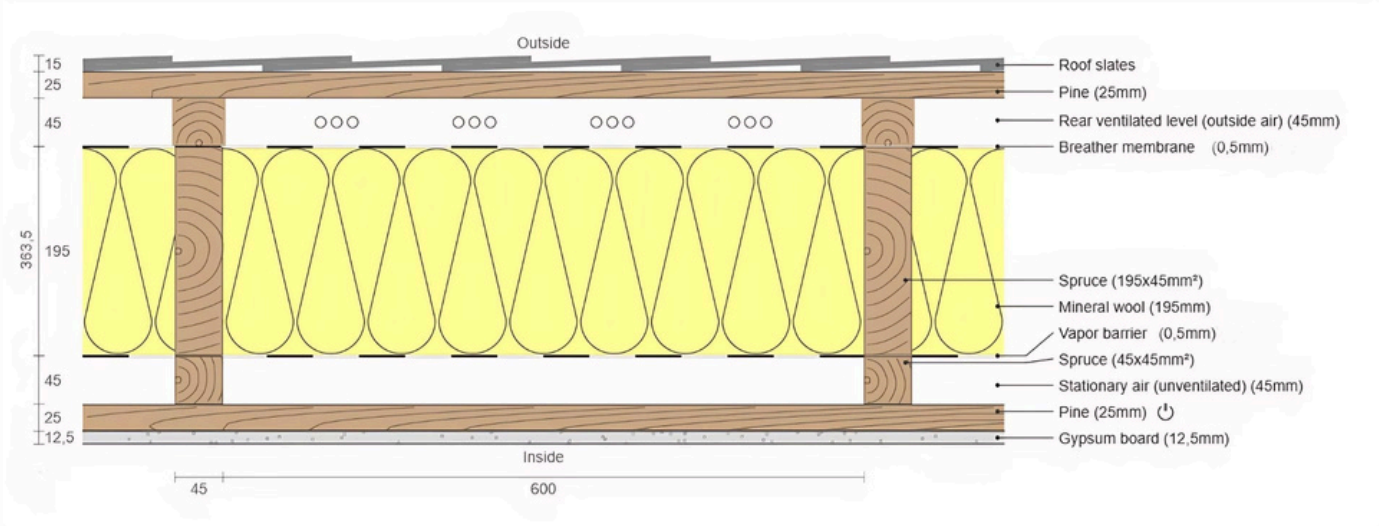
The assembly is basedon a timberrafter structure filled with **200 millimetersof primary insulation** and protected by an internal vapor barriermembrane and a wind moisturediffusion membrane.
This configuration is designed to create a comfortable and stable indoor microclimate. The vapor barrier is essential for managing moisture, protecting the roof structure from condensation and ensuring the building's long-term durability.

It offers a reliable and cost-effective solution for regions with mild winter conditions, complementing the Optimal Wall system.

## Roof Assembly Composition



# 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: 0,189 W/(m²K)

Contribution to the greenhouse effect:

insufficient excellent

Condensate: 100 kg/m²

Moisture content of wood: + 100,0%

Drying time: -

insufficient excellent

Thickness: 36,35 cm
Weight: 74 kg/m²

Interior surface 18,7°C (54%)

Drying reserve: 9112 g/m²a

insufficient excellent

Temp. amplitude damping (1/TAV): 12,1

Phase shift: 6,8h

Heat storage capacity: 35 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: 5,018 m²KW

Contribution to the greenhouse effect:

insufficient excellent

Condensate: 100 kg/m²

Moisture content of wood: + 100,0%

Drying time: -

insufficient excellent

Thickness: 36,35 cm
Weight: 74 kg/m²

Interior surface 18,7°C (54%)

