

## External wall - awmhi01a-04

external wall, solid wood construction, ventilated, with dry lining, with cladding, other surface

### Performance rating

<b>Fire protection performance</b>	REI from inside	90
	REI from outside	60

Maximum ceiling height = 3 m; maximum load  $E_{d,fi} = 35,0 \text{ kN/lfm}$   
 Classified by HFA

#### Germany

REI 60 (from inside/from outside); Attention: REI 90 (from inside) possible with 2x12,5mm gypsum plaster board type DF/gypsum fibre board  
 Load  $E_{d,fi}$  according to the German certification document  
 Corresponding proof: manufacturer specific

<b>Thermal performance</b>	<b>U</b>	0.12 W/(m <sup>2</sup> K)
	<b>Diffusion</b>	suitable

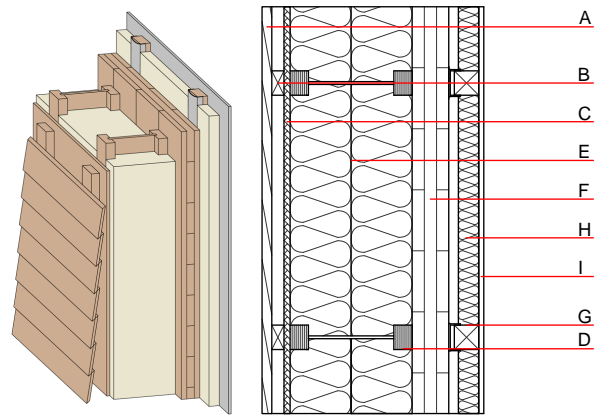
Calculated by TUM

<b>Acoustic performance</b>	$R_w (C;C_{tr})$	56(-2;-7) dB
	$L_{n,w} (C_i)$	

Assessed by HFA  
 Assessed by Müller-BBM

<b>Mass per unit area</b>	<b>m</b>	107.20 kg/m <sup>2</sup>
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Calculation based on gypsum plaster board type DF



Note: Attention: REI 90 (from inside) in Germany possible with 2x12,5mm gypsum plaster board type DF/gypsum fibre board

### Register of building materials used for this application, cross-section (from outside to inside, dimensions in mm)

	Thickness	Building material	Thermal performance				Reaction to fire EN
			$\lambda$	$\mu$ min – max	$\rho$	c	
A	24.0	larch wood external wall cladding	0.155	150	600	1.600	D
B	30.0	spruce wood battens offset (30/60) - ventilation	0.120	50	450	1.600	D
C	15.0	fibreboard (MDF)	0.140	11	600	1.700	D
D	300.0	Light composite wood-based beams (I-beams) with solid wood flanges (60/45) and hard board intermediate web ( $\geq 6,7$ ) $e=625$	0.400	20 - 30	800	1.700	D
E	300.0	Cellulose fibre [040; 50]	0.040	1	50	2.000	E
F	100.0	cross laminated timber (at least 3-layers, top layer at least 30mm)	0.130	50	500	1.600	D
G	70.0	spruce wood battens 60/60 on resilient clips, $e=625$	0.120	50	450	1.600	D
H	50.0	mineral wool [040; 11; <1000°C]	0.040	1	11	1.030	A1
I	12.5	gypsum plaster board type DF or	0.250	10	800	1.050	A2
I	12.5	gypsum fibre board	0.320	21	1000	1.100	A2

### Sustainability rating (per m<sup>2</sup>)

#### Database ecoinvent

<b>O13<sub>kon</sub></b>	35.9
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Calculated by HFA

#### Database GaBi (ÖKOBAUDAT)

<b>Built-in renewable materials</b>	kg	101.400
<b>Biogenic carbon in kg CO<sub>2</sub>-e.</b>	kg CO <sub>2</sub>	141.840
<b>Energy use of Primary Energy</b>	MJ	1087.970
<b>Share of renewable PE</b>	%	44.11

Calculated by TUM

**Details of sustainability rating**

**Database ecoinvent**

Lifecycle (Phases)	GWP [kg CO <sub>2</sub> -e.]	AP [kg SO <sub>2</sub> -e.]	EP [kg PO <sub>4</sub> -e.]	ODP [kg R11-e.]	POCP [kg Ethen-e.]	
A1 - A3		0.217	0.093	3,50E-6	0.054	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	121.260	1386.219	1507.479	665.247	36.238	701.484

**Database GaBi (ÖKOBAUDAT)**

Lifecycle (Phases)	GWP [kg CO <sub>2</sub> -e.]	AP [kg SO <sub>2</sub> -e.]	EP [kg PO <sub>4</sub> -e.]	ODP [kg R11-e.]	POCP [kg Ethen-e.]	
A1 - A3		0.138	0.028	4,14E-6	0.028	
C1 - C4		0.008	0.011	2,28E-7	0.001	
A1 - C4		0.148	0.040	4,38E-6	0.030	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	478.577	1625.972	2101.286	577.676	33.467	610.640
C1 - C4	0.982	-1377.285	-1376.304	24.865	-22.975	1.890
A1 - C4	479.940	248.946	725.622	608.031	10.544	618.070