

External wall - awrhh04a-12

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 HFA
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Germany

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

Thermal performance U 0.21 W/(m²K)
Diffusion suitable

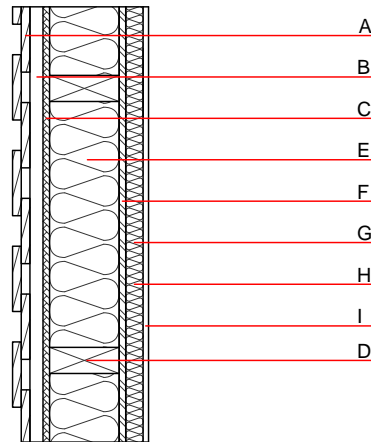
Calculated by TUM

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

Assessed by Müller BBM

Mass per unit area m 61.10 kg/m²

Calculation based on gypsum plaster board type DF



Note: dry lining $\geq 40 \text{ mm}$

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	
			λ	$\mu \text{ min} - \text{max}$	ρ	c	EN	
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	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	Wood fibre insulation [039; 45]	0.039	1 - 2	45	2.100	E	
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 m²)

Database ecoinvent

O13_{Kon} 17.8

Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials kg 55.550
Biogenic carbon in kg CO₂-e. kg CO₂ 80.470
Energy use of Primary Energy MJ 1073.290
Share of renewable PE % 37.91

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		0.104	0.045	1,78E-6	0.023	
Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	132.056	851.933	983.989	371.486	42.729	414.215

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		0.121	0.026	1,56E-6	0.035	
C1 - C4		0.002	0.000	1,01E-7	0.000	
A1 - C4		0.125	0.027	1,67E-6	0.035	
Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	404.519	1253.161	1657.532	636.693	56.945	693.710
C1 - C4	1.957	-1248.914	-1246.958	24.516	-56.003	-31.490
A1 - C4	406.855	4.505	411.213	666.439	0.994	667.510