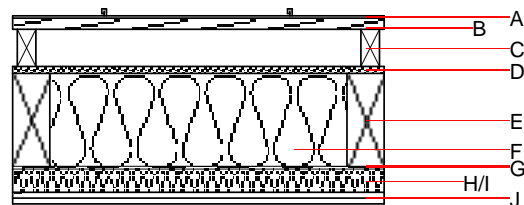
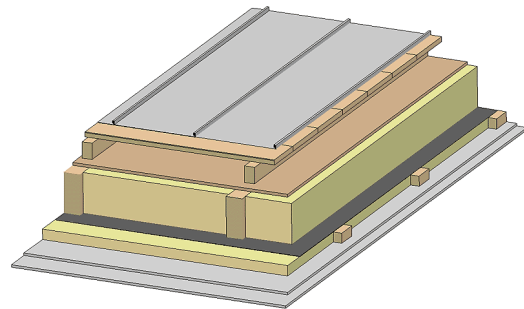


### Flat roof - fdrhbi08b-04

flat roof, timber frame construction, ventilated, with dry lining, not suspended, other surface

#### Performance rating

<b>Fire protection performance</b>	REI	60
maximum span = 5 m; maximum load $E_{d,fi} = 3,66 \text{ kN/m}^2$ Classified by HFA		
<b>Thermal performance</b>	U Diffusion	0.16 $\text{W}/(\text{m}^2\text{K})$ suitable
Calculated by HFA		
<b>Acoustic performance</b>	$R_w$ (C;C <sub>tr</sub> ) $L_{n,w}$ (C)	51(-3;-8) dB
Assessed by TGM		
<b>Mass per unit area</b>	m	55.10 $\text{kg}/\text{m}^2$
Calculation based on GF		



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	Plastic roofing membrane or					E
A	sheet metal roofing			7800		A1
B 24.0	spruce wood closed cladding without spacing of cladding boards	0.120	50	450	1.600	D
C 80.0	spruce wood counter battens (ventilation)	0.120	50	450	1.600	D
D	sarking membrane $s_d \leq 0,3\text{m}$			1000		E
D 15.0	fibreboard (MDF)	0.140	11	600	1.700	D
E 200.0	construction timber (80/*; e=800)	0.120	50	450	1.600	D
F 200.0	mineral wool [035; 50; <1000°C]	0.035	1	50	1.030	A1
G	vapour barrier $s_d \geq 1\text{m}$			1000		
H 50.0	spruce wood cross battens (50/80;a=400)	0.120	50	450	1.600	D
I 50.0	mineral wool [035; 50; <1000°C] or without insulation in type 01	0.035	1	50	1.030	A1
J 25.0	gypsum fibre board (2x12,5 mm) or	0.320	21	1000	1.100	A2
J 25.0	gypsum plaster board type DF (2x12,5 mm)	0.250	10	800	1.050	A2

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

##### Database ecoinvent

$O13_{kon}$  66.4

Calculated by HFA

### 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		0.280	0.130	4,64E-6	0.043	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	122.003	638.476	760.480	893.310	29.762	923.073