

External wall - awropi04a-03

external wall, timber frame construction, not ventilated, with dry lining, with rendering, other surface

Performance rating

Fire protection performance REI from inside 60
 REI from outside 60
 maximum ceiling height = 3 m; maximum load $E_{d,fi} = 32,0 \text{ kN/m}$
 Classified by MA39
 Classified by HFA

Germany

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

Thermal performance U 0.15 $\text{W}/(\text{m}^2\text{K})$
 Diffusion suitable

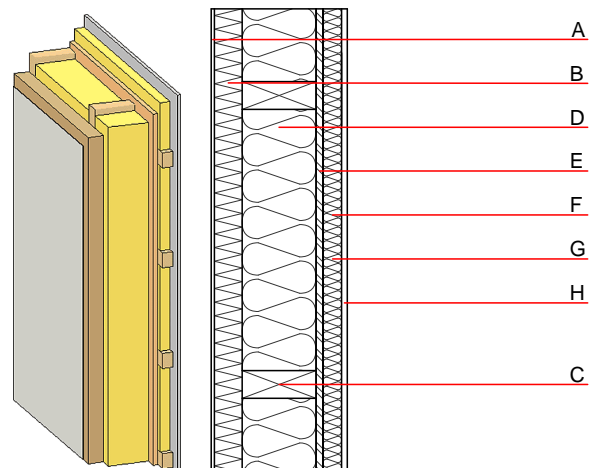
Calculated by HFA
 Calculated by TUM

Acoustic performance $R_w (C; C_{tr})$ 53(-3;-11) dB
 $L_{n,w} (C_i)$

vertical battens for the dry lining screwed onto the structural timber lead to an $R_w(C;C_{tr})=51(-3;-11) \text{ dB}$
 Assessed by MA39
 Assessed by Müller-BBM

Mass per unit area m 59.10 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	7.0	plaster	1.000	10 - 35	2000	1.130	A1
B	60.0	wood-fibre insulation board WF-PT [045; 180]	0.045	5 - 7	180	2.100	E
C	200.0	construction timber (60/...; e=625)	0.120	50	450	1.600	D
D	200.0	mineral wool [040; ≥ 16 ; $< 1000^\circ\text{C}$]	0.040	1	16	1.030	A1
E	15.0	OSB (sealed with airtight tape)	0.130	200	600	1.700	D
F	40.0	spruce wood cross battens (a=400) or battens offset)	0.120	50	450	1.600	D
G	40.0	mineral wool [040; ≥ 16 ; $< 1000^\circ\text{C}$]	0.040	1	16	1.030	A1
H	12.5	gypsum plaster board type DF or	0.250	10	800	1.050	A2
H	12.5	gypsum fibre board	0.320	21	1000	1.100	A2

Sustainability rating (per m^2)

Database ecoinvent

OI3_{Kon} 39.7
 Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials kg 36.620
Biogenic carbon in $\text{kg CO}_2\text{-e}$. kg CO_2 53.860
Energy use of Primary Energy MJ 634.070
Share of renewable PE % 29.78

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		0.169	0.076	3,31E-6	0.026	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	104.397	590.694	695.090	590.646	34.612	625.258

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		0.123	0.020	8,03E-7	0.021	
C1 - C4		0.003	0.003	5,74E-8	0.001	
A1 - C4		0.130	0.024	8,69E-7	0.022	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	187.410	552.470	740.370	425.660	30.000	455.750
C1 - C4	1.030	-545.910	-544.720	13.020	-17.030	-1.810
A1 - C4	188.830	6.820	196.510	445.240	13.020	463.930