Technical Data Sheet
Passive Wall

An advanced building envelope solution for superior thermal performance.

The Passive Wall system is an engineered building envelope solution designed to provide superior thermal insulation and building frame protection. The core of this system is a multi-layered assembly featuring significant external insulation, with thickness specified according to regional climatic demands.

The primary technical advantage is the optimization of the building's thermal envelope, which minimizes thermal bridging and significantly enhances energy efficiency. This results in reduced heat gain during summer months and minimized heat loss during winter, leading to measurable reductions in energy consumption and operational costs over the building's lifecycle.
The system is engineered for robust performance in climates experiencing extreme temperature variations, from harsh winters to hot, arid conditions.
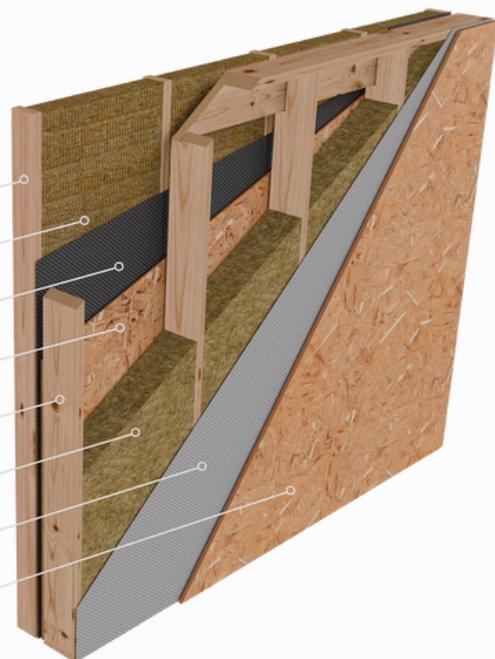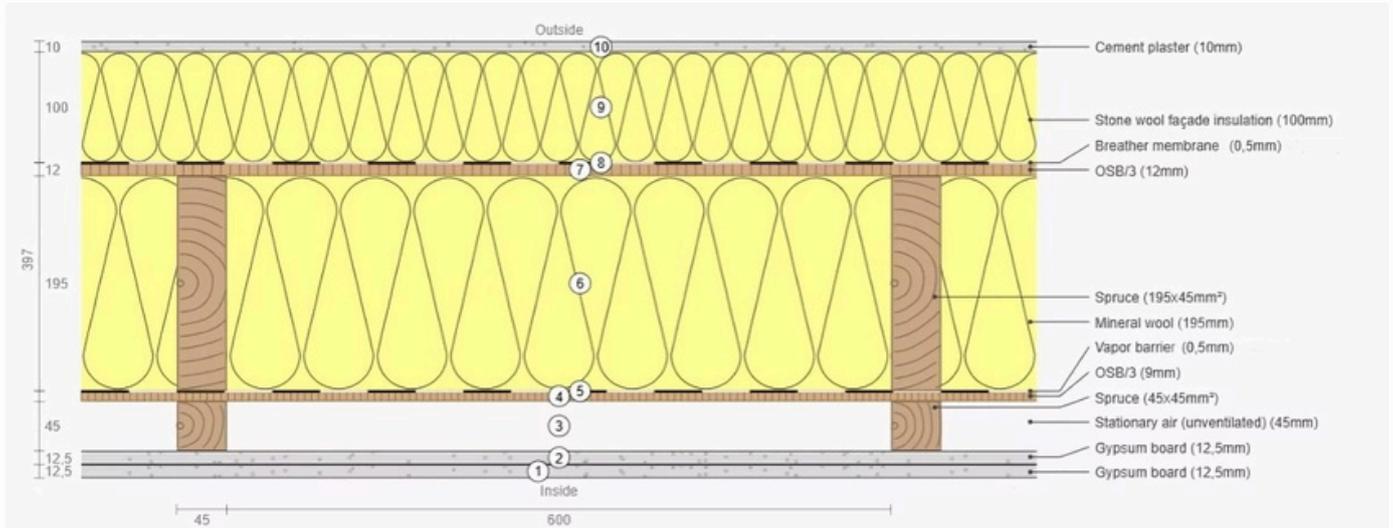
Wall Assembly Composition

SENMAR

PASSIVE PRESET / Thickness: 337mm

1. Vertical Timber Battens	120 mm
2. External Insulation / Hard Mineral Wool	100 mm
3. Wind-Moisture / Diffusion Membrane	0.2 mm
4. External OSB Plate	12 mm
5. Timber Frame Structure	195 mm
6. Primary Insulation / Soft Mineral Wool	200 mm
7. Vapor Barrier / Diffusion Membrane	0.2 mm
8. Internal OSB Plate	9 mm

CONSTRUCTION SYSTEM / Walls Presets

Thermal Performance Metrics

Diagram labels (outside to inside):
- Cement plaster (10mm)
- Stone wool façade insulation (100mm)
- Breather membrane (0,5mm)
- OSB/3 (12mm)
- Spruce (195x45mm²)
- Mineral wool (195mm)
- Vapor barrier (0,5mm)
- OSB/3 (9mm)
- Spruce (45x45mm²)
- Stationary air (unventilated) (45mm)
- Gypsum board (12,5mm)
- Gypsum board (12,5mm)

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: **0,125** W/(m²K)

Contribution to the greenhouse effect:

insufficient	excellent

Condensate: 100 kg/m²

Moisture content of wood: + 100,0 %

Drying time: -

insufficient	excellent

Thickness: 39,7 cm
Weight: 72 kg/m²

Interior surface 19,1°C (53%)

