

### External wall - awropo09a-17

external wall, timber frame construction, not ventilated, without 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 HFA  
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#### Germany

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

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

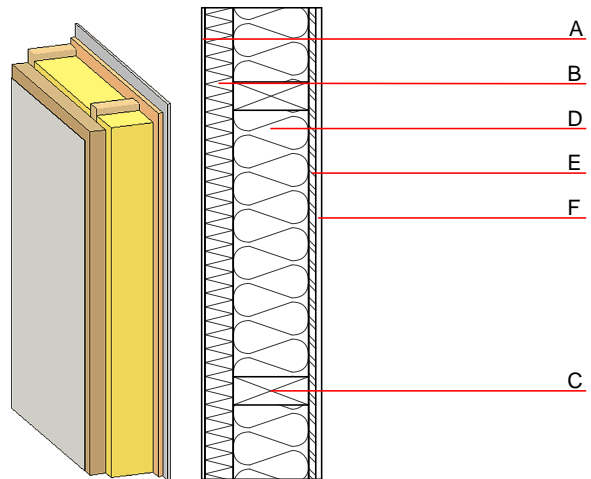
Calculated by TUM

**Acoustic performance**  $R_w (C; C_{tr})$  52(-3;-11) dB  
 $L_{n,w} (C_i)$

Assessed by Müller-BBM

**Mass per unit area** m 65.90  $\text{kg}/\text{m}^2$

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
			$\lambda$	$\mu$ min - max	$\rho$	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	240.0	construction timber (60/...; e=625)	0.120	50	450	1.600	D
D	240.0	Wood fibre insulation [039; 45]	0.039	1 - 2	45	2.100	E
E	15.0	OSB (sealed with airtight tape)	0.130	200	600	1.700	D
F	12.5	gypsum plaster board type DF or	0.250	10	800	1.050	A2
F	12.5	gypsum fibre board	0.320	21	1000	1.100	A2

#### Sustainability rating (per $\text{m}^2$ )

##### Database ecoinvent

$OI_{3kon}$  33.6

Calculated by HFA

##### Database GaBi (ÖKOBAUDAT)

Built-in renewable materials kg 46.090  
 Biogenic carbon in  $\text{kg CO}_2\text{-e.}$   $\text{kg CO}_2$  67.340  
 Energy use of Primary Energy MJ 1109.570  
 Share of renewable PE % 37.57

Calculated by TUM

### Details of sustainability rating

#### Database ecoinvent

Lifecycle (Phases)	GWP [kg CO <sub>2</sub> -e.]	AP [kg SO <sub>2</sub> -e.]	EP [kg PO <sub>4</sub> -e.]	ODP [kg R11-e.]	POCP [kg Ethen-e.]	
A1 - A3		0.148	0.066	3,03E-6	0.024	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	115.734	759.106	874.840	556.986	51.418	608.404

#### Database GaBi (ÖKOBAUDAT)

Lifecycle (Phases)	GWP [kg CO <sub>2</sub> -e.]	AP [kg SO <sub>2</sub> -e.]	EP [kg PO <sub>4</sub> -e.]	ODP [kg R11-e.]	POCP [kg Ethen-e.]	
A1 - A3		0.124	0.026	6,28E-7	0.032	
C1 - C4		0.003	0.000	5,15E-8	0.000	
A1 - C4		0.129	0.027	6,87E-7	0.032	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	414.170	1056.725	1471.816	660.911	57.019	718.040
C1 - C4	2.270	-1051.503	-1049.069	26.607	-55.426	-26.620
A1 - C4	416.819	5.481	423.588	692.747	1.645	700.060