

## Flat roof - fdroba01a-02

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

### Performance rating

**Fire protection performance** REI 30

maximum span = 5 m; maximum load  $E_{d,fi} = 2,6 \text{ kN/m}^2$   
Classified by HFA

#### Germany

F30

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

Corresponding proof: DIN 4102-4:2016-05, Tabelle 10.19, Zeile 1

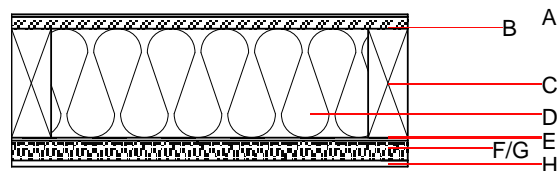
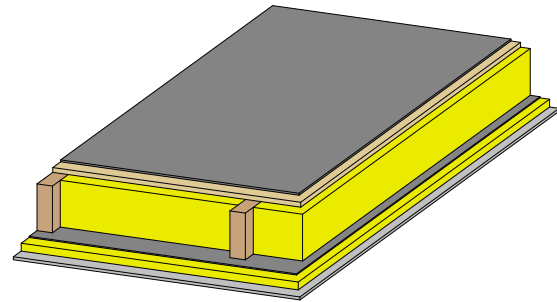
**Thermal performance** U 0.13 W/(m<sup>2</sup>K)  
Diffusion suitable

Attention: Due to the application of a moisture-adaptive vapour barrier an object-related proof according to protection against moisture (diffusion) is mandatory. A hygrothermic simulation is necessary (e.g. WUFI)  
Calculated by TUM

**Acoustic performance**  $R_w (C; C_{tr})$  52(-4;-9) dB  
 $L_{n,w} (C_i)$

Assessed by Müller-BBM

**Mass per unit area** m 188.50 kg/m<sup>2</sup>



**Note: ATTENTION:** Regarding protection against moisture an object-related proof in terms of parameter like e.g. climate, shading class etc. is required. Therefore a hygrothermic simulation is necessary (e.g. WUFI), a simple Glaser calculation is not allowed.

### 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		Plastic roofing membrane /metal sheeting on structured separation layer					E
B	25.0	OSB	0.130	200	600	1.700	D
C	300.0	construction timber (80/-; e=800)	0.120	50	450	1.600	D
D	300.0	mineral wool [040; 30; $\geq 1000^\circ\text{C}$ ]	0.040	1	30	1.030	A1
E		moisture-adaptive vapour retarder					E
F	40.0	acoustic hanger					
G	40.0	mineral wool [040; 30; $\geq 1000^\circ\text{C}$ ]	0.040	1	30	1.030	A1
H	15.0	gypsum plaster board type DF	0.250	10	800	1.050	A2

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

#### Database ecoinvent

OI3<sub>Kon</sub> 44.8

Calculated by HFA

#### Database GaBi (ÖKOBAUDAT)

Built-in renewable materials	kg	36.800
Biogenic carbon in kg CO <sub>2</sub> -e.	kg CO <sub>2</sub>	54.540
Energy use of Primary Energy	MJ	834.770
Share of renewable PE	%	24.88

Calculated by TUM

## 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		0.197	0.064	3,04E-6	0.068	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	99.880	489.860	589.740	527.505	88.127	615.632

### Database GaBi (ÖKOBAUDAT)

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		0.172	0.026	1,42E-6	0.030	
C1 - C4		0.003	0.003	8,05E-8	0.000	
A1 - C4		0.178	0.030	1,51E-6	0.031	

Lifecycle (Phases)	PERE [MJ]	PERM [MJ]	PERT [MJ]	PENRE [MJ]	PENRM [MJ]	PENRT [MJ]
A1 - A3	206.187	637.016	842.292	606.897	64.359	671.333
C1 - C4	1.012	-629.954	-628.943	11.875	-13.914	-2.038
A1 - C4	207.689	7.322	214.098	627.077	50.509	677.663