Drying reserve: 9112 g/m²a

insufficient excellent

Temp. amplitude damping (1/TAV): 12,1

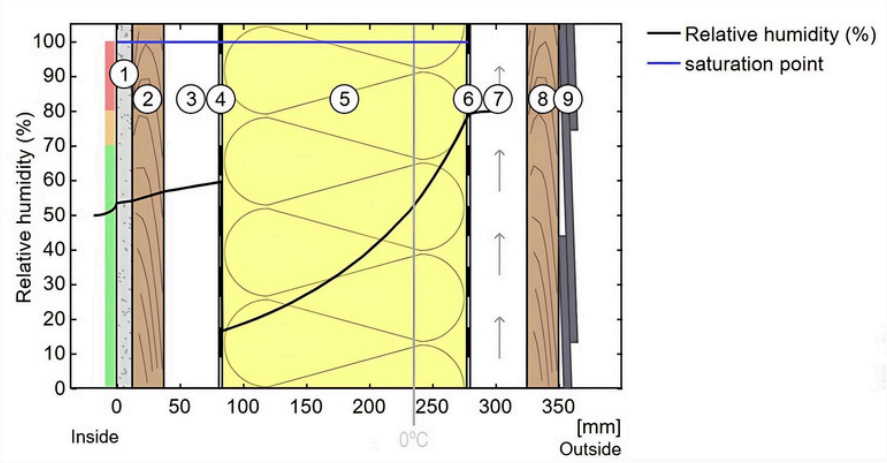
Phase shift: 6,8h

Heat storage capacity: 35 kJ/m²K

insufficient excellent

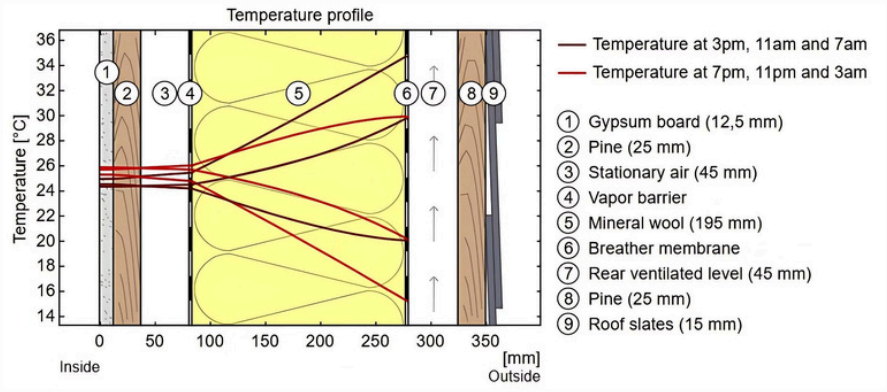
# Hygrothermal Analysis

## Relative Humidity & Moisture Control



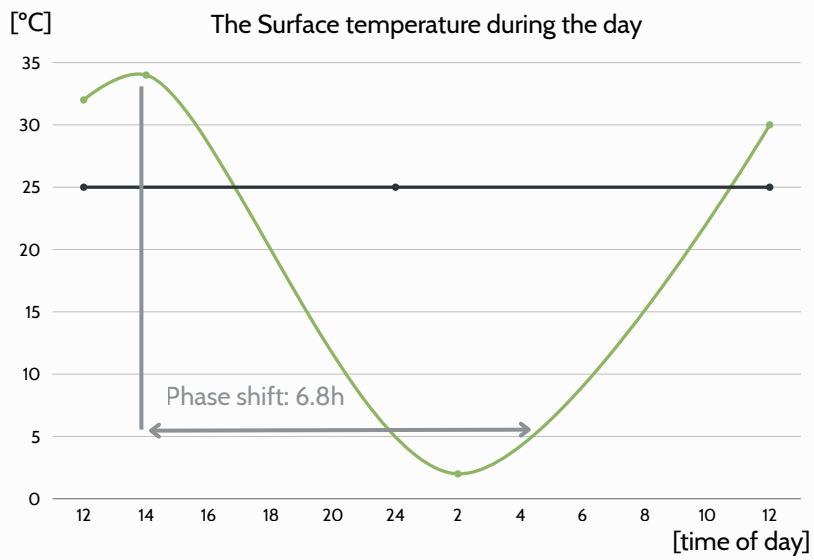

**Drying reserve** Drying reserve according to DIN 4108-3:2018: **9112 g/(m²a)**
At least required by DIN 68800-2: **100 g/(m²a)**
**Mould protection** The temperature of the inside surface is 18,7 °C leading to a relative humidity on the surface of 54 %.
Mould formation **is not expected** under these 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: **6,8 h**
- Heat storage capacity (whole component): **45 kJ/m²K**
- Amplitude attenuation: **12,1**
- Thermal capacity of inner layers: **35 kJ/m²K**
- TAD: **0,082**