

Flat roof - fdmbi01a-00

flat roof, solid wood construction, not ventilated, with dry lining, suspended, other surface

Performance rating

Fire protection performance REI 60

maximum span = 5 m; maximum load $E_{d,fi} = 5 \text{ kN/m}^2$
 Classified by HFA

Germany

REI30; Attention: REI60 (from inside) possible with 2x12,5mm gypsum plaster board type DF/gypsum fibre board

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

Corresponding proof: manufacturer-specific

Thermal performance U Diffusion 0.16 $\text{W}/(\text{m}^2\text{K})$ suitable

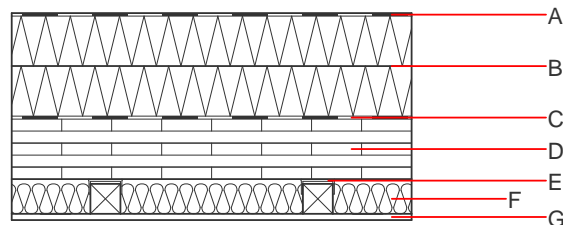
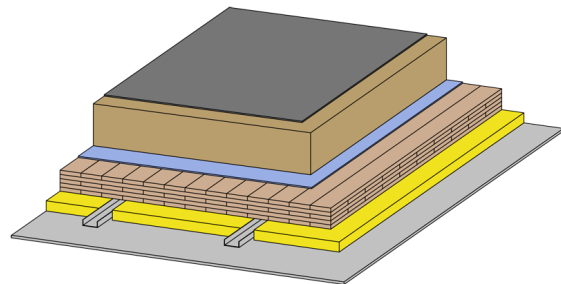
Calculated by TUM

Acoustic performance $R_w (C;C_{tr})$ $L_{n,w} (C_i)$ 50(-3;-9) dB

Assessed by Müller-BBM

Mass per unit area m 105.70 kg/m^2

Calculation based on gypsum plaster board type DF



Note: Attention: REI60 (from inside) in Germany possible with 2x12,5mm gypsum plaster board type DF/gypsum fibre board

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		sealing sheet $s_d \geq 100\text{m}$ e.g. EPDM membrane					
B	200.0	wood-fibre insulation board [0,045; R=160] (2*100)	0.045	5 - 7	160	2.100	E
C		sealing sheet e.g. bitumen					
D	125.0	cross laminated timber $\geq 125,0$; at least 5-layers, top layer at least 27,5 mm)	0.130	50	500	1.600	D
E	70.0	acoustic hanger (suspension); $e=415$;					
F	60.0	mineral wool [040; 20]	0.040	1	20	1.030	A2
G	12.5	gypsum plaster board type DF or	0.250	10	800	1.050	A2
G	12.5	gypsum fibre board	0.320	21	1000	1.100	A2

Sustainability rating (per m^2)

Database ecoinvent

O13_{kon} 81.3
 calculated with gypsum plaster fire protection board (GKF/DF); this data includes 3-, 5-, and 7-ply cross laminated timber elements;
 Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials kg 110.900
Biogenic carbon in kg CO₂-e. kg CO₂ 159.380
Energy use of Primary Energy MJ 1477.870
Share of renewable PE % 34.72

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		0.339	0.145	8,03E-6	0.077	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	111.434	1445.414	1556.849	1207.842	253.825	1461.667

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		0.168	0.033	3,44E-6	0.033	
C1 - C4		0.003	0.001	1,82E-7	0.000	
A1 - C4		0.173	0.035	3,63E-6	0.033	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	510.739	1611.451	2119.460	928.617	142.026	1069.943
C1 - C4	1.944	-1605.983	-1604.039	30.641	-35.374	-4.732
A1 - C4	513.064	5.727	516.061	964.801	106.704	1070.805