

External wall - awrhho05a-10

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: DIN 4102-4:2016-05, Tabelle 10.7, Zeile 4

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

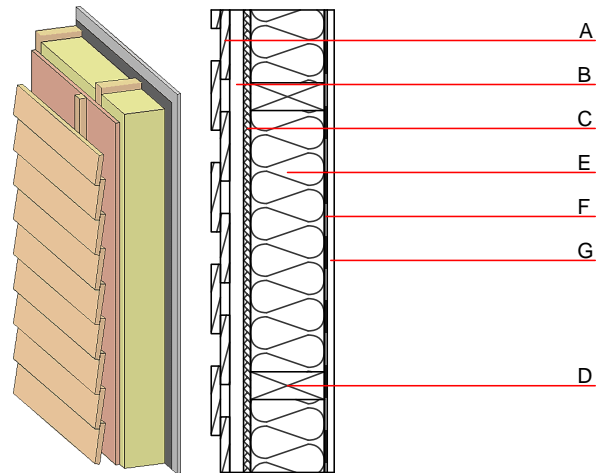
Calculated by TUM

Acoustic performance $R_w (C;C_{tr})$ 46(-2;-8) dB
 $L_{n,w} (C_i)$

Assessed by Müller-BBM

Mass per unit area m 50.50 kg/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
			λ	μ min - max	ρ	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	200.0	construction timber (60/...; e=625)	0.120	50	450	1.600	D
E	200.0	mineral wool [040; 30; $\geq 1000^\circ\text{C}$]	0.040	1	30	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^2)

Database ecoinvent

$OI3_{Kon}$ 32.2

Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials kg 33.320
Biogenic carbon in $\text{kg CO}_2\text{-e}$. kg CO_2 47.540
Energy use of Primary Energy MJ 469.130
Share of renewable PE % 31.80

Calculated by TUM

Details of sustainability rating

Database ecoinvent

Lifecycle (Phases)	GWP [kg CO ₂ -e.]	AP [kg SO ₂ -e.]	EP [kg PO ₄ -e.]	ODP [kg R11-e.]	POCP [kg Ethen-e.]	
A1 - A3		0.165	0.054	1,61E-6	0.061	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	104.861	541.243	646.104	403.444	22.510	425.954

Database GaBi (ÖKOBAUDAT)

Lifecycle (Phases)	GWP [kg CO ₂ -e.]	AP [kg SO ₂ -e.]	EP [kg PO ₄ -e.]	ODP [kg R11-e.]	POCP [kg Ethen-e.]	
A1 - A3		0.095	0.016	1,60E-6	0.014	
C1 - C4		0.002	0.002	9,99E-8	0.000	
A1 - C4		0.100	0.019	1,71E-6	0.015	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	148.303	561.606	710.185	301.594	32.855	334.540
C1 - C4	0.407	-556.247	-555.841	10.703	-15.100	-4.400
A1 - C4	149.195	5.618	155.089	319.932	17.819	337.840