CERTIFICATE

Certified Passive House Component

Component-ID 2285cs04 valid until 31st December 2025

Passive House Institute
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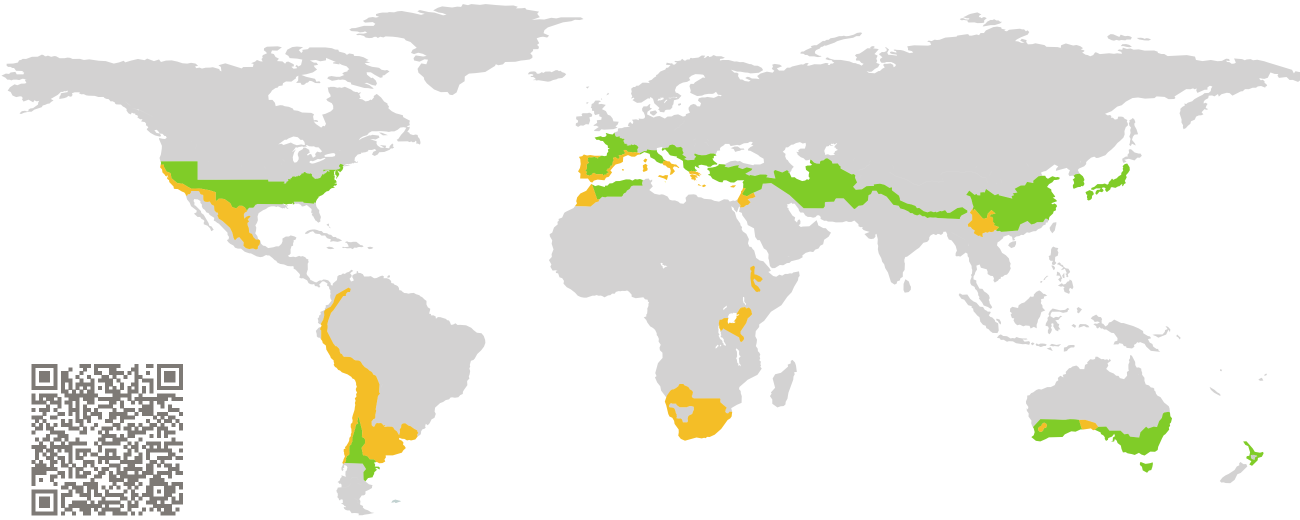
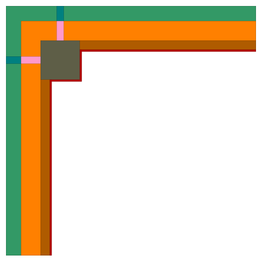
64283 Darmstadt
Germany



Category:	**Construction system**
Manufacturer:	**Hispalyt,** **Madrid,** **Spain**
Product name:	**Structura**



Hygiene criterion

The mininum temperature factor of the interior surfaces is $f_{Rsi=0.25\,m^2K/W} \geq$ 0.65

Comfort criterion

The U-value of the installed windows is $U_{wi} \leq$ 1.05 W/(m² K)

Efficiency criteria

Heat transfer coefficient of building envelope: $U * f_{PHI} \leq$ 0.25 W/(m² K)

Temperature factor of opaque junctions: $f_{Rsi=0.25\,m^2K/W} \geq$ 0.82

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.

warm, temperate climate

CERTIFIED COMPONENT

Passive House Institute

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Opaque building envelope

Structura is a cavity wall system with an interior brick layer consisting of 7 cm Hispalyt double hol-low bricks (930 kg/m³; partition 60 mm <E <90 mm), an insulation layer of 15 cm with mineral wool insulation (0.040 W/(mK)) and an exterior brick layer consisting of Hispalyt 1/2 foot perforated bricks (1020 kg/m³). In the U-value of the wall steel mesh in the exterior brick layer was considered. For the thermal bridges wall connecting anchors in the connection points are taken into account. The interior wall corner connection does not pass efficiency criteria due to the geometric effect. The connections of interior walls to the exterior wall as well as the ceiling integration into the exterior wall also do not pass efficiency criteria. As the main insulation layer is continuous around the details and interior surface temperatures are high enough this is acceptable. With this the Passive House Standard can still plausibly be achieved.

