CERTIFICATE

Certified Passive House Component

Component-ID 1720cs03 valid until 31st December 2025

Passive House Institute
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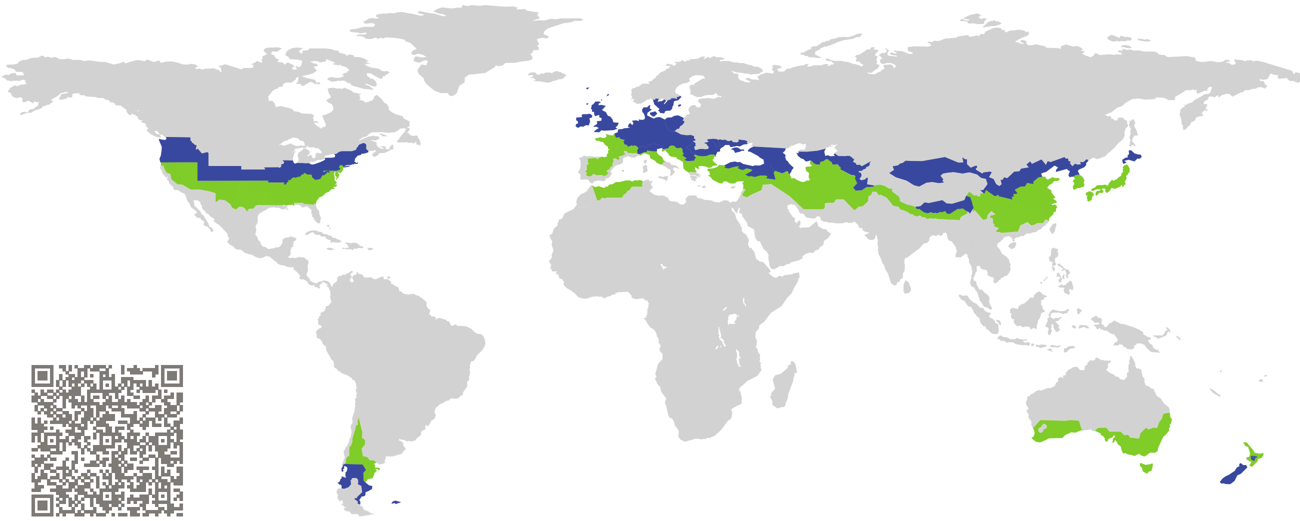
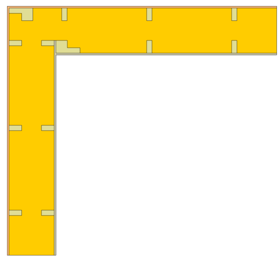
Germany



Category:	**Construction system**
Manufacturer:	**Advanced Housing Systems Ltd., Kingsbridge, United Kingdom**
Product name:	**THEPASSIVHAUS**



Hygiene criterion

The mininum temperature factor of the interior surfaces is $f_{Rsi=0.25\,m^2\,K/W} \geq$ 0.70

Comfort criterion

The U-value of the installed windows is $U_{wi} \leq$ 0.85 W/(m² K)

Efficiency criteria

Heat transfer coefficient of building envelope: $U * f_{PHI} \leq$ 0.15 W/(m² K)

Temperature factor of opaque junctions: $f_{Rsi=0.25\,m^2\,K/W} \geq$ 0.86

Thermal bridge-free design for key connection details: $\Psi \leq$ 0.01 W/(m K)

An airtightness concept for all components and connection details was provided.

It was confirmed that the structure will dry out within 12 months and there is no risk of moisture-related damage.

cool, temperate climate

CERTIFIED COMPONENT

Passive House Institute

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https://www.advancedhousingsystems.co.uk/ |

Opaque building envelope

THEPASSIVHAUS is a construction system comprising a lightweight timber assembly for above- ground application and insulated concrete formwork for basement construction. The timber assembly is insulated using Knauf glass wool products (Knauf Frametherm Roll/Slab, λR 0,038 W/(mK); Knauf Earthwool Omnifit Roll 0,048 W/(mK)). The ICF assembly is insulated using EPS products (Kay-Cel EPS 200E, λR 0,041 W/(mK); Kay-Cel EPS 250/300E, λR 0,040 W/(mK). The system was simulated in one-, two- and three-dimensions in accordance with ISO 6946 and ISO 10211, the results are shown below and right. A hygrothermal assessment was carried out using the simplified Glaser method in line with ISO 13788 for all wall, roof and floor types; in accordance with the Passive House criteria, no risk of moisture accumulation or interstitial condensation was found.

