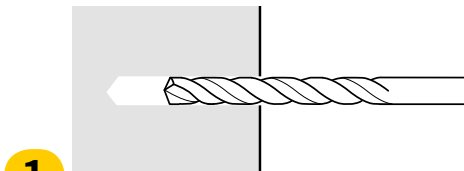


# ESI & EVL Xtreme Pro

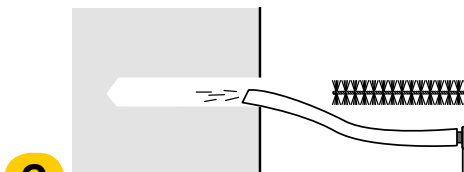


## Installation:

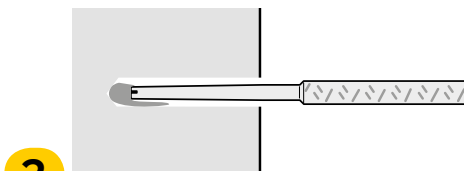
**Aerated Concrete, Lightweight Aggregate Concrete element (LAC) and Solid Sand-Lime element.**



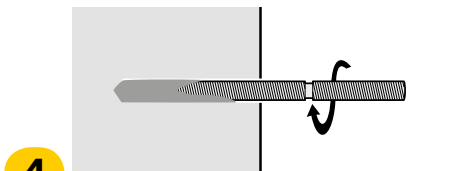
**1** Drill a hole in correct diameter and depth



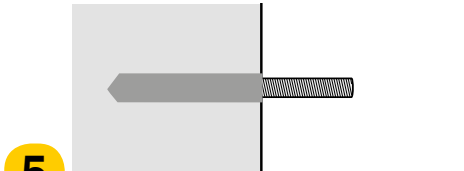
**2** Clean the drilled hole thoroughly



**3** Insert the mixer into the drilled hole, and while the mixer is slowly retracted inject the correct volume of styrene free injection mortar



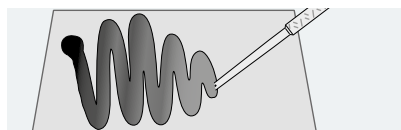
**4** Insert the threaded rod or socket in a slowly rotating motion. For optimal filling of the hole excess mortar should flow out. Observe temperature dependent curing time



**5** After ended curing time the fixing can be loaded and the installation is finished - see curing time table on next page

 **NOTE:**

Always use thread rods free of oil and other impurities. Eject 10-15 cm of Injection Mortar in order to secure correct mix-ratio.



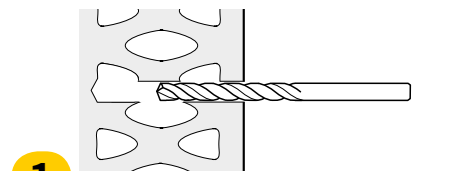
Always respect and comply with temperature dependent curing time.

Anchor rod must not be disturbed or loaded during curing time.

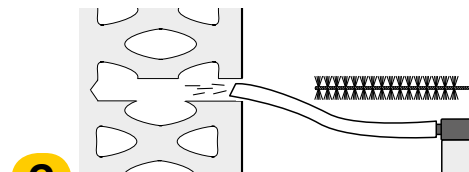
# STYRENE FREE INJECTION MORTAR

For fixing of threaded rods and sleeves in hollow brick (DN), aerated concrete, Lightweight Aggregate Concrete elements (LAC) and Solid Sand-Lime elements based on Expandet technical data.

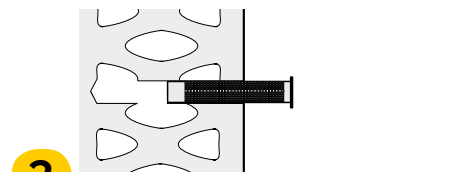
**Hollow brick (DN)**



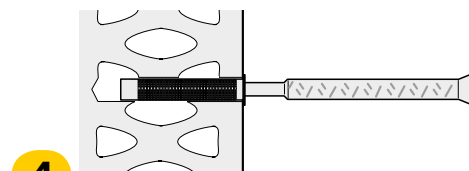
**1** Drill a hole in correct diameter and depth



