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Designation: sdshzx01-05
Last updated: 8/2/23
Source: Holzforschung Austria
Editor: HFA, SP

Pitched roof - sdshzx01-05

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 kN/m² (with exposed beams 180/240 and fire protection cladding)
Classified by HFA
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Germany

F30

Load $E_{d,fi}$ according to the German certification document

Corresponding proof: DIN 4102-4:2016-05, Tabelle 10.24, Zeile 1

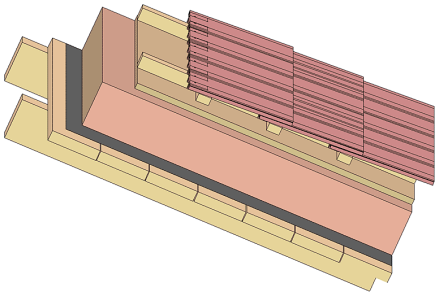
Thermal performance	**U**	0.14 W/(m²K)
	Diffusion	suitable

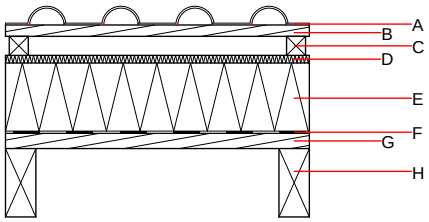
Calculated by TUM

Acoustic performance	**R_w (C_i;C_{tr})**	44(-3;-8) dB
	$L_{n,w}$ (C_I)	

Assessed by Müller-BBM

Mass per unit area	**m**	137.50 kg/m²





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
			λ	μ min – max	ρ	c	EN
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	240.0	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 sd≥ 1m			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 m²)

Database ecoinvent

$OI3_{Kon}$	50.3

Calculated by HFA

Database GaBi (ÖKOBAUDAT)

Built-in renewable materials	**kg**	112.770
Biogenic carbon in kg CO_2-e.	**kg CO_2**	161.500
Energy use of Primary Energy	**MJ**	1489.100
Share of renewable PE	**%**	35.11

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		0.226	0.103	4,70E-6	0.044	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	192.378	1373.158	1565.536	868.716	104.020	972.736

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		0.153	0.033	2,26E-6	0.036	
C1 - C4		0.010	0.001	1,30E-7	0.001	
A1 - C4		0.164	0.035	2,39E-6	0.036	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	518.002	1571.410	2089.277	910.344	72.294	982.775
C1 - C4	4.072	-1572.776	-1568.703	46.854	-64.594	-17.740
A1 - C4	522.771	-1.366	521.271	966.333	7.700	974.168