

Pitched roof - sdrhzi04a-04

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 IBS
 Classified by HFA

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 0.19 $\text{W}/(\text{m}^2\text{K})$ suitable

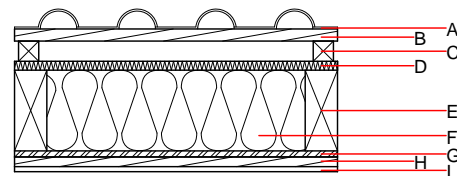
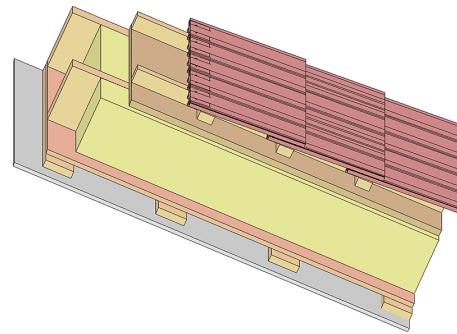
Calculated by HFA
 Calculated by TUM

Acoustic performance $R_w (C; C_{tr})$ $L_{n,w} (C_i)$ 53(-1;-7) dB

with a tiled roof $R_w = 51 (-1; -7)$ dB
 Assessed by TGM
 Assessed by Müller-BBM

Mass per unit area m 99.90 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	200.0	construction timber (80/..; e=625)	0.120	50	450	1.600	D
F	200.0	mineral wool [038; ≥33; ≥1000°C]	0.038	1	33	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 m²)

Database ecoinvent

O13 _{Kon}	34.9
Calculated by HFA	

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials	kg	33.600
Biogenic carbon in kg CO ₂ -e.	kg CO ₂	49.780
Energy use of Primary Energy	MJ	793.930
Share of renewable PE	%	22.31

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		0.160	0.056	2,55E-6	0.054	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	95.175	522.922	618.096	464.050	19.362	483.412

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		0.112	0.018	8,36E-7	0.021	
C1 - C4		0.007	0.003	7,03E-8	0.001	
A1 - C4		0.123	0.022	9,15E-7	0.021	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	173.915	556.058	731.046	578.651	19.841	598.615
C1 - C4	2.152	-549.854	-547.703	22.761	-10.344	12.417
A1 - C4	177.151	6.463	184.685	616.782	9.548	626.453