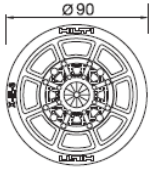
X-IE 6 and X-IE 9 Insulation fasteners

Product Data

Dimensions

X-IE 6

X-IE 9



General information

Material specifications

Plastic plate	X-IE 6: HDPE, colourless X-IE 9: HDPE, black
Nail	X-PX Carbon steel shank: HRC 58 Zinc coating: 5 – 20 µm

Recommended fastening tools

DX 460 IE, DX 460 IE XL, DX 5 IE, DX 5 IE XL

See **X-IE fastener program** in the next pages and **Tools and equipment** chapter for more details

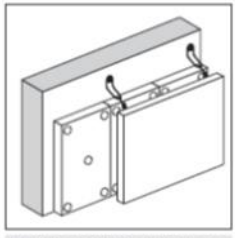
Approvals

SOCOTEC WX 1530 (France)

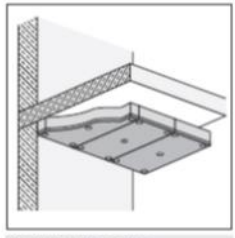
Note: technical data presented in these approvals and design guidelines reflect specific local conditions and may differ from those published in this handbook

Applications and suitable insulation materials

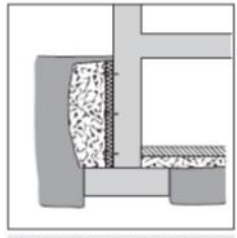
- ✓ Mineral wool
- ✓ EPS
- ✓ XPS
- ✓ PIR
- ✓ PUR
- ✓ Multilayer



Insulation behind curtain walls



Insulation in ceilings

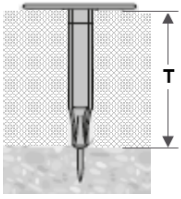


Temporary fixing of insulation of moisture barriers / drainage plates

Fastener program

X-IE 6

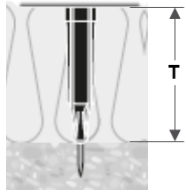
Ø 60mm



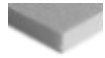
T = fastenable insulation thickness

X-IE 9

Ø 90mm



X-IE 6: For use with mineral wool, EPS, XPS, PIR, PUR and soft core multilayer boards *



T (mm)	Designation	Item no.
20	X-IE 6- 20	2143956
25	X-IE 6- 25	2041714
30	X-IE 6- 30	2041715
35	X-IE 6- 35	2041716
40	X-IE 6- 40	2041717
50	X-IE 6- 50	2041718
60	X-IE 6- 60	2041719
70	X-IE 6- 70	2041740
75	X-IE 6- 75	2041741

T (mm)	Designation	Item no.
80	X-IE 6- 80	2041742
90	X-IE 6- 90	2041743
100	X-IE 6- 100	2041744
120	X-IE 6- 120	2041745
140	X-IE 6- 140	2041393
150	X-IE 6- 150	2048523
160	X-IE 6- 160	2041394
180	X-IE 6- 180	2041395
200	X-IE 6- 200	2041396

* Soft core multilayer are boards with hard top layer and mineral wool insulation core

X-IE 9: For use with soft mineral wool

T (mm)	Designation	Item no.
50	X-IE 9- 50 BK	2092034
60	X-IE 9- 60 BK	2041746
80	X-IE 9- 80 BK	2041747
90	X-IE 9- 90 BK	2041748
100	X-IE 9- 100 BK	2041749

T (mm)	Designation	Item no.
120	X-IE 9- 120 BK	2041750
140	X-IE 9- 140 BK	2041751
160	X-IE 9- 160 BK	2041752
180	X-IE 9- 180 BK	2041753
200	X-IE 9- 200 BK	2041754

Fastener program

X-IE 6: For use with stiff core multilayer boards *

T (mm)	Designation	Item no.
31	X-IE 6- 35	2041716
36	X-IE 6- 40	2041717
46	X-IE 6- 50	2041718
56	X-IE 6- 60	2041719
66	X-IE 6- 70	2041740
71	X-IE 6- 75	2041741

T (mm)	Designation	Item no.
76	X-IE 6- 80	2041742
86	X-IE 6- 90	2041743
91	X-IE 6- 100	2041744
96	X-IE 6- 100	2041744
116	X-IE 6- 120	2041745

Must pre-drill holes of Ø 20 mm

* Stiff core multilayer are boards with hard top layer and insulation core of EPS, XPS, PIR, PUR

Notes
Maximum allowable insulation compressive strength 500 kN/m^2
Maximum insulation board thickness tolerance +/- 3mm

Mineral wool, soft mineral wool: For intermediate thicknesses, not covered, use next shorter fastener.
Example: for mineral wool insulation thickness 110 mm, use X-IE 6-100

EPS, XPS, PIR, PUR: For intermediate thicknesses, not covered, use next longer fastener.
Example: for PIR insulation thickness 110 mm, use X-IE 6-120

Multilayer: For sizes not covered with above portfolio, please contact Hilti

System recommendation

Tool

DX 460 IE, DX 460 IE XL, DX 5 IE, DX 5 IE XL

Cartridge recommendation

Steel	6.8/11M yellow or red cartridge
Concrete	6.8/11M yellow or red cartridge
Masonry	6.8/11M yellow or green cartridge

Tool energy adjustment

Energy to be adjusted by setting tests on site and checking proper fastening using the check gauge provided in every box of fasteners

Application limits

Thickness of base material

Concrete thickness	$\geq$ 80 mm
Steel thickness	$\geq$ 4mm

Base material

Concrete	f_{cc} = 15-65 N/mm^2	(aggregate size $\leq$ 32 mm)
Solid sand-lime masonry	f_b = 15-45 N/mm^2	
Clinker brick	f_b = 28-45 N/mm^2	
Steel	f_u = 360-450 N/mm^2	(thickness 4-6mm)

Insulation

Insulation thickness	20 – 200 mm
Insulation max compressive strength	500 kN/m^2
Insulation board thickness tolerance (max)	+/- 3mm

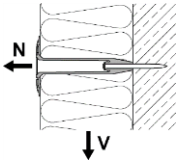
Spacing and edge distance

For number and spacing of fasteners, please inquire at the insulation supplier.
If recommendations from suppliers are not available, use minimum
Mineral wool and mineral wool based insulation: 5 fasteners per m^2
EPS, XPS, PIR, PUR insulation: 4 fasteners per m^2

Performance Data (Base material: concrete)

Recommended loads

Load data – governed by insulation fastener (pullout of fastener) *



	Tension N_{rec} [kN]	Shear V_{rec} [kN]	Estimated stick rate
Soft concrete	0.4	0.4	90% - 95%
Tough concrete	0.2	0.2	85% - 90%

* Load data governed by pullover of the insulation material is available in the Socotec approval

Conditions

- All visible setting failures must be replaced with a new fastening, not in the same hole
- Soft concrete up to fcc = 45 N/mm^2, Tough concrete up to fcc = 65 N/mm^2
- When base material properties are questionable, jobsite qualification is necessary

Thermal efficiency	Point thermal transmittance χ [W/K]
Basement perimeter insulation	60 mm: χ = 0.003 70 – 100mm: χ = 0.002 120 – 200 mm: χ = 0.001
Curtain wall insulation	60 – 90 mm: χ = 0.002 100 – 200mm: χ = 0.001