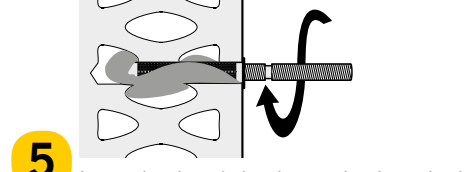
**2** Clean the drilled hole thoroughly



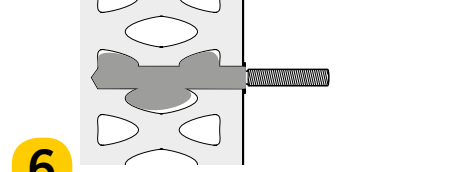
**3** Insert sleeve flush with wall



**4** Inject mortar from bottom of drilled hole - fill the sleeve completely



**5** Insert the threaded rod or socket in a slowly rotating motion. For optimal filling of the hole excess mortar should flow out



**6** After ended curing time the fixing can be loaded and the installation is finished - see curing time table on next page

## ESI and EVL Xtreme Pro STYRENE FREE INJECTION MORTAR

### Advantages:

Expansion free.  
Applicable close to free edge - and with small spacing.  
It is not necessary to use the whole cartridge in one operation.

### Materials:

ESI Xtreme Pro Injection Mortar is supplied in 280, 350 and 410 ml cartridges (280 ml. cartridges can be used with normal silicone gun).

EVL Xtreme Pro winter injection mortar, supplied in 300 ml cartridges and can be used in brickwork at temperatures down to -20 °C.

### Accessories:

Blow Out Bulp.  
Brush.  
Threaded rods/- bolts.  
Sleeve, plastic or metal.  
Socket Anchor with internal thread.  
Injection gun for 280, 300, 350 and 410 ml.



Expandet have a complete programme in Threaded Rods

### ESI and EVL Xtreme Pro in Aerated Concrete (PP2)

Type	Dim.	Fixing							Load Capacities	
		d	d <sub>0</sub>	h <sub>1</sub>	h <sub>nom</sub>	h <sub>min</sub>	S <sub>min</sub>	C <sub>min</sub>	N <sub>Rd</sub>	V <sub>Rd</sub>
Threaded Rods	Threaded Rod diameter mm	Drill hole diameter mm	Depth of drilled hole (Min.) mm	Embedment depth (Min.) mm	Approx. filling quantity per hole ml	Thickness of concrete member, min. mm	Minimum allowable spacing mm	Minimum allowable edge distance mm	Design resistance tension kN*	Design resistance shear kN*
	M 8	10	80	80	3,0	100	80	100	0,78	0,67
	M10	12	90	90	4,4	110	100	100	1,04	0,77
	M12	14	110	110	6,7	130	100	100	1,15	0,89

\* Design resistance is valid for a single anchor not influenced by edge distance and / or spacing in aerated concrete PP2: Density 375 kg/m<sup>3</sup> with a compressive strength of 2 N/mm<sup>2</sup>.

Partial safety factor for material (γ<sub>m</sub>) is included. Partial safety factor for actions (γ<sub>f</sub>) must be applied according to national building code.

If no guidance for γ<sub>f</sub> exists Expandet recommend a partial safety factor for actions of minimum 1,5.

1 kN ≈ 100 kg.

Combined resistance shall be verified if both tension and shear actions are applied:

$$\left(\frac{N_{Sd}}{N_{Rd}}\right) + \left(\frac{V_{Sd}}{V_{Rd}}\right) \leq 1,2$$

### ESI and EVL Xtreme Pro in Aerated Concrete (PP4)

Type	Dim.	Fixing							Load Capacities	
		d	d <sub>0</sub>	h <sub>1</sub>	h <sub>nom</sub>	h <sub>min</sub>	S <sub>min</sub>	C <sub>min</sub>	N <sub>Rd</sub>	V <sub>Rd</sub>
Threaded Rods	Threaded Rod diameter mm	Drill hole diameter mm	Depth of drilled hole (Min.) mm	Embedment depth (Min.) mm	Approx. filling quantity per hole ml	Thickness of concrete member, min. mm	Minimum allowable spacing mm	Minimum allowable edge distance mm	Design resistance tension kN*	Design resistance shear kN*
	M 8	10	80	80	3,0	100	80	100	0,93	1,05
	M10	12	80	80	3,9	100	100	100	1,07	1,08
	M12	14	80	80	4,9	100	100	100	1,09	1,09

\* Design resistance is valid for a single anchor not influenced by edge distance and / or spacing in aerated concrete PP4: Density 535 kg/m<sup>3</sup> with a compressive strength of 4 N/mm<sup>2</sup>.

Partial safety factor for material (γ<sub>m</sub>) is included. Partial safety factor for actions (γ<sub>f</sub>) must be applied according to national building code.

If no guidance for γ<sub>f</sub> exists Expandet recommend a partial safety factor for actions of minimum 1,5.

1 kN ≈ 100 kg.

