

## Pitched roof - sdrhzi09a-05

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 0.20 W/(m<sup>2</sup>K) suitable

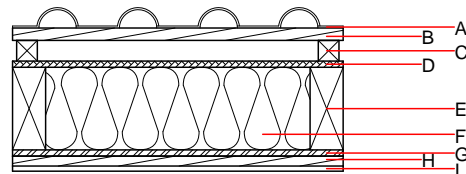
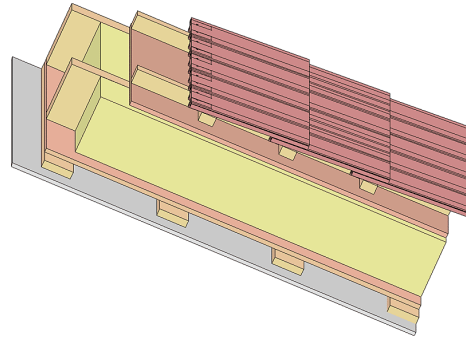
Calculated by HFA  
 Calculated by TUM

**Acoustic performance**  $R_w$  (C;C<sub>tr</sub>) 53(-2;-8) dB  
 $L_{n,w}$  (C<sub>i</sub>)

with a tiled roof  $R_w = 51$  (-2; -8) dB  
 Assessed by TGM  
 Assessed by Müller-BBM

**Mass per unit area** m 107.10 kg/m<sup>2</sup>

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
			$\lambda$	$\mu$ min – max	$\rho$	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	16.0	fibreboard (MDF)	0.140	11	600	1.700	D
E	200.0	construction timber (80/...; e=625)	0.120	50	450	1.600	D
F	200.0	Cellulose fibre [040; 50]	0.040	1	50	2.000	E
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<sup>2</sup>)

### Database ecoinvent

<b>O13<sub>Kon</sub></b>	21.8
Calculated by HFA	

### Database GaBi (ÖKOBAUDAT)

<b>Built-in renewable materials</b>	<b>kg</b>	51.740
<b>Biogenic carbon in kg CO<sub>2</sub>-e.</b>	<b>kg CO<sub>2</sub></b>	72.780
<b>Energy use of Primary Energy</b>	<b>MJ</b>	832.090
<b>Share of renewable PE</b>	<b>%</b>	23.84

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		0.111	0.048	2,29E-6	0.020	
Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	105.360	700.414	805.775	377.912	30.095	408.007

### 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		0.087	0.017	1,53E-6	0.024	
C1 - C4		0.010	0.007	1,08E-7	0.001	
A1 - C4		0.100	0.025	1,64E-6	0.024	
Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	195.195	825.882	1022.508	594.125	23.395	617.644
C1 - C4	2.084	-677.546	-675.463	25.249	-22.453	2.796
A1 - C4	198.355	148.595	348.380	633.737	0.994	634.855