

External wall - awrhh04a-16

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: F60 (from inside): manufacturer-specific; F30 (from outside): DIN 4102-4:2016-05

Thermal performance	U	0.15 W/(m ² K)
	Diffusion	suitable

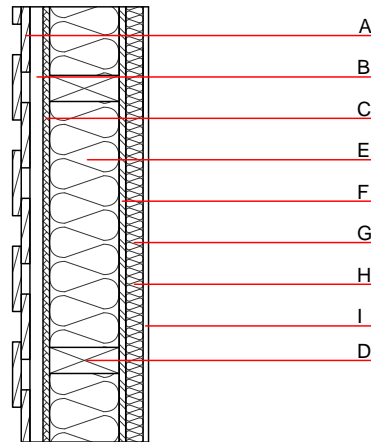
Calculated by TUM

Acoustic performance	$R_w (C; C_{tr})$	52(-3;-10) dB
	$L_{n,w} (C_i)$	

Assessed by Müller-BBM

Mass per unit area	m	64.00 kg/m ²
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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 EN
			λ	$\mu \text{ min} - \text{max}$	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	240.0	construction timber (60/.,; e=625)	0.120	50	450	1.600	D
E	240.0	mineral wool [040; 30; $\geq 1000^\circ\text{C}$]	0.040	1	30	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; 30; $\geq 1000^\circ\text{C}$]	0.040	1	30	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 m²)

Database ecoinvent

OI3_{Kon}	30.0
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Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials	kg	48.570
Biogenic carbon in kg CO₂-e.	kg CO ₂	70.580
Energy use of Primary Energy	MJ	698.220
Share of renewable PE	%	30.53

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		0.167	0.057	1,78E-6	0.059	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	132.697	768.336	901.034	427.180	28.891	456.072

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		0.139	0.023	1,91E-6	0.026	
C1 - C4		0.003	0.003	1,11E-7	0.000	
A1 - C4		0.144	0.027	2,03E-6	0.027	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	211.894	825.701	1037.755	465.143	35.526	500.780
C1 - C4	0.880	-819.850	-818.971	13.142	-21.440	-8.300
A1 - C4	213.164	6.110	219.434	485.060	14.137	499.310