

Pitched roof - sdrhbi01a-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 $E_{d,fi} = 3,66 \text{ kN/m}^2$ (rafter 80/200 without roofing, full formwork and counter battens)
 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

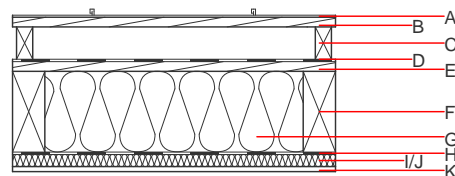
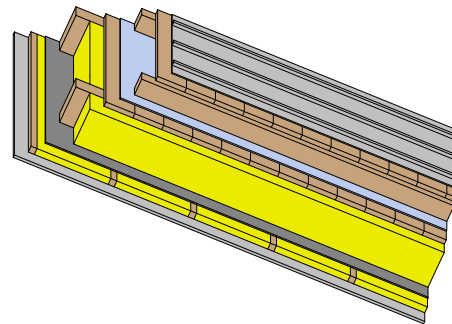
Thermal performance U Diffusion 0.16 $\text{W}/(\text{m}^2\text{K})$ suitable

Calculated by TUM

Acoustic performance $R_w (C;C_{tr})$ $L_{n,w} (C_i)$ 51(-4;-11) dB

Assessed by Müller-BBM

Mass per unit area m 61.90 kg/m^2



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)

Layer	Thickness	Building material	Thermal performance				Reaction to fire EN
			λ	$\mu \text{ min} - \text{max}$	ρ	c	
A		sheet metal roofing on structured separation layer				7800	A1
B	24.0	spruce wood full formwork	0.120	50	450	1.600	D
C	80.0	spruce wood counter battens (40/80)	0.120	50	450	1.600	D
D		sarking membrane $s_d \leq 0,3\text{m}$				1000	E
E	24.0	planking spruce wood full formwork	0.120	50	450	1.600	D
F	240.0	construction timber (80/*; e=625)	0.120	50	450	1.600	D
G	240.0	Cellulose fibre [040; 50]	0.040	1	50	2.000	E
H		vapour barrier $s_d \geq 10\text{m}$				1000	
I	30.0	spruce wood cross battens (a=400)	0.120	50	450	1.600	D
J	30.0	mineral wool [040; 11; <1000°C]	0.040	1	11	1.030	A1
K	12.5	gypsum plaster board type DF	0.250	10	800	1.050	A2

Sustainability rating (per m^2)

Database ecoinvent

OI3_{kon} 25.0

Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials	kg	57.580
Biogenic carbon in $\text{kg CO}_2\text{-e}$.	kg CO_2	81.350
Energy use of Primary Energy	MJ	655.130
Share of renewable PE	%	34.88

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		0.143	0.065	2,04E-6	0.030	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	122.738	783.352	906.090	405.268	12.683	417.952

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		0.114	0.017	1,13E-6	0.018	
C1 - C4		0.006	0.008	1,53E-7	0.001	
A1 - C4		0.122	0.025	1,29E-6	0.019	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	227.557	939.451	1170.340	404.800	81.789	486.737
C1 - C4	0.557	-761.454	-760.897	16.455	-0.159	16.296
A1 - C4	228.495	178.256	410.083	426.636	81.682	508.465