Windows

For the purposes of certification a generic triple-glazed passive house window (Uw = 1.0 W/(m²K) with Ug = 0.90 W/(m²K), featuring phA thermal values for the spacer and a polysulfide secondary seal was used. The overall U-value of the installed window of standard size (1.23 m wide by 1.48 m tall) should be no more than 0,05 W/(m²K) greater than the Uw to ensure occupant comfort - this criteria is met in this instance. The calculations undertaken demonstrate that the window installation locations are suited to the warm-temperate climate zone, with no risk of surface condensation or subsequent mold growth. Mounting of the windows are ensured through the use of a timber support frame around the window. Windows are then screwed into this support frame.

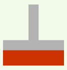
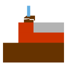
Airtightness concept

Airtightness is ensured by the interior plaster layer. Connections to interior ceilings, windows, roof and floor slab are to be sealed with airtight tape.

Summary of values

Opaque assemblies		U-value W/(m^2 K)	Thickness mm
exterior wall	(EW1)	0.23	350
flat roof	(FR1)	0.25	465
floor slab	(FS1)	0.24	525
pitched roof	(RO1)	0.23	485

Frame Cuts with "dummy wood window warm-temperate" from "dummy window manufacturer" (0004)						
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)		125	0.92	0.038	0.70
Top	(OH1)		125	0.92	0.038	0.70
Lateral	(OJ1)		125	0.92	0.038	0.70
Threshold	(OT1)		125	0.92	0.038	0.70
Spacer: PHI phB-Spacer				Secondary seal: Polysulfide		

Junctions		U1 U2 U3 W/(m² K)	Ψ-value Ψ W/(m K)	Temp. factor $f_{Rsi=0.25}$ [-]
Ceiling integration into exterior wall (EW1_EW1_CE_1)		0.23 0.23	0.015	0.944
Exterior corner exterior wall (EW1_EW1_ec_1)		0.23 0.23	–0.084	0.903
Interior corner exterior wall (EW1_EW1_ic_1)		0.23 0.23	0.087	0.936
Internal wall integration into exterior wall (EW1_EW1_IW_1)		0.23 0.23	0.021	0.936
Roof parapet flat roof (EW1_FR1_rp_1)		0.23 0.25	–0.081	0.892
Window bottom operable window in exterior wall (EW1_OB1_1)		0.23 0.92	0.022	0.798
Window head operable window in exterior wall (EW1_OH1_1)		0.23 0.92	0.009	0.800
Window jamb operable window in exterior wall (EW1_OJ1_1)		0.23 0.92	0.009	0.800
Roof eave pitched roof (EW1_RO1_ea_1)		0.23 0.23	–0.038	0.903
Roof verge pitched roof (EW1_RO1_ve_1)		0.23 0.23	–0.058	0.886
Threshold to floor slab (FS1_EW1_OT1_1)		0.24 0.23 0.92	0.003	0.770
Exterior wall plinth on floor slab (FS1_EW1_1)		0.24 0.23	–0.089	0.868

Opaque Assemblies

exterior wall (EW1)

Material	Lambda W/(m K)	Thickness (mm)
EW1_eq 1/2 foot perforated brick 1020 kg/m³ & ste mesh metric or catalan 60 mm <G 80 mm; accordir to Código Técnico de la Edificación (CTE)	0.596	115
mineral wool 040	0.040	150
Hispalyt double hollow brick 930 kg/m³ partition 6 mm <E <90 mm; according to Código Técnico de Edificación (CTE)	0.375	70
gypsum plaster (interior plaster)	0.570	15