Windows

Installation type 1 refers to the E98 Passive entrance door from Urban Front Ltd., in a fully opaque configuration; the Ud-installed value shown is based on a reference size of 1,1 by 2,2 m. Type 2 refers to the Ultra Insulated outward-opening window from Green Building Store, using a Ug-value of 0,70 W/(m²K) and based on a reference size of 1,23 by 1,48 m. Type 3 refers to the Primus Slide double sliding door from ENERsign GmbH. For the latter, the average frame values are shown and the mullion is excluded, but the actual installed Uw-value is shown. This is based on a reference size of 2,4 by 2,5 m and uses a Ug-value of 0,70 W/(m²K).

Airtightness concept

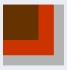
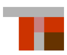
The Passive House level of airtightness is achieved by way of suitable membrane (SIGA Majrex 200), with joints sealed using appropriate airtightness tape. Windows and doors are installed using flexible gaskets and are connected to the airtight membrane using airtightness tape. Service penetrations are to be sealed using suitable gaskets or tape.

Summary of values

Opaque assemblies		U-value W/(m² K)	Thickness mm
Basement Exterior Wall	(BEW1)	0.10	605
exterior wall	(EW1)	0.13	344
floor slab	(FS1)	0.13	500
floor slab	(FS2)	0.11	550
pitched roof	(RO1)	0.12	411
top floor ceiling	(TC1)	0.13	459

Frame Cuts with "dummy window - cold" from "dummy window manufacturer" (0001)					
Frame values		Frame width b_f mm	*U*-value frame U_f $W/(m^2 K)$	Ψ-glazing edge Ψ_g W/(m K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Bottom	(OB2)	100	0.74	0.022	0.75
Top	(OH2)	100	0.56	0.023	0.77
Lateral	(OJ2)	100	0.56	0.023	0.77
Spacer: Super Spacer TriSeal / T-Spacer Premium Plus			Secondary seal: Butyl		

Frame Cuts with "ULTRA insulated" from "Green Building Store" (0579wi03)					
Frame values		Frame width b_f mm	*U*-value frame U_f W/(m^2 K)	Ψ-glazing edge Ψ_g W/(m K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Bottom	(OB1)	138	0.82	0.022	0.75
Top	(OH1)	120	0.84	0.023	0.75
Lateral	(OJ1)	120	0.84	0.023	0.75
Spacer: SWISSPACER Ultimate			Secondary seal: Polysulfide		

Junctions		U1	U2	Ψ-value Ψ	Temp. factor $f_{Rsi=0.25}$
		W/(m² K)		W/(m K)	[-]
Exterior corner basement exterior wall (BEW1_BEW1_ec_1)		0.10	0.10	–0.070	0.942
Interior corner basement exterior wall (BEW1_BEW1_ic_1)		0.10	0.10	0.039	0.977
Basement exterior wall to exterior wall with basement ceiling integration (BEW1_EW1_BC_1)		0.10	0.13	0.004	0.869
Ceiling integration into exterior wall (EW1_EW1_CE_1)		0.13	0.13	0.010	0.932
Exterior corner exterior wall (EW1_EW1_ec_1)		0.13	0.13	–0.048	0.905
Interior corner exterior wall (EW1_EW1_ic_1)		0.13	0.13	0.030	0.958
Internal wall integration into exterior wall (EW1_EW1_IW_1)		0.13	0.13	0.001	0.958
Panel joint exterior wall (EW1_EW1_pj_1)		0.13	0.13	0.007	0.957
Window bottom operable window in exterior wall (EW1_OB1_1)		0.13	0.82	–0.004	0.734
Window head operable window in exterior wall (EW1_OH1_1)		0.13	0.84	0.006	0.749
Window jamb operable window in exterior wall (EW1_OJ1_1)		0.13	0.84	0.001	0.754
Roof eave pitched roof (EW1_RO1_ea_1)		0.13	0.12	–0.006	0.925
Roof verge pitched roof (EW1_RO1_ve_1)		0.13	0.12	–0.049	0.903
Roof eave exterior wall to top ceiling with cold roof (EW1_TC1_RO_ea_2)		0.13	0.13	–0.058	0.903
Floor slab to basement exterior wall with basement ceiling (FS1_BEW1_BC_1)		0.13	0.10	0.058	0.947
Exterior wall plinth on floor slab (FS1_EW1_1)		0.13	0.13	–0.040	0.929