Drying reserve: 356 g/m²a

insufficient	excellent

Temp. amplitude damping (1/TAV): 40,0

Phase shift: 12h

Heat storage capacity: 42 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: **7,829** m²KW

Contribution to the greenhouse effect:

insufficient	excellent

Condensate: 100 kg/m²

Moisture content of wood: + 100,0 %

Drying time: -

insufficient	excellent

Thickness: 39,7 cm
Weight: 72 kg/m²

Interior surface 19,1°C (53%)

Drying reserve: 356 g/m²a

insufficient	excellent

Temp. amplitude damping (1/TAV): 40,0

Phase shift: 12h

Heat storage capacity: 42 kJ/m²K
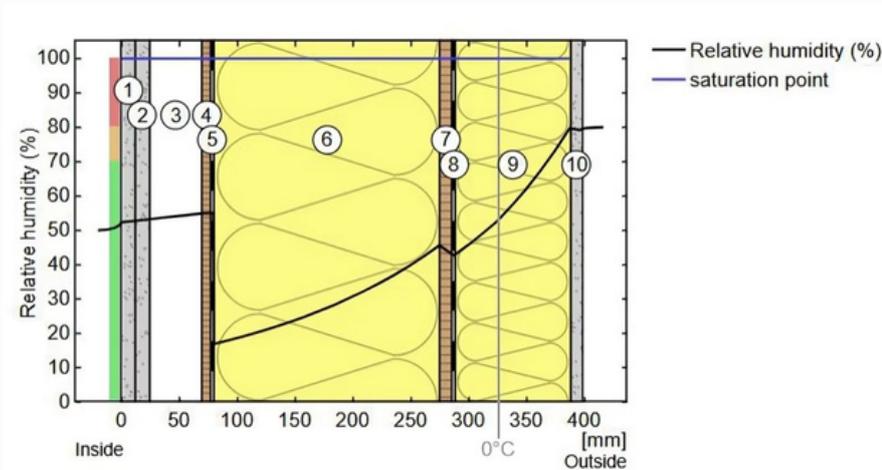
insufficient	excellent

Hygrothermal Analysis
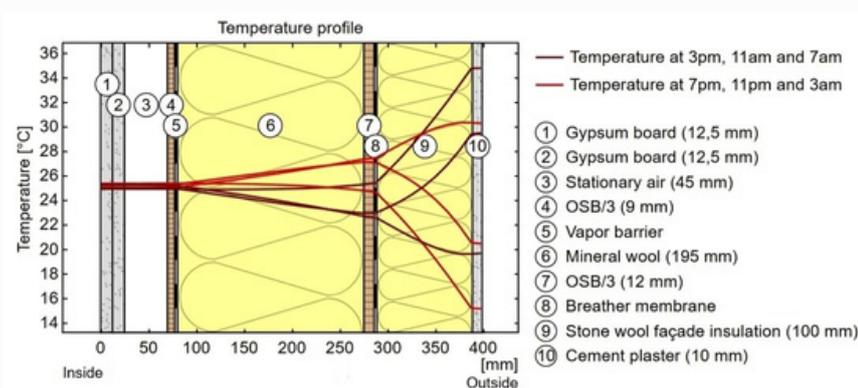## Relative Humidity & Moisture Control

Drying reserve

Drying reserve according to DIN 4108-3:2018: **356 g/(m²a)**
At least required by DIN 68800-2: **100 g/(m²a)**
Mould protection

The temperature of the inside surface is 19,1 °C leading to a relative humidity on the surface of 53 %.
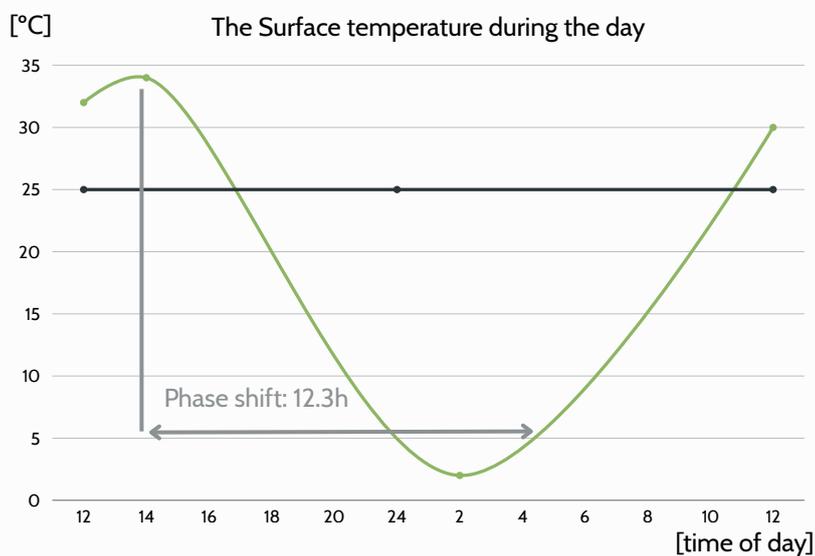Mould formation **is not expected** under these conditions.

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

- phase shift: **12,3 h**
- Heat storage capacity (whole component): **82 kJ/m²K**
- Amplitude attenuation: **40,0**
- Thermal capacity of inner layers: **42 kJ/m²K**
- TAD: **0,025**