


# Certificate

valid until 31.12.2019

 **Passivhaus  
Institut**  
Dr. Wolfgang Feist  
Rheinstraße 44/46  
D-64283 Darmstadt

## Balcony connection

Low Energy Component

**HIT-SP ZVX**  
**160 - 240 mm slab thickness**

**Manufacturer:** Halfen GmbH  
40764 Langenfeld, GERMANY

The following criteria were used in awarding this certificate:

### Efficiency Criterion

In two typical applications<sup>1)</sup>, the construction is

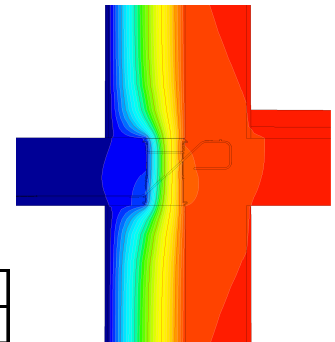
$$\Delta U_{WB} < 0.025 \quad \text{W/(m}^2\text{K)}$$

### Comfort Criterion

The inner surface must be warm enough to prevent mould as well as uncomfortable down-draught and radiation losses.

$$\theta_{i,min} > 17.00 \quad ^\circ\text{C}$$

Following heat transmission coefficients ( $\Psi$  [W/(mK)])  
have been validated:



Isothermal map of  
HIT-SP ZVX-0502-24-100-  
30-06

Product	Slab thickness [mm]			
	160	180	220	240
HIT-SP ZVX-0202-hh <sup>1)</sup> -100-30-08	-	-	-	0.109
HIT-SP ZVX-0302-hh <sup>1)</sup> -100-30-06	-	-	-	0.108
HIT-SP ZVX-0502-hh <sup>1)</sup> -100-30-06	-	-	0.109	0.109

<sup>1)</sup> hh - slab thickness [cm]


<sup>2)</sup> The criterion was validated on both, a row house and a apartment dwelling  
(according to criteria "balcony connection" v2.1.1)

The certificate includes types with minor statical performance. The thermal bridge  
coefficient can be approximated by linear interpolation



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**Low Energy  
Component:**

**Halfen Balcony Connection  
HIT-HP ZVX & SP ZVX  
180 mm slab thickness**

**Hersteller: HALFEN GmbH  
Liebigstraße 14 40764 Langenfeld**

**The following criteria were used in awarding this certificate:**

### Efficiency Criterion

In two typical applications<sup>\*)</sup>, the construction is

$$\Delta U_{WB} < 0.025 \text{ W/(m}^2\text{K)}$$

### Comfort Criterion

The inner surface must be warm enough to prevent mould as well as uncomfortable down-drought and radiation losses.

$$\theta_{i,min} > 17.00 \text{ } ^\circ\text{C}$$

**The following thermal data were determined:**

HALFEN HIT ISO-Element	minimum temperature of the inner surface $\theta_{Si,min}$ [°C]	thermal bridge coefficient $\Psi$ [W/(mK)]
HIT-HP ZVX-0404-18-100-35-06	18.45	0.18
HIT-HP ZVX-0804-18-100-35-08	18.34	0.20
HIT-SP ZVX-0302-18-100-35-08	18.87	0.11
HIT-SP ZVX-0404-18-100-35-06	18.71	0.14
HIT-SP ZVX-0804-18-100-35-08	18.62	0.15


<sup>\*)</sup> The criterion was validated on both, a row house and a apartment dwelling.

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**Low Energy  
Component:**

**Halfen Balcony Connection  
HIT-HP ZVX & SP ZVX  
240 mm slab thickness**

**Hersteller: HALFEN GmbH  
Liebigstraße 14 40764 Langenfeld**

**The following criteria were used in awarding this certificate:**

### Efficiency Criterion

In two typical applications<sup>\*)</sup>, the construction is

$$\Delta U_{WB} < 0.025 \text{ W/(m}^2\text{K)}$$

### Comfort Criterion

The inner surface must be warm enough to prevent mould as well as uncomfortable down-drought and radiation losses.

$$\theta_{i,min} > 17.00 \text{ } ^\circ\text{C}$$

**The following thermal data were determined:**

HALFEN HIT ISO-Element	minimum temperature of the inner surface $\theta_{Si,min}$ [°C]	thermal bridge coefficient $\Psi$ [W/(mK)]
HIT-HP ZVX-0404-24-100-35-06	18.37	0.20
HIT-HP ZVX-0804-24-100-35-08	18.29	0.21
HIT-SP ZVX-0302-24-100-35-08	18.85	0.11
HIT-SP ZVX-0404-24-100-35-06	18.68	0.14
HIT-SP ZVX-0804-24-100-35-08	18.62	0.16

<sup>\*)</sup> The criterion was validated on both, a row house and a apartment dwelling.  
The certificate includes types with minor statical performance. The thermal bridge coefficient can be approximated by linear interpolation.