Junctions		U1 U2 W/(m² K)		Ψ-value Ψ W/(m K)	Temp. factor $f_{Rsi=0.25}$ [-]
Internal wall integration into floor slab (FS1_FS1_IW_1)		0.13	0.13	0.000	0.929
Basement exterior wall to basement floor (FS2_BEW1_1)		0.11	0.10	–0.034	0.904
Roof ridge pitched roof (RO1_RO1_ri_1)		0.12	0.12	–0.053	0.934

Basement Exterior Wall (BEW1)

Material	Lambda W/(m K)	Thickness (mm)
Advanced Housing Systems Ltd. - Interior plaster	0.570	5
Advanced Housing Systems Ltd. - Kay-Cal EP 200E	0.041	150
Advanced Housing Systems Ltd. - Concrete, 1' steel	2.300	200
Advanced Housing Systems Ltd. - Kay-Cal EP 250/300E	0.040	250

Total thickness: 605 mm
Rsi: 0.13 m^2 K/W
Rse: - m^2 K/W
U-value: 0.10 W/(m^2 K)

exterior wall (EW1)

Material	Lambda W/(m K)	Thickness (mm)
Advanced Housing Systems Ltd. - Fermace Gypsum Fibre	0.400	12
Advanced Housing Systems Ltd. - Knauf Frametherm + timber 3	0.043	90
Advanced Housing Systems Ltd. - Knauf Frametherm + timber 4	0.038	140
Advanced Housing Systems Ltd. - Knauf Frametherm + timber 3	0.043	90
Advanced Housing Systems Ltd. - Panelve Sheathing Board	0.125	12

Total thickness: 344 mm
Rsi: 0.13 m^2 K/W
Rse: 0.13 m^2 K/W
U-value: 0.13 W/(m^2 K)

floor slab (FS1)

Material	Lambda W/(m K)	Thickness (mm)
Advanced Housing Systems Ltd. - Concrete, 1' steel	2.300	200
Advanced Housing Systems Ltd. - Kay-Cal EP 200E	0.041	300

Total thickness: 500 mm
Rsi: 0.17 m^2 K/W
Rse: - m^2 K/W
U-value: 0.13 W/(m^2 K)

floor slab (FS2)

Material	Lambda W/(m K)	Thickness (mm)
Advanced Housing Systems Ltd. - Kay-Cal EP 250/300E	0.040	50
Advanced Housing Systems Ltd. - Concrete, 1' steel	2.300	200
Advanced Housing Systems Ltd. - Kay-Cal EP 250/300E	0.040	300

Total thickness: 550 mm
Rsi: 0.17 m^2 K/W
Rse: - m^2 K/W
U-value: 0.11 W/(m^2 K)

pitched roof (RO1)

Material	Lambda W/(m K)	Thickness (mm)
Advanced Housing Systems Ltd. - Fermace Gypsum Fibre	0.400	24
Advanced Housing Systems Ltd. - Air gap + timbe	0.160	25
Advanced Housing Systems Ltd. - Knauf Framet erm + timber 2	0.049	45
Advanced Housing Systems Ltd. - Knauf Framet erm + timber 1	0.041	260
Advanced Housing Systems Ltd. - Knauf Framet erm + timber 2	0.049	45
Advanced Housing Systems Ltd. - Panelve Sheathing Board	0.125	12

