

## Pitched roof - sdshzx01-01

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

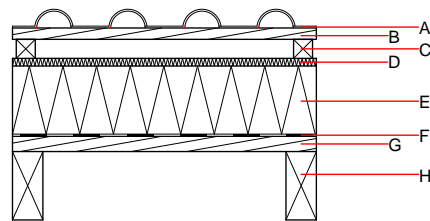
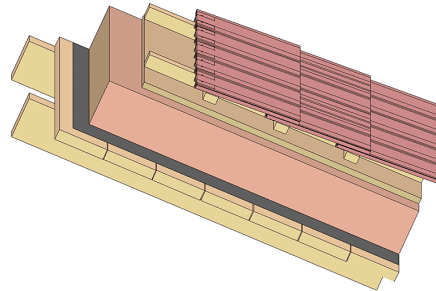
**Thermal performance** U Diffusion 0.18  $\text{W}/(\text{m}^2\text{K})$  suitable

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  $R_w = 41 (-2; -8)$  dB  
 Assessed by TGM  
 Assessed by Müller-BBM

**Mass per unit area** m 125.50  $\text{kg}/\text{m}^2$



**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	wood-fibre insulation board [0,040; R=200] - insulation placed on top of the rafters	0.040	5 - 7	200	2.100	E
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

$O13_{kon}$  41.4

Calculated by HFA

#### Database GaBi (ÖKOBAUDAT)

**Built-in renewable materials** kg 98.970  
**Biogenic carbon in  $\text{kg CO}_2\text{-e}$ .** kg  $\text{CO}_2$  141.740  
**Energy use of Primary Energy** MJ 1314.320  
**Share of renewable PE** % 34.33

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		0.189	0.086	3,97E-6	0.039	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	172.408	1196.034	1368.442	725.938	87.288	813.227

**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		0.134	0.029	2,21E-6	0.031	
C1 - C4		0.010	0.001	1,29E-7	0.001	
A1 - C4		0.146	0.031	2,34E-6	0.032	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	446.851	1419.783	1866.499	811.625	61.682	873.443
C1 - C4	3.693	-1421.149	-1417.455	42.316	-53.982	-11.666
A1 - C4	451.241	-1.366	449.741	863.076	7.700	870.912