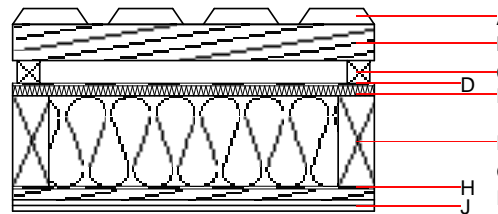
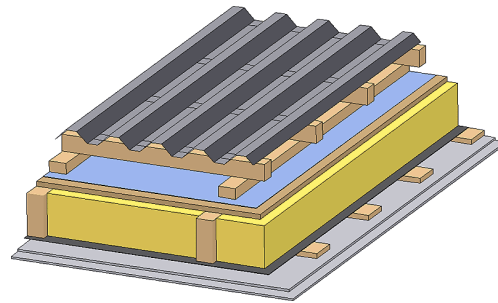


### Flat roof - fdrhbi05b-04

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 $E_{d,fi} = 3,66 \text{ kN/m}^2$<br>Classified by HFA |                                     |  |
| <b>Thermal performance</b>   | U<br>Diffusion                      | 0.20 $\text{W}/(\text{m}^2\text{K})$<br>suitable |
| Calculated by HFA  |                                     |  |
| <b>Acoustic performance</b>  | $R_w (C;C_{tr})$<br>$L_{n,w} (C_i)$ | 49(-2;-7) dB                                     |
| Assessed by TGM  |                                     |  |
| <b>Mass per unit area</b>  | m                                   | 42.60 $\text{kg}/\text{m}^2$                     |
| Calculation based on gypsum plaster board type DF                                      |                                     |  |



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 |           | trapezoidal sheet metal roofing                                     |                     |                 |        |       | A1                  |
| B | 80.0      | spruce wood battens (80/50)   | 0.120               | 50              | 450    | 1.600 | D                   |
| C | 50.0      | 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 | 200.0     | construction timber (80/..; e=800)                                  | 0.120               | 50              | 450    | 1.600 | D                   |
| G | 200.0     | mineral wool [038; $\geq 33$ ; $\geq 1000^\circ\text{C}$ ]          | 0.038               | 1               | 33     | 1.030 | A1                  |
| I | 24.0      | spruce wood cladding with spacing of cladding boards(24/100); a=400 | 0.120               | 50              | 450    | 1.600 | D                   |
| I |           | vapour barrier $s_d \geq 2\text{m}$                                 |                     |                 | 1000   |       |                     |
| J | 25.0      | gypsum plaster board type DF (2x12,5 mm) or                         | 0.250               | 10              | 800    | 1.050 | A2                  |
| J | 25.0      | gypsum fibre board (2x12,5 mm)                                      | 0.320               | 21              | 1000   | 1.100 | A2                  |

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

##### Database ecoinvent

$OI3_{kon}$  77.8

Calculated by HFA

**Details of sustainability rating**

Database ecoinvent

| Lifecycle<br>(Phases) | GWP<br>[kg CO <sub>2</sub> -e.] | AP<br>[kg SO <sub>2</sub> -e.] | EP<br>[kg PO <sub>4</sub> -e.] | ODP<br>[kg R11-e.] | POCP<br>[kg Ethen-e.] |  |
|-----------------------|---------------------------------|--------------------------------|--------------------------------|--------------------|-----------------------|--|
| A1 - A3               |                                 | 0.318                          | 0.138                          | 3,74E-6            | 0.079                 |  |

| Lifecycle<br>(Phases) | PERE<br>[MJ] | PERM<br>[MJ] | PERT<br>[MJ] | PENRE<br>[MJ] | PENRM<br>[MJ] | PENRT<br>[MJ] |
|-----------------------|--------------|--------------|--------------|---------------|---------------|---------------|
| A1 - A3               | 87.061       | 385.006      | 472.068      | 909.707       | 19.383        | 929.090       |