

## External wall - awropo22b-05

external wall, timber frame construction, not ventilated, without dry lining, with rendering, other surface

### Performance rating

<b>Fire protection performance</b>	<b>REI from inside</b>	60
	<b>REI from outside</b>	90

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

<b>Thermal performance</b>	<b>U Diffusion</b>	0.19 $\text{W}/(\text{m}^2\text{K})$ suitable
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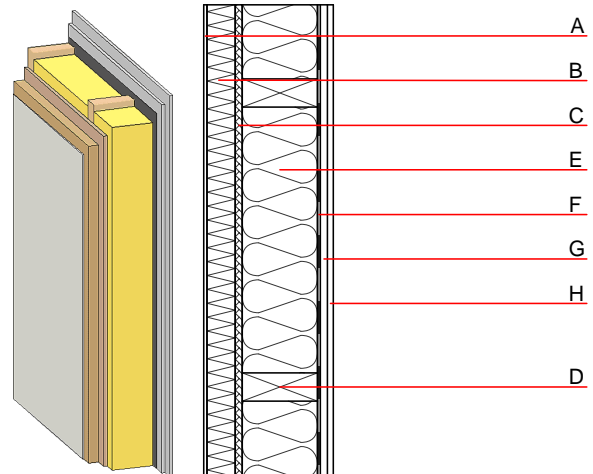
Calculated by TUM

<b>Acoustic performance</b>	<b><math>R_w</math> (<math>C; C_{tr}</math>)</b>	51(-2;-8) dB
	<b><math>L_{n,w}</math> (<math>C_i</math>)</b>	

Assessed by MA39  
 Assessed by Müller-BBM

<b>Mass per unit area</b>	<b>m</b>	71.70 $\text{kg}/\text{m}^2$
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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 [055; 200]	0.055	5 - 7	200	2.100	E
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	mineral wool [040; 33; $\geq 1000^\circ\text{C}$ ]	0.040	1	33	1.030	A1
F		vapour barrier $s_d \geq 3\text{m}$			1000		
G	15.0	gypsum fibre board	0.320	21	1000	1.100	A2
H	12.5	gypsum fibre board or	0.320	21	1000	1.100	A2
H	12.5	gypsum plaster board type DF	0.250	10	800	1.050	A2

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

#### Database ecoinvent

<b>Oil<sub>kon</sub></b>	44.0
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Calculated by HFA

#### Database GaBi (ÖKOBAUDAT)

<b>Built-in renewable materials</b>	kg	32.430
<b>Biogenic carbon in <math>\text{kg CO}_2\text{-e.}</math></b>	kg $\text{CO}_2$	45.850
<b>Energy use of Primary Energy</b>	MJ	603.810
<b>Share of renewable PE</b>	%	28.67

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		0.190	0.068	2,90E-6	0.045	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	120.832	450.044	570.876	570.268	39.775	610.042

### 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		0.100	0.019	1,37E-6	0.015	
C1 - C4		0.004	0.002	8,48E-8	0.000	
A1 - C4		0.108	0.022	1,47E-6	0.016	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	171.611	464.546	637.072	403.493	43.268	446.840
C1 - C4	0.657	-454.141	-453.320	14.525	-25.692	-8.960
A1 - C4	173.131	10.924	185.338	430.675	17.693	454.020