Total thickness: 411 mm
Rsi: 0.10 m^2 K/W
Rse: 0.10 m^2 K/W
U-value: 0.12 W/(m^2 K)

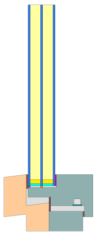
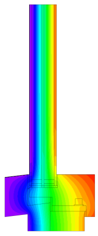
top floor ceiling (TC1)

Material	Lambda W/(m K)	Thickness (mm)
Advanced Housing Systems Ltd. - Fermace Gypsum Fibre	0.400	24
Advanced Housing Systems Ltd. - Air gap + timbe	0.153	25
Advanced Housing Systems Ltd. - Softwood/ OS board	0.130	10
Advanced Housing Systems Ltd. - Knauf Loft Roll timber	0.058	100
Advanced Housing Systems Ltd. - Knauf Loft Ro 44	0.053	300

Total thickness: 459 mm
Rsi: 0.10 m^2 K/W
Rse: 0.10 m^2 K/W
U-value: 0.13 W/(m^2 K)

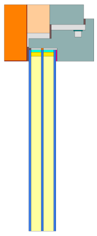
Bottom

b_f = 100 mm
U_f = 0.74 W/(m^2 K)
Ψ_g = 0.022 W/(m K)
f_{Rsi} = 0.75

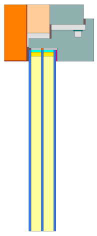
Top

b_f = 100 mm
U_f = 0.56 W/(m^2 K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.77



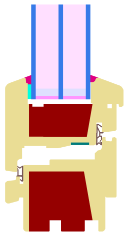

Lateral

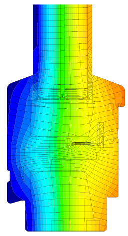
b_f = 100 mm
U_f = 0.56 W/(m^2 K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.77




Bottom

b_f = 138 mm
U_f = 0.82 W/(m^2 K)
Ψ_g = 0.022 W/(m K)
f_{Rsi} = 0.75





Top

b_f = 120 mm
U_f = 0.84 W/(m^2 K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.75

Lateral

b_f = 120 mm
U_f = 0.84 W/(m^2 K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.75

Exterior corner

basement exterior wall

(BEW1_BEW1_ec_1)

$U_{BEW1} = 0.10\,\text{W/(m}^2\,\text{K)}$

$U_{BEW1} = 0.10\,\text{W/(m}^2\,\text{K)}$

$\Psi = -0.070\,\text{W/(m K)}$

$f_{Rsi} = 0.942$

Interior corner

basement exterior wall

(BEW1_BEW1_ic_1)

$U_{BEW1} = 0.10\,\text{W/(m}^2\,\text{K)}$

$U_{BEW1} = 0.10\,\text{W/(m}^2\,\text{K)}$

$\Psi = 0.039\,\text{W/(m K)}$

$f_{Rsi} = 0.977$

Basement exterior wall to exterior wall

with basement ceiling integration (BEW1_EW1_BC_1)

$U_{BEW1} = 0.10\,\text{W/(m}^2\,\text{K)}$

$U_{EW1} = 0.13\,\text{W/(m}^2\,\text{K)}$

$\Psi = 0.004\,\text{W/(m K)}$

$f_{Rsi} = 0.869$

Ceiling integration

into exterior wall

(EW1_EW1_CE_1)

$U_{EW1} = 0.13\,\text{W/(m}^2\,\text{K)}$

$U_{EW1} = 0.13\,\text{W/(m}^2\,\text{K)}$

$\Psi = 0.010\,\text{W/(m K)}$

$f_{Rsi} = 0.932$

Exterior corner

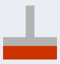
exterior wall (EW1_EW1_ec_1)

$$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$$
$$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$$
$$\Psi = -0.048\,\mathrm{W/(m\,K)}$$
$$f_{Rsi} = 0.905$$

