

## External wall - awrhho05a-09

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 HFA  
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#### Germany

F30 (from inside/from outside)  
Load  $E_{d,fi}$  according to the German certification document  
Corresponding proof: manufacturer-specific

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

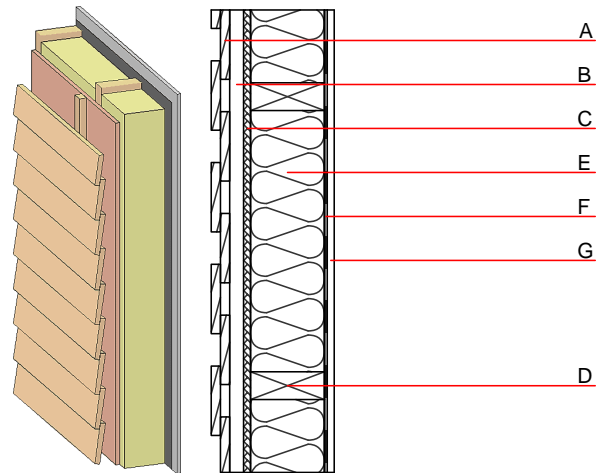
Calculated by TUM

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

Assessed by Müller-BBM

**Mass per unit area** m 49.90 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
			$\lambda$	$\mu \text{ min} - \text{max}$	$\rho$	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	Wood fibre insulation [039; 45]	0.039	1 - 2	45	2.100	E
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

O13<sub>Kon</sub> 14.8

Calculated by HFA

#### Database GaBi (ÖKOBAUDAT)

Built-in renewable materials kg 39.380  
Biogenic carbon in kg CO<sub>2</sub>e. kg CO<sub>2</sub> 56.170  
Energy use of Primary Energy MJ 763.740  
Share of renewable PE % 38.94

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		0.081	0.036	1,42E-6	0.017	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	105.515	628.405	733.919	299.566	33.714	333.280

### 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		0.088	0.019	1,40E-6	0.021	
C1 - C4		0.002	0.000	9,52E-8	0.000	
A1 - C4		0.092	0.020	1,50E-6	0.021	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	295.739	893.378	1189.240	440.254	49.549	489.880
C1 - C4	1.220	-889.100	-887.880	19.460	-40.662	-21.200
A1 - C4	297.437	4.538	302.097	466.307	8.951	475.330