

## Pitched roof - sdshzx01-00

pitched roof, exposed rafter, ventilated, -, without lining, wooden surface

### Performance rating

**Fire protection performance** REI 30

maximum span = 5 m; maximum load  $E_{d,fi} = 5,29 \text{ kN/m}^2$  (with exposed beams 180/240 and fire protection cladding)  
 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 10.24, Zeile 1

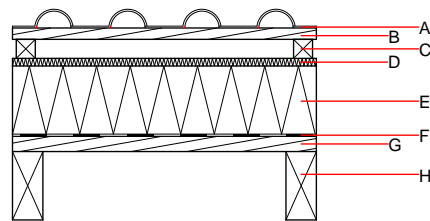
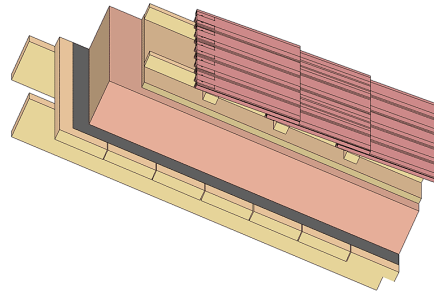
**Thermal performance** U Diffusion 0.18  $\text{W}/(\text{m}^2\text{K})$  suitable

Calculated by HFA  
 Calculated by TUM

**Acoustic performance**  $R_w (C; C_{tr})$   $L_{n,w} (C_i)$  42(-3;-8) dB

with a tiled roof  $R_w = 41 (-3; -8)$  dB  
 Assessed by TGM  
 Assessed by Müller-BBM

**Mass per unit area** m 121.90  $\text{kg}/\text{m}^2$



**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)

	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	22.0	softboard [045; 250] - rigid underlay	0.045	5	250	2.100	E
E	180.0	mineral wool [040; 180; $\geq 1000^\circ\text{C}$ ] - insulation placed on top of the rafters	0.040	1	180	1.030	A1
F		vapour barrier $s_d \geq 1 \text{ m}$				1000	
G	40.0	spruce wood tongue and groove, fire protection cladding (Germany minimum 50 mm)	0.120	50	450	1.600	D
H		construction timber in acc. with structural design	0.120	50	450	1.600	D

### Sustainability rating (per $\text{m}^2$ )

#### Database ecoinvent

$O13_{kon}$  84.3

Calculated by HFA

#### Database GaBi (ÖKOBAUDAT)

**Built-in renewable materials** kg 57.570  
**Biogenic carbon in  $\text{kg CO}_2\text{-e}$ .** kg  $\text{CO}_2$  82.450  
**Energy use of Primary Energy** MJ 1147.770  
**Share of renewable PE** % 23.73

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		0.398	0.119	3,69E-6	0.160	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	133.686	664.661	798.346	873.869	37.094	910.963

### 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		0.268	0.042	2,98E-6	0.029	
C1 - C4		0.012	0.009	1,35E-7	0.002	
A1 - C4		0.282	0.051	3,12E-6	0.030	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	268.818	969.018	1237.702	829.507	63.868	893.512
C1 - C4	2.877	-966.267	-963.390	35.695	-22.146	13.549
A1 - C4	272.400	2.751	275.017	875.374	41.722	917.233