

## External wall - awrhh04a-08

external wall, timber frame construction, ventilated, with dry lining, with cladding, other surface

### Performance rating

**Fire protection performance**  
 REI from inside 60  
 REI from outside 30  
 maximum ceiling height = 3 m; maximum load  $E_{d,fi} = 19,2 \text{ kN/m}$   
 Classified by MA39  
 Classified by HFA

#### Germany

F60 (from inside)/F30 (from outside)  
 Load  $E_{d,fi}$  according to the German certification document  
 Corresponding proof: F60 (from inside): manufacturer-specific; F30 (from outside):  
 DIN 4102-4:2016-05

**Thermal performance**  
 U Diffusion 0.21  $\text{W}/(\text{m}^2\text{K})$   
 suitable

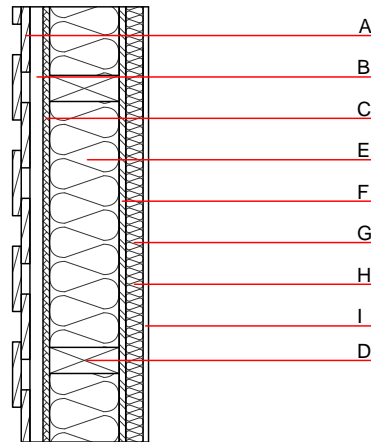
Calculated by TUM

**Acoustic performance**  
 $R_w (C;C_{tr})$  50(-3;-10) dB  
 $L_{n,w} (C_i)$

Battens for the ventilation space screwed onto the structural timber together with vertical battens for the dry lining screwed directly onto the ledger beams will result in  $R_w(C;Ctr)=43(-1;-5)$   
 Assessed by MA39  
 Assessed by Müller-BBM

**Mass per unit area** m 58.90  $\text{kg}/\text{m}^2$

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	15.0	OSB	0.130	200	600	1.700	D
G	40.0	spruce wood cross battens (a=400) $\geq 40\text{mm}$	0.120	50	450	1.600	D
H	40.0	mineral wool [040; 33; $\geq 1000^\circ\text{C}$ ]	0.040	1	33	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 $\text{m}^2$ )

#### Database ecoinvent

$\text{OI3}_{\text{kon}}$  28.8  
 Calculated by HFA

#### Database GaBi (ÖKOBAUDAT)

**Built-in renewable materials** kg 44.790  
**Biogenic carbon in  $\text{kg CO}_2\text{-e.}$**   $\text{kg CO}_2$  65.060  
**Energy use of Primary Energy** MJ 625.850  
**Share of renewable PE** % 30.69

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		0.158	0.054	1,68E-6	0.055	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	121.147	705.445	826.592	405.913	28.891	434.804

**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		0.116	0.020	1,69E-6	0.024	
C1 - C4		0.002	0.002	1,01E-7	0.000	
A1 - C4		0.120	0.023	1,80E-6	0.025	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	190.894	759.915	950.662	415.708	31.938	447.720
C1 - C4	0.810	-754.509	-753.699	11.691	-21.400	-9.710
A1 - C4	192.092	5.666	197.609	433.757	10.590	444.420