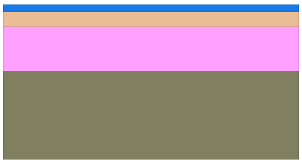
Total thickness: 350 mm
Rsi: 0.13 m^2 K/W
Rse: 0.04 m^2 K/W
U-value: 0.23 W/(m^2 K)

flat roof (FR1)

Material	Lambda W/(m K)	Thickness (mm)
Insulation 040	0.040	150
concrete (1 % steel)	2.300	300
gypsum plaster (interior plaster)	0.570	15

Total thickness: 465 mm
Rsi: 0.10 m^2 K/W
Rse: 0.04 m^2 K/W
U-value: 0.25 W/(m^2 K)

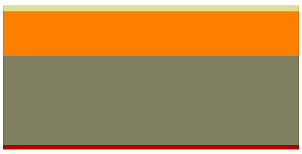
floor slab (FS1)



Material	Lambda W/(m K)	Thickness (mm)
artificial stone	1.300	25
cement screet	1.400	50
XPS 040	0.040	150
concrete (1 % steel)	2.300	300

Total thickness: 525 mm
Rsi: 0.17 m^2 K/W
Rse: - m^2 K/W
U-value: 0.24 W/(m^2 K)

pitched roof (RO1)

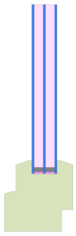


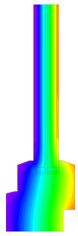
Material	Lambda W/(m K)	Thickness (mm)
softwood, OSB – perpendicular to grain direction	0.130	20
Insulation 040	0.040	150
concrete (1 % steel)	2.300	300
gypsum plaster (interior plaster)	0.570	15

Total thickness: 485 mm
Rsi: 0.10 m^2 K/W
Rse: 0.10 m^2 K/W
U-value: 0.23 W/(m^2 K)

Bottom

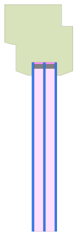
b_f = 125 mm
U_f = 0.92 W/(m^2 K)
Ψ_g = 0.038 W/(m K)
f_{Rsi} = 0.70





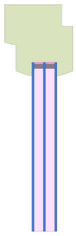
Top

b_f = 125 mm
U_f = 0.92 W/(m^2 K)
Ψ_g = 0.038 W/(m K)
f_{Rsi} = 0.70



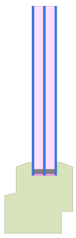
Lateral

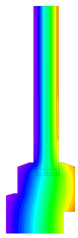
b_f = 125 mm
U_f = 0.92 W/(m^2 K)
Ψ_g = 0.038 W/(m K)
f_{Rsi} = 0.70



Threshold

b_f = 125 mm
U_f = 0.92 W/(m^2 K)
Ψ_g = 0.038 W/(m K)
f_{Rsi} = 0.70





Ceiling integration

into exterior wall

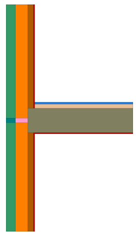
(EW1_EW1_CE_1)

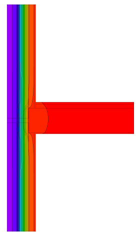
$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$\Psi = 0.015\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.944$





Exterior corner

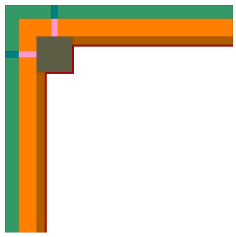
exterior wall (EW1_EW1_ec_1)

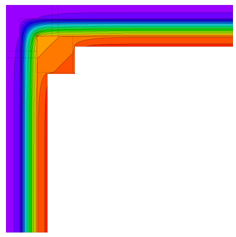
$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$\Psi = -0.084\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.903$





Interior corner

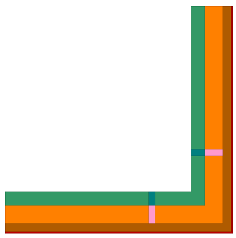
exterior wall (EW1_EW1_ic_1)