Combined resistance shall be verified if both tension and shear actions are applied:

$$\left(\frac{N_{Sd}}{N_{Rd}}\right) + \left(\frac{V_{Sd}}{V_{Rd}}\right) \leq 1,2$$

**Important:** See Expandet's "Principles for fastening" for general information on fastening as well as information on limited liability. (Can be downloaded at [www.expandet.com](http://www.expandet.com))

#### ESI Xtreme Pro - Maximum working time and minimum curing time

Temperature <sup>1)</sup>	Geltime	Curingtime
-10°C → -6°C <sup>2)</sup>	90 min <sup>2)</sup>	24 h
-5°C → -1°C	90 min <sup>3)</sup>	14 h
0°C → +4°C	45 min <sup>3)</sup>	7 h
+5°C → +9°C	25 min <sup>3)</sup>	2 h
+10°C → +19°C	15 min <sup>3)</sup>	80 min
+20°C → +29°C	6 min <sup>3)</sup>	45 min
+30°C → +34°C	4 min <sup>4)</sup>	25 min
+35°C → +39°C	2 min <sup>4)</sup>	20 min

<sup>1)</sup> In concrete

\* Cartridge temp. Min: + 5°C Max: + 25°C

<sup>2)</sup> Cartridge temp. Min: + 15°C

<sup>3)</sup> Cartridge temp.: Must be between +5°C and +25°C (Only acc. EC2 for rebar)

<sup>4)</sup> Cartridge Temp.: Must be below +20°C (Only acc. EC2 for rebar)

In wet concrete the curing time must be doubled.

#### EVL Xtreme Pro - Maximum working time and minimum curing time

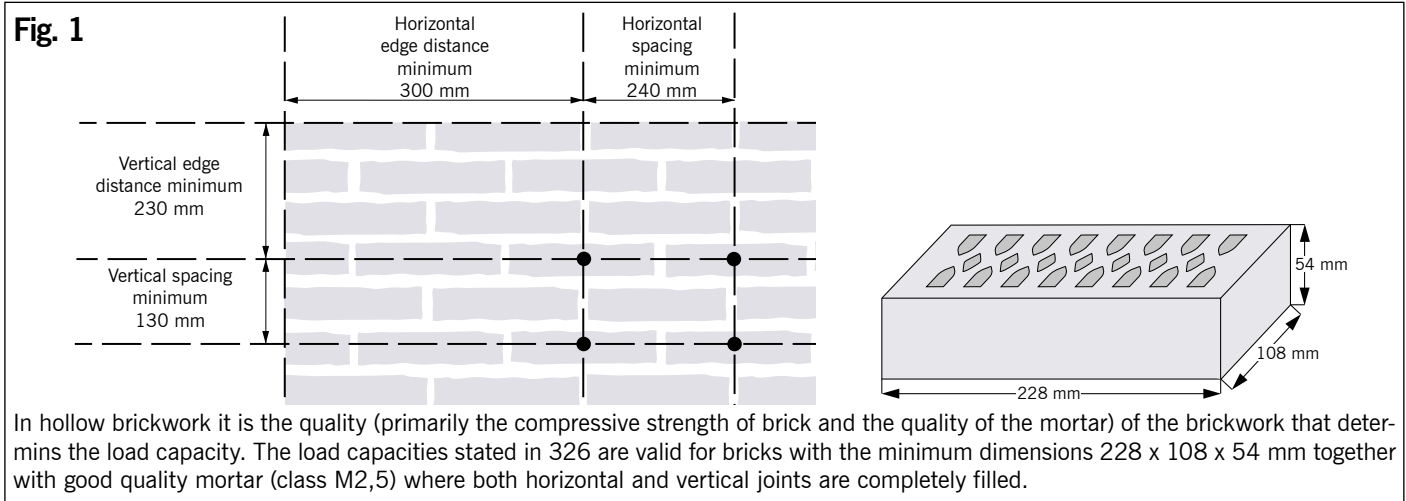
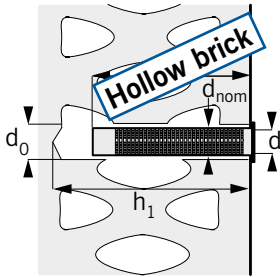
Temperature <sup>1)</sup>	Geltime	Curingtime
-20°C → -16°C	90 min	24 h
-15°C → -11°C	90 min	14 h
-10°C → -6°C	45 min	7 h
-5°C → -1°C	25 min	2 h
0°C → +4°C	15 min	80 min
+5°C → +9°C	6 min	45 min
+10°C	4 min	25 min

