

Pitched roof - sdrhzi04a-08

pitched roof, timber frame construction, ventilated, with dry lining, not suspended, other surface

Performance rating

Fire protection performance REI 30

maximum span = 5 m; maximum load $E_{d,fi} = 2,62 \text{ kN/m}^2$ (rafter 60/200 without roofing, counter battens and battens)
 Classified by HFA
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Germany

F30

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

Corresponding proof: DIN 4102-4:2016-05, Tabelle 10.19, Zeile 1

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

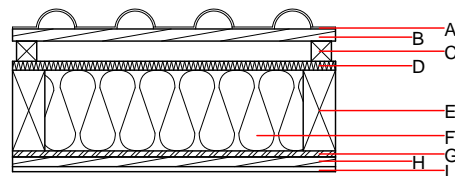
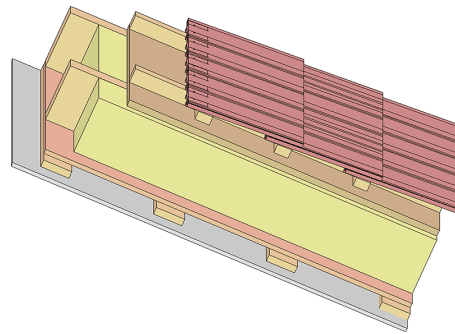
Calculated by TUM

Acoustic performance $R_w (C_1, C_{12})$ 54(-1;-7) dB
 $L_{n,w} (C_1)$

Assessed by Müller-BBM

Mass per unit area m 102.20 kg/m^2

Calculation based on gypsum plaster board type DF



Note: The design of the under-roof construction and of the counter-battens have to be specified according to the roof pitch and the national requirements.

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		concrete roof tile or tiled roof			2100		A1
B	30.0	spruce wood battens (30/50)	0.120	50	450	1.600	D
C	50.0	spruce wood counter battens (Austria: minimum height 50 mm), Germany 30 mm	0.120	50	450	1.600	D
D	22.0	softboard [045; 250] - rigid underlay	0.045	5	250	2.100	E
E	240.0	construction timber (80/..; e=625)	0.120	50	450	1.600	D
F	240.0	mineral wool [040; 30; $\geq 1000^\circ\text{C}$]	0.040	1	30	1.030	A1
G	15.0	OSB (sealed with airtight tape)	0.130	200	600	1.700	D
H	24.0	spruce wood cladding with spacing of cladding boards(24/100); a=400	0.120	50	450	1.600	D
I	12.5	gypsum plaster board type DF or	0.250	10	800	1.050	A2
I	12.5	gypsum fibre board	0.320	21	1000	1.100	A2

Sustainability rating (per m^2)

Database ecoinvent

$OI3_{kon}$ 35.4

Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials	kg	36.180
Biogenic carbon in $\text{kg CO}_2\text{-e}$.	kg CO_2	53.470
Energy use of Primary Energy	MJ	833.840
Share of renewable PE	%	22.780

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	-18.772	0.174	0.054	2,55E-6	0.033	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	63.147	563.601	626.747	441.048	21.104	462.151

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	-20.649	0.125	0.020	9,61E-7	0.022	
C1 - C4	58.541	0.007	0.003	7,67E-8	0.001	
A1 - C4	41.243	0.136	0.024	1,05E-6	0.023	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	186.663	599.836	787.777	604.731	21.578	626.457
C1 - C4	2.192	-593.415	-591.223	23.594	-10.371	13.223
A1 - C4	189.940	6.681	197.897	643.895	11.259	655.303