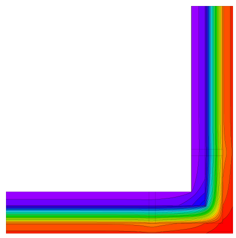
$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$\Psi = 0.087\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.936$





Internal wall integration

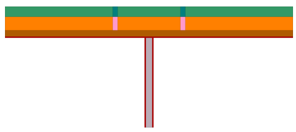
into exterior wall (EW1_EW1_IW_1)

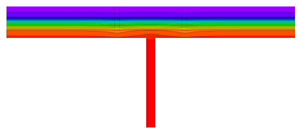
$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$\Psi = 0.021\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.936$





Roof parapet

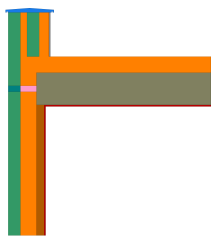
flat roof (EW1_FR1_rp_1)

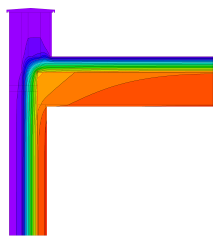
$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$U_{FR1} = 0.25\,\mathrm{W/(m^2\,K)}$

$\Psi = -0.081\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.892$





Window bottom

operable window in exterior wall (EW1_OB1_1)

U_{EW1} = 0.23 W/(m² K)

U_{OB1} = 0.92 W/(m² K)

Ψ = 0.022 W/(m K)

f_{Rsi} = 0.798

Window head

operable window in exterior wall (EW1_OH1_1)

U_{EW1} = 0.23 W/(m² K)

U_{OH1} = 0.92 W/(m² K)

Ψ = 0.009 W/(m K)

f_{Rsi} = 0.800

Window jamb

operable window in exterior wall (EW1_OJ1_1)

U_{EW1} = 0.23 W/(m² K)

U_{OJ1} = 0.92 W/(m² K)

Ψ = 0.009 W/(m K)

f_{Rsi} = 0.800

Roof eave

pitched roof (EW1_RO1_ea_1)

U_{EW1} = 0.23 W/(m² K)

U_{RO1} = 0.23 W/(m² K)

Ψ = –0.038 W/(m K)

f_{Rsi} = 0.903

Roof verge

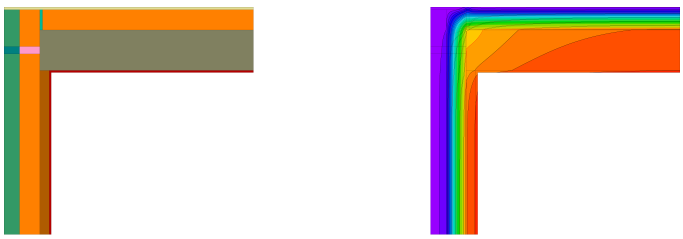
pitched roof (EW1_RO1_ve_1)

U_{EW1} = 0.23 W/(m² K)

U_{RO1} = 0.23 W/(m² K)

Ψ = –0.058 W/(m K)

f_{Rsi} = 0.886



Threshold

to floor slab (FS1_EW1_OT1_1)

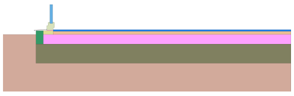
$U_{FS1} = 0.24\,\mathrm{W/(m^2\,K)}$

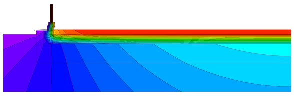
$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$U_{OT1} = 0.92\,\mathrm{W/(m^2\,K)}$

$\Psi = 0.003\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.770$





Exterior wall plinth

on floor slab (FS1_EW1_1)

$U_{FS1} = 0.24\,\mathrm{W/(m^2\,K)}$

$U_{EW1} = 0.23\,\mathrm{W/(m^2\,K)}$

$\Psi = -0.089\,\mathrm{W/(m\,K)}$

$f_{Rsi} = 0.868$