<sup>1)</sup> In concrete

\* Cartridge temp. from + 10°C to -20°C

• In wet concrete the curing time must be doubled

**ESI and EVL Xtreme Pro STYRENE FREE INJECTION MORTAR**



ESI and EVL Xtreme Pro in Hollow Brick (minimum 22 N/mm <sup>2</sup> )										
Type	Dim.	Fixing							Load Capacities	
	d		d <sub>0</sub>	h <sub>1</sub>	h <sub>nom</sub>	T <sub>inst</sub>	S <sub>min</sub>	C <sub>min</sub>	N <sub>Rd</sub>	V <sub>Rd</sub>
Threaded Rods	Threaded Rod diameter mm	Sleeve dimension mm	Drill hole diameter mm	Depth of drilled hole (Min.) mm	Embedment depth (Min.) mm	Required setting torque Nm	Minimum spacing mm	Minimum edge distance mm	<b>Design resistance tension</b> kN*	<b>Design resistance Shear</b> kN*
	M 8	12 x 50	12	55	50	5,0	See fig. 1	See fig. 1	1,6	1,8
	M10	16 x 85	16	90	85	8,0	See fig. 1	See fig. 1	2,0	2,5
	M12	16 x 85	16	140	85	10,0	See fig. 1	See fig. 1	2,3	3,0
	M16	20 x 85	20	90	85	12,0	See fig. 1	See fig. 1	3,2	3,8

\* Design resistance is valid for a single anchor not influenced by edge distance and / or spacing in hollow brick with a minimum compressive strength of 22 N/mm<sup>2</sup>. Only actual tests can define load capacity for a specific brick. Thus above load capacities are only for guidance. Further it is important to ensure that the brick wall can absorb the loads applied.

Combined resistance shall be verified if both tension and shear actions are applied: 
$$\left(\frac{N_{Sd}}{N_{Rd}}\right) + \left(\frac{V_{Sd}}{V_{Rd}}\right) \leq 1,2$$

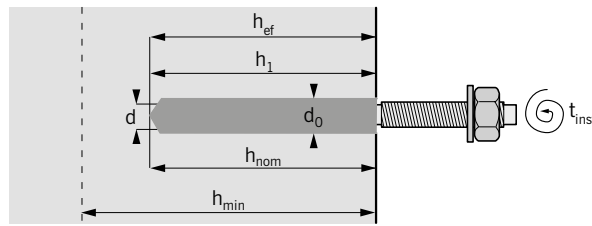
Partial safety factor for material ( $\gamma_m$ ) is included. Partial safety factor for actions ( $\gamma_t$ ) must be applied according to national building code.

If no guidance for  $\gamma_t$  exists Expandet recommend a partial safety factor for actions of minimum 1,5.

1 kN ≈ 100 kg.

**Important:** See Expandet's "Principles for fastening" for general information on fastening as well as information on limited liability.

**ESI and EVL Xtreme Pro STYRENE FREE INJECTION MORTAR**



Lightweight Aggregate Concrete Element (LAC) 10/1550									
Type	Dim.	Fixing						Load Capacities	
	d	d <sub>0</sub>	h <sub>1</sub>	h <sub>nom</sub>	h <sub>min</sub>	S <sub>min</sub>	C <sub>min</sub>	LAC 10/1550	
Threaded Rods	Threaded Rod diameter mm	Drill hole diameter mm	Depth of drilled hole (Min.) mm	Embedment depth (Min.) mm	Thickness of concrete member mm	Minimum allowable spacing mm	Minimum allowable edge distance mm	Design resistance tension kN (N <sub>Rd,d</sub> ) <sup>1</sup>	Design resistance Shear kN (V <sub>Rd,d</sub> ) <sup>2</sup>
M8	8	10	70	70	100	210 <sup>3)</sup>	50	3,1	3,0
M10	10	12	70	70	100	210 <sup>3)</sup>	50	4,8	3,0
M12	12	14	70	70	100	210 <sup>3)</sup>	50	5,6	3,0

- 1) Design resistance is valid for a single anchor with 50 mm edge distance and is based on test performed with 100mm LAC elements. The tests are performed in the side of the elements with 50 mm edge distance to both sides. Load capacities are not valid for fixing where the third (corner) edge distance is < 150 mm
- 2) Design resistance for share is valid for a single anchor with 210 mm spacing distance. Load capacities are valid in both directions, against and along the edge.
- 3) If the anchor is influenced by tension load only, the spacing distance can be reduced to 150 mm.

Combined resistance shall be verified if both tension and shear actions are applied:  $\left(\frac{N_{Sd}}{N_{Rd}}\right) + \left(\frac{V_{Sd}}{V_{Rd}}\right) \leq 1,2$

