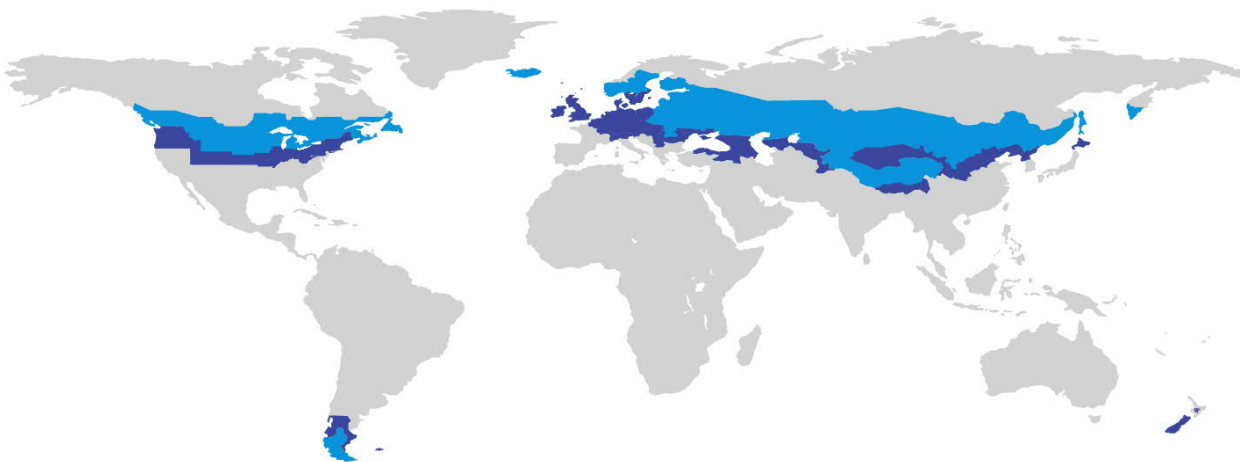


CERTIFICATE

Certified Passive House Component

ID: 1554wa02 valid until 31. December 2026

Passive House Institute
Dr. Wolfgang Feist
64342 Darmstadt
GERMANY



| | |
|--------------|---|
| Category | Wall system Lightweight timber construction |
| Manufacturer | Quantum Passivhaus Minden Canada |
| Product name | Quantum Wall System - Type 1 |

This certificate for the cold climate zone was awarded based on the following criteria

Hygiene criterion

The minimum temperature factor of the interior surfaces is $f_{Rsi=0,25m^2K/W} \geq 0,75$

Comfort criterion

The U-value of the installed windows is $U_{W,i} \leq 0,65 \text{ W/(m}^2\text{K)}$

Efficiency criteria

Heat transfer coefficient of building envelope $U \cdot f_{PHI} \leq 0,12 \text{ W/(m}^2\text{K)}$

Temperature factor of opaque junctions $f_{Rsi=0,25m^2K/W} \geq 0,88$

Thermal bridge-free design for key connection details $\Psi \leq 0,01 \text{ W/(m}^2\text{K)}$

An airtightness concept for all components and connection details was provided



Opaque building envelope

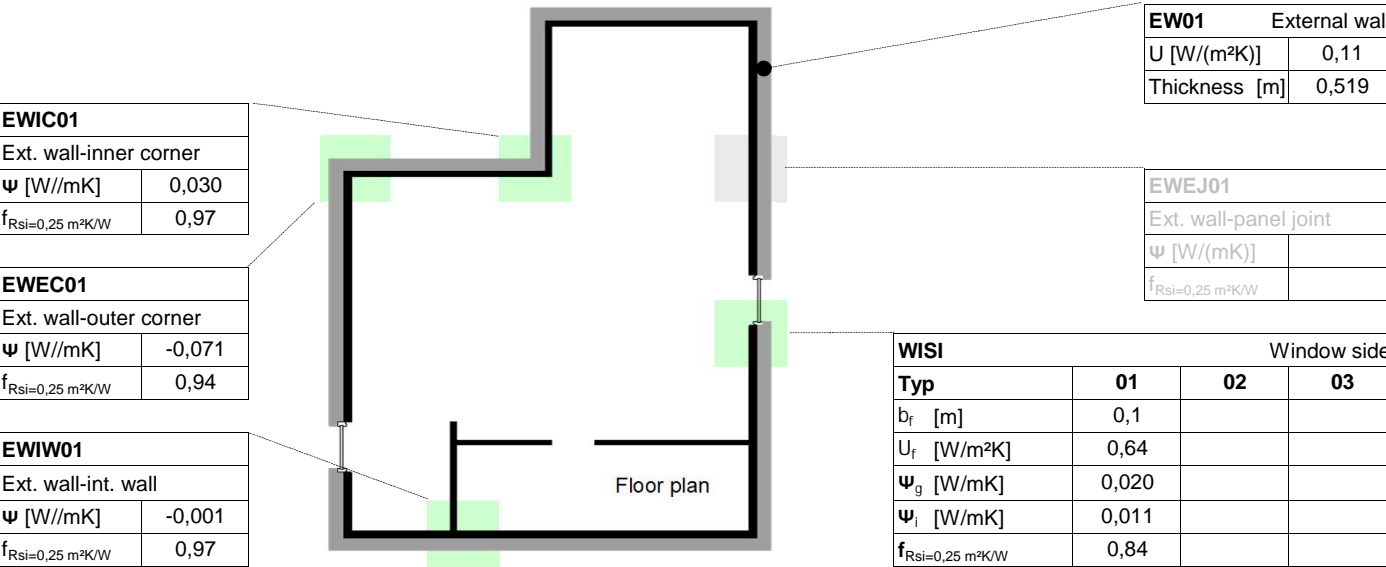
The Quantum Wall System is a lightweight timber frame construction system, insulated with mineral wool (0,036 / 0,046 W/(mK)) and cellulose (0,045 W/(mK)). The system is intended to be used with a ventilated rainscreen to the exterior, for which additional point thermal bridges may need to be taken into account in the design phase. The system has been designed to meet the Passive House Institute criteria for opaque components in the cold (Types A1, A1.1) and cool-temperate (Types A2, A2.1) climate zone, and is also suitable for use in the warm-temperate zone.

Explanatory notes

The Passive House Institute has defined international component criteria for seven climate zones based on hygiene, comfort and affordability criteria. In principle, components which have been certified for climate zones with higher requirements may also be used in climates with less stringent requirements. Their use might make economic sense in certain circumstances.

Thermal bridge not calculated
Criteria achieved

Efficiency criteria not achieved
Hygiene or comfort criterion not achieved



Windows

Analysis was undertaken using a high quality Passive House window with a U_w-value of 0,60 W/(m²K) using a Ug of 0,52 W/(m²K), a SWISSPACER Ultimate spacer and butyl secondary seal. The installed U-value meets the comfort requirement of Passive House buildings using a reference size of 1,23 by 1,48 m.

Airtightness concept

The airtightness of the construction system is achieved through the use of an airtight membrane, fixed to the inside of the supporting joists and behind the service cavity. Joints are secured with specialist air tightness tape. The system also includes a wind- and waterproof membrane, fixed to the outside of the exterior insulation, with joints secured as above.

