

## External wall - awrhho05a-05

external wall, timber frame construction, ventilated, without dry lining, with cladding, other surface

### Performance rating

**Fire protection performance** REI from inside 30  
 REI from outside 30  
 maximum ceiling height = 3 m; maximum load  $E_{d,fi} = 32,0 \text{ kN/m}$   
 Classified by MA39  
 Classified by HFA

#### Germany

F30 (from inside/from outside)  
 Load  $E_{d,fi}$  according to the German certification document  
 Corresponding proof: DIN 4102-4:2016-05, Tabelle 10.7, Zeile 4

**Thermal performance** U 0.26 W/(m<sup>2</sup>K)  
 Diffusion suitable

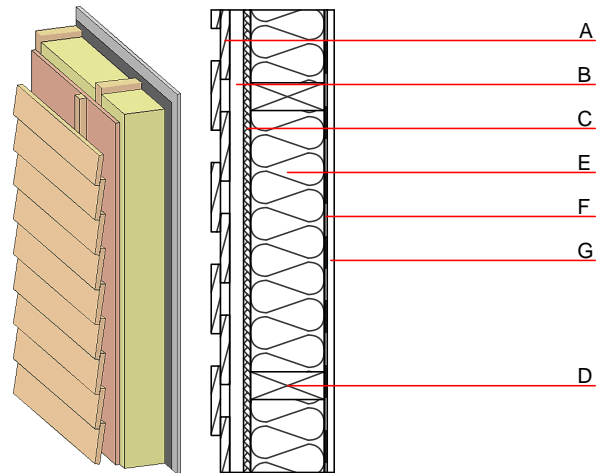
Calculated by TUM

**Acoustic performance**  $R_w (C;C_{tr})$  45(-2;-8) dB  
 $L_{n,w} (C_i)$

Battens for the ventilation space screwed onto the structural timber result in an  $R_w(C;C_{tr})=41(-1;-7)$  dB  
 Assessed by MA39  
 Assessed by Müller-BBM

**Mass per unit area** m 48.20 kg/m<sup>2</sup>

Calculation based on gypsum plaster board type DF



### 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 (30/50; 30/80) - ventilation	0.120	50	450	1.600	D
C	15.0	fibreboard (MDF)	0.140	11	600	1.700	D
D	160.0	construction timber (60/..; e=625)	0.120	50	450	1.600	D
E	160.0	mineral wool [040; 33; $\geq 1000^\circ\text{C}$ ]	0.040	1	33	1.030	A1
F		vapour barrier $s_d \geq 1 \text{ m}$			1000		
G	15.0	gypsum fibre board or	0.320	21	1000	1.100	A2
G	15.0	gypsum plaster board type DF	0.250	10	800	1.050	A2

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

#### Database ecoinvent

**OI3<sub>Kon</sub>** 23.8  
 Calculated by HFA

#### Database GaBi (ÖKOBAUDAT)

**Built-in renewable materials** kg 31.420  
**Biogenic carbon in kg CO<sub>2</sub>-e.** kg CO<sub>2</sub> 44.780  
**Energy use of Primary Energy** MJ 432.940  
**Share of renewable PE** % 32.03

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		0.125	0.043	1,34E-6	0.043	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	96.682	509.797	606.479	327.440	22.510	349.950

### 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		0.084	0.015	1,49E-6	0.013	
C1 - C4		0.002	0.002	9,50E-8	0.000	
A1 - C4		0.088	0.017	1,60E-6	0.014	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	137.803	528.713	666.638	276.876	31.061	308.010
C1 - C4	0.372	-523.577	-523.205	9.978	-15.080	-5.100
A1 - C4	138.658	5.395	144.176	294.281	16.046	310.400