

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 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/(m²K)
Diffusion suitable

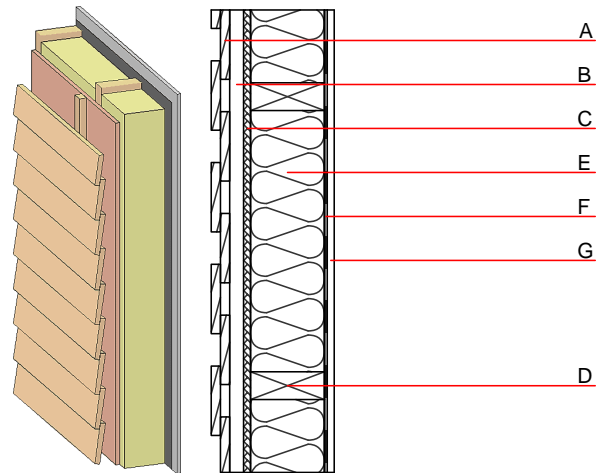
Calculated by TUM

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/m²

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	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 sd ≥ 1 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 m²)

Database ecoinvent

OI3_{Kon} 23.8
Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials kg 31.420
Biogenic carbon in kg CO₂-e. kg CO₂ 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 ₂ -e.]	AP [kg SO ₂ -e.]	EP [kg PO ₄ -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 ₂ -e.]	AP [kg SO ₂ -e.]	EP [kg PO ₄ -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