External wall - awmopo01a-07

external wall, solid wood construction, not ventilated, without dry lining, with rendering, wooden surface

Performance rating

Fire protection performance	**REI from inside**	90
	REI from outside	90

maximum ceiling height = 3 m; maximum load $E_{d,fi}$ = 35,0 kN/m
Classified by HFA

Germany

REI60 (from inside/from outside)

Load $E_{d,fi}$ according to the German certification document

Corresponding proof: manufacturer-specific

Thermal performance	**U**	0.28 W/(m²K)
	Diffusion	suitable

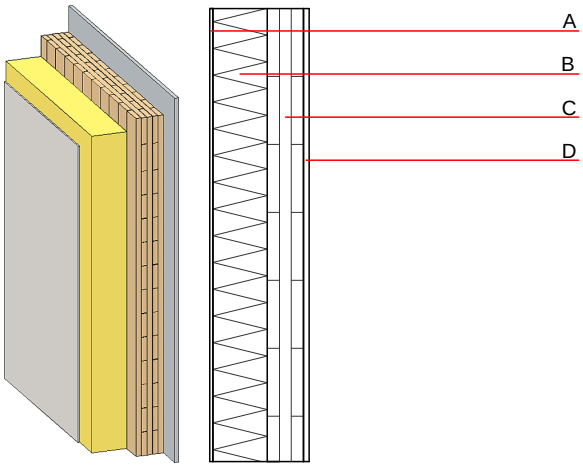
Calculated by HFA
Calculated by TUM

Acoustic performance	**R_w ($C;C_{tr}$)**	39(-1;-6) dB
	$L_{n,w}$ (C_I)	

Assessed by Müller-BBM

Mass per unit area	**m**	93.80 kg/m²

Calculation based on gypsum plaster board type DF



Note: Cross laminated timber:
Variation 00-03: d ≥ 78,0; at least 3-layers, top layer at least 25 mm; variation 04-07: at least 3-layers, top layer at least 30 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	μ min – max	ρ	c	EN
A	7.0	plaster	1.000	10 - 35	2000	1.130	A1
B	120.0	wood-fibre insulation board [045; 190]	0.045	5 - 7	190	2.100	E
C	100.0	solid glued wood (e.g. cross laminated timber)	0.130	50	500	1.600	D
D	12.5	gypsum plaster board type DF / gypsum fibre board	0.250	10	800	1.050	A2

Sustainability rating (per m²)

Database ecoinvent

$OI3_{Kon}$	42.7

Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials	**kg**	73.600
Biogenic carbon in kg CO_2-e.	**kg CO_2**	105.750
Energy use of Primary Energy	**MJ**	865.020
Share of renewable PE	**%**	38.66

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		0.204	0.088	3,97E-6	0.048	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	70.815	1038.249	1109.064	728.164	51.177	779.341

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		0.099	0.021	2,47E-6	0.020	
C1 - C4		0.003	0.000	1,34E-7	0.000	
A1 - C4		0.105	0.022	2,61E-6	0.020	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	332.843	1087.688	1418.652	504.934	29.926	534.330
C1 - C4	1.231	-1082.514	-1081.119	20.408	-21.224	1.390
A1 - C4	334.454	5.433	338.375	530.571	8.754	544.380