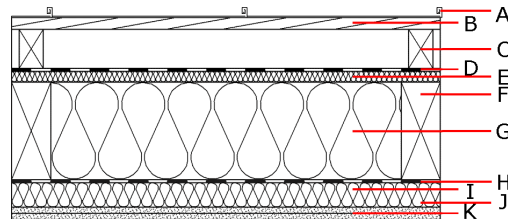
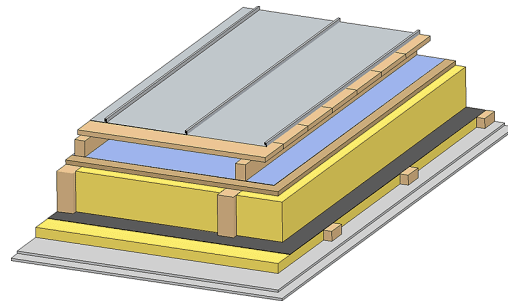


### Flat roof - fdrhbi01b-02

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 IBS		
<b>Thermal performance</b>	U Diffusion	0.16 $\text{W}/(\text{m}^2\text{K})$ suitable
Calculated by HFA		
<b>Acoustic performance</b>	$R_w (C;C_{tr})$ $L_{n,w} (C_i)$	51 (-2;-7) dB
Assessed by TGM		
<b>Mass per unit area</b>	m	45.80 $\text{kg}/\text{m}^2$
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
		$\lambda$	$\mu \text{ min} - \text{max}$	$\rho$	c	
A	sheet metal roofing or plastic roofing membrane			7800		A1
A	Plastic roofing membrane					E
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
E 22.0	softboard [045; 250] - rigid underlay	0.045	5	250	2.100	E
F 220.0	construction timber (80/*; e=800)	0.120	50	450	1.600	D
G 220.0	mineral wool [040; $\geq 16$ ; $< 1000^\circ\text{C}$ ]	0.040	1	16	1.030	A1
H	vapour barrier $s_d \geq 2\text{m}$			1000		
I 50.0	spruce wood cross battens (50/80;a=400)	0.120	50	450	1.600	D
J 50.0	mineral wool [040; $\geq 16$ ; $< 1000^\circ\text{C}$ ] or without insulation in type O1	0.040	1	16	1.030	A1
K 25.0	gypsum fibre board (2x12,5 mm) or	0.320	21	1000	1.100	A2
K 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

$OI3_{kon}$  40.0

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	-23.413	0.179	0.081	3,16E-6	0.012	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	47.461	613.313	660.774	577.707	22.867	600.574