The following pages are an excerpt from the North American Product Technical Guide, Volume 1: Direct Fastening Technical Guide, Edition 24.

Please refer to the publication in its entirety for complete details on this product including data development, base materials, general suitability, installation, corrosion, and product specifications.

Direct Fastening Technical Guide, Edition 24

To consult directly with a team member regarding our direct fastening products, contact Hilti's team of technical support specialists between the hours of 7:00am - 5:00pm CST.

US: 877-749-6337 or HNATechnicalServices@hilti.com
CA: 1-800-363-4458 ext. 6 or CATechnicalServices@hilti.com

Hilti, Inc.
7250 Dallas Parkway, Suite 1000
Plano, Texas 75024

1-800-879-8000 | www.hilti.com

3.2.20 X-IE-G INSULATION FASTENER

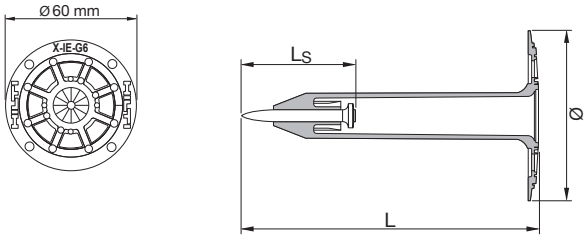
3.2.20.1 PRODUCT DESCRIPTION

The X-IE-G Insulation Fastening system consists of a Gas-Actuated Fastener pre-mounted in a non-metallic insulation fastener assembly, and installed using the Hilti GX-IE Gas-Actuated tool. The resulting fastener assembly allows for various insulation materials to be attached more rapidly and securely to concrete base materials, providing more efficient and safer installation. Due to the design of the fastener and the non-metallic material, the thermal conductivity of the fastening point is minimal, regardless of the insulation thickness. Thermal bridging is minimized.

X-IE-G 6

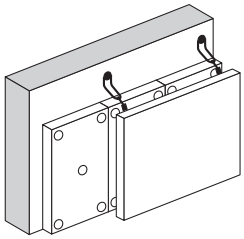
3.2.20.2 SPECIFICATIONS

Dimensions

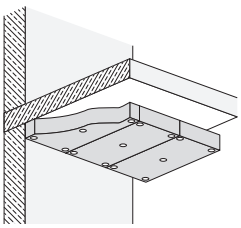


X-IE-G6

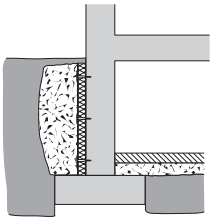
Material specification	
Plate	X-IE-G 6 — HDPE, colorless
Nail	Carbon steel shank: HRC 57.5 Zinc coating: 2 – 13 µm Designation: X-P 36



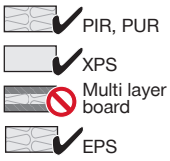
Insulation behind curtain walls



Insulation in ceilings



Temporary fixing of insulation of moisture barriers/drainage plates



3.2.20.3 ADDITIONAL SYSTEM REQUIREMENTS

Tool	GX-IE, GX-IE XL*
Gas can	GC52

*Required for all X-IE G6 with length > 150 mm

3.2.20.4 TECHNICAL DATA

Thickness of base material

Concrete: h_{min} = 3 1/8”

Thickness of fastened material

Insulation thickness [in.]:

X-IE-G 6 (for the use with mineral wool, EPS, XPS, PIR, PUR)	1 – 8

Note: Max. tolerance of insulation thickness = +/- 1/8”

Edge distances and minimum number of X-IE-G

For spacing of insulation fasteners, and minimum distances to the insulation edges, please consult with the insulation material supplier. If spacing recommendations are not available from supplier, please use a minimum of (2) X-IE G fasteners per ft².

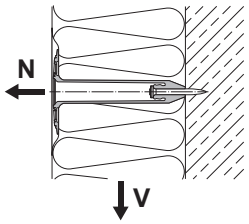
Application limits

Concrete: f’ = 2200–6500 psi (aggregate size ≤ 1 ¼”)

Performance data

Recommended Loads [lb] for concrete base material:	
Tension (lb)	22
Shear (lb)	22

When base material properties are questionable, jobsite testing is recommended



Thermal efficiency

Example for insulation material (EPS or mineral wool) with a thermal conductivity λ = 0.03 W/mK

