

## External wall - awrho07a-09

external wall, timber frame construction, ventilated, without dry lining, with cladding, other surface

### Performance rating

**Fire protection performance** REI from inside 60  
REI from outside 30  
maximum ceiling height = 3 m; maximum load  $E_{d,fi} = 32,0 \text{ kN/m}$   
Classified by HFA  
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#### Germany

F60 (from inside/from outside)  
Load  $E_{d,fi}$  according to the German certification document  
Corresponding proof: manufacturer-specific

**Thermal performance** U 0.19 W/(m<sup>2</sup>K)  
Diffusion suitable

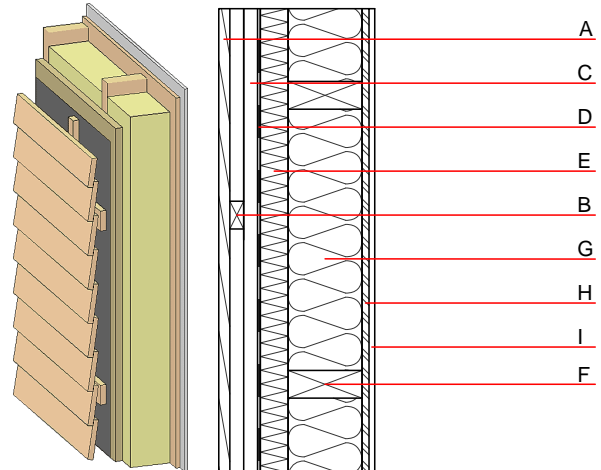
Calculated by TUM

**Acoustic performance**  $R_w (C; C_{tr})$  46(-2;-8) dB  
 $L_{n,w} (C_i)$

Assessed by Müller-BBM

**Mass per unit area** m 58.70 kg/m<sup>2</sup>

Calculation based on gypsum plaster board type DF



Note: According to OIB-RL 2 (Austria) is for ventilated and insulated facades (from building class 2) an insulation material with minimum Euroclass D required.

### 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 | 24.0      | larch wood external wall cladding      | 0.155               | 150                            | 600    | 1.600 | D                   |
| B | 30.0      | spruce wood battens - ventilation      | 0.120               | 50                             | 450    | 1.600 | D                   |
| C | 30.0      | spruce wood cross battens              | 0.120               | 50                             | 450    | 1.600 | D                   |
| D |           | wind barrier                           |                     |                                | 1000   |       |                     |
| E | 60.0      | wood-fibre insulation board [045; 140] | 0.045               | 2 - 5                          | 140    | 2.100 | E                   |
| F | 160.0     | construction timber (60/-; e=625)      | 0.120               | 50                             | 450    | 1.600 | D                   |
| G | 160.0     | Wood fibre insulation [039; 45]        | 0.039               | 1 - 2                          | 45     | 2.100 | E                   |
| H | 15.0      | OSB (sealed with airtight tape)        | 0.130               | 200                            | 600    | 1.700 | D                   |
| I | 12.5      | gypsum plaster board type DF or        | 0.250               | 10                             | 800    | 1.050 | A2                  |
| I | 12.5      | gypsum fibre board                     | 0.320               | 21                             | 1000   | 1.100 | A2                  |

### Sustainability rating (per m<sup>2</sup>)

#### Database ecoinvent

013<sub>Kon</sub> 21.0

Calculated by HFA

#### Database GaBi (ÖKOBAUDAT)

Built-in renewable materials kg 52.280  
Biogenic carbon in kg CO<sub>2</sub>-e. kg CO<sub>2</sub> 76.510  
Energy use of Primary Energy MJ 945.800  
Share of renewable PE % 38.59

Calculated by TUM

## 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               |                                 | 0.110                          | 0.050                          | 2,10E-6            | 0.023                 |               |
| Lifecycle<br>(Phases) | PERE<br>[MJ]                    | PERM<br>[MJ]                   | PERT<br>[MJ]                   | PENRE<br>[MJ]      | PENRM<br>[MJ]         | PENRT<br>[MJ] |
| A1 - A3               | 127.237                         | 775.359                        | 902.596                        | 401.348            | 40.532                | 441.879       |

### Database GaBi (ÖKOBAUDAT)

| 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               |                                 | 0.107                          | 0.022                          | 6,54E-7            | 0.029                 |               |
| C1 - C4               |                                 | 0.002                          | 0.000                          | 7,56E-8            | 0.000                 |               |
| A1 - C4               |                                 | 0.110                          | 0.023                          | 7,37E-7            | 0.030                 |               |
| Lifecycle<br>(Phases) | PERE<br>[MJ]                    | PERM<br>[MJ]                   | PERT<br>[MJ]                   | PENRE<br>[MJ]      | PENRM<br>[MJ]         | PENRT<br>[MJ] |
| A1 - A3               | 362.668                         | 1049.663                       | 1412.081                       | 552.490            | 70.057                | 622.620       |
| C1 - C4               | 1.912                           | -1044.560                      | -1042.649                      | 23.121             | -42.595               | -19.470       |
| A1 - C4               | 364.959                         | 5.362                          | 370.071                        | 580.840            | 27.514                | 608.430       |