Interior corner

exterior wall (EW1_EW1_ic_1)

$$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$$
$$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$$
$$\Psi = 0.030\,\mathrm{W/(m\,K)}$$
$$f_{Rsi} = 0.958$$



Internal wall integration

into exterior wall (EW1_EW1_IW_1)

$$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$$
$$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$$
$$\Psi = 0.001\,\mathrm{W/(m\,K)}$$
$$f_{Rsi} = 0.958$$

Panel joint

exterior wall (EW1_EW1_pj_1)

$$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$$
$$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$$
$$\Psi = 0.007\,\mathrm{W/(m\,K)}$$
$$f_{Rsi} = 0.957$$

Window bottom

operable window in exterior wall (EW1_OB1_1)

$$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$$
$$U_{OB1} = 0.82\,\mathrm{W/(m^2\,K)}$$
$$\Psi = -0.004\,\mathrm{W/(m\,K)}$$
$$f_{Rsi} = 0.734$$

Window head

operable window in exterior wall (EW1_OH1_1)

$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$

$U_{OH1} = 0.84\,\mathrm{W/(m^2\,K)}$

$\Psi = 0.006\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.749$

Window jamb

operable window in exterior wall (EW1_OJ1_1)

$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$

$U_{OJ1} = 0.84\,\mathrm{W/(m^2\,K)}$

$\Psi = 0.001\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.754$

Roof eave

pitched roof (EW1_RO1_ea_1)

$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$

$U_{RO1} = 0.12\,\mathrm{W/(m^2\,K)}$

$\Psi = -0.006\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.925$

Roof verge

pitched roof (EW1_RO1_ve_1)

$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$

$U_{RO1} = 0.12\,\mathrm{W/(m^2\,K)}$

$\Psi = -0.049\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.903$

Roof eave

exterior wall to top ceiling with cold roof (EW1_TC1_RO_ea_2)

$U_{EW1} = 0.13\,\mathrm{W/(m^2\,K)}$

$U_{TC1} = 0.13\,\mathrm{W/(m^2\,K)}$

$\Psi = -0.058\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.903$

Floor slab to basement exterior wall
with basement ceiling (FS1_BEW1_BC_1)

U_{FS1} = 0.13 W/(m² K)
U_{BEW1} = 0.10 W/(m² K)
Ψ = 0.058 W/(m K)
f_{Rsi} = 0.947

Exterior wall plinth
on floor slab (FS1_EW1_1)

U_{FS1} = 0.13 W/(m² K)
U_{EW1} = 0.13 W/(m² K)
Ψ = −0.040 W/(m K)
f_{Rsi} = 0.929

Internal wall integration
into floor slab (FS1_FS1_IW_1)

U_{FS1} = 0.13 W/(m² K)
U_{FS1} = 0.13 W/(m² K)
Ψ = 0.000 W/(m K)
f_{Rsi} = 0.929

Basement exterior wall
to basement floor (FS2_BEW1_1)

U_{FS2} = 0.11 W/(m² K)
U_{BEW1} = 0.10 W/(m² K)
Ψ = −0.034 W/(m K)
f_{Rsi} = 0.904

Roof ridge

pitched roof (RO1_RO1_ri_1)

$U_{RO1} = 0.12\,\mathrm{W/(m^2\,K)}$

$U_{RO1} = 0.12\,\mathrm{W/(m^2\,K)}$

$\Psi = -0.053\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.934$

Disclaimer: The Passive House Institute GmbH (PHI) carries out heat transfer analyses according to the standards set out in the document "Criteria and Algorithms for Certified Passive House Components: Opaque Construction Systems" and based on information provided by the manufacturer. It is the responsibility of the project leader, e.g. the architect to ensure the appropriate assessments have been carried out for specific buildings, which may include more detailed analyses than those carried out for this certification. Use of a certified Passive House component does not guarantee that a construction project will achieve the Passive House, EnerPHit or PHI Low Energy Building standard. In all cases full details are to be made available by the manufacturer on request to the engaged certified Passive House designer or certifier, who will be permitted to check these against the construction information and to perform on-site checks as part of the quality assurance process.