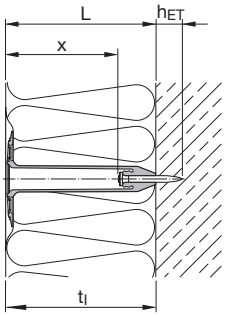
Insulation thickness (inch)	1	2	3	4	5	6	7	8
Hilti insulation fastener	**X-IE-G 25**	**X-IE-G 50**	**X-IE-G 75**	**X-IE-G 100**	**X-IE-G 120**	**X-IE-G 150**	**X-IE-G 180**	**X-IE-G 200**
Thermal conductivity λ [W/mK]	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Thermal resistance R [m^2K/W]	0.85	1.69	2.54	3.39	4.23	5.08	5.93	6.77
Thermal transmittance U [W/m^3K]	1.181	0.591	0.394	0.295	0.236	0.197	0.169	0.148
Point thermal transmittance x [W/K]	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001
Uc = U + n*x [W/m^2K] for n = 1	1.183	0.593	0.396	0.296	0.237	0.198	0.170	0.149
Thermal efficiency = U/Uc	99.8%	99.7%	99.5%	99.7%	99.6%	99.5%	99.4%	99.3%

λ Thermal conductivity [W/mK]
R Thermal resistance [m^2K/W], R = d/λ with d = thickness of inslation or component
U Thermal transmittance [W/m^3K]
Up = x Point thermal transmittance x [W/K] per single fastener
Uc Corrected thermal transmittance [W/m^2K]

1

Fastening quality assurance

Fastening inspection



Insulation thickness t_i [mm][1]

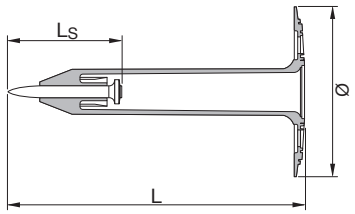
	25/30	40	50	60	70	75	80	90
h_{ET} = 12-19 mm								
x_{min} [mm]	3	14	24	34	44	49	54	64
x_{max} [mm]	10	21	31	41	51	56	61	71

Insulation thickness t_i [mm][1]

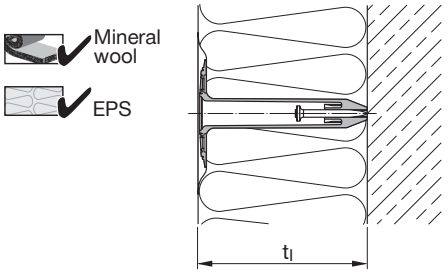
	100	120	130	140	150	160	180	200
h_{ET} = 12-19 mm								
x_{min} [mm]	74	94	104	114	124	134	154	174
x_{max} [mm]	81	100	111	121	131	141	161	181

1 Dimensions are provided in millimeters for accurate field measurement.

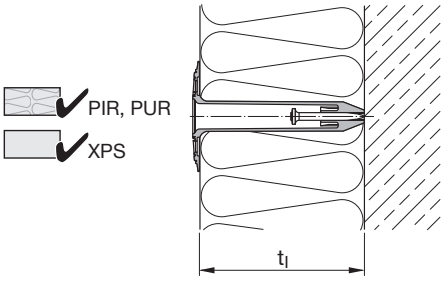
3.2.20.5 ORDERING INFORMATION



Select fastener with designation equivalent to the insulation thickness t_I.



Soft insulation boards (Mineral wool, EPS):
Fasteners are allowed to be countersunk as shown in the drawing.
Note:
For mineral wool of intermediate thicknesses use next shorter X-IE-G.



Hard insulation boards (XPS, PIR, PUR):
The fastener is not countersunk, fastener disc needs to be flush with the board prior to installation as shown in the drawing. For convenience, pre-core the board before installation.

Note:
For intermediate thicknesses, use the next longer X-IE-G.

Designation	Item number	t_I (mm)	Insulation thickness [in][1]
X-IE-G 6-25	2192914	25	1
X-IE-G 6-30	2163810	30	1 1/8
X-IE-G 6-40	2163811	40	1 5/8
X-IE-G 6-50	2163812	50	2
X-IE-G 6-60	2163813	60	2 1/2
X-IE-G 6-70	2163814	70	2 3/4
X-IE-G 6-75	2192915	75	3
X-IE-G 6-80	2163815	80	3 1/4
X-IE-G 6-90	2192916	90	3 1/2
X-IE-G 6-100	2163816	100	4
X-IE-G 6-120	2192917	120	4 3/4
X-IE-G 6-130	2192918	130	5 1/8
X-IE-G 6-140	2163817	140	5 1/2
X-IE-G 6-150	2163818	150	6
X-IE-G 6-160	2163819	160	6 1/4
X-IE-G 6-180	2163820	180	7 1/8
X-IE-G 6-200	2163821	200	8

1 Equivalent insulation thickness converted from mm (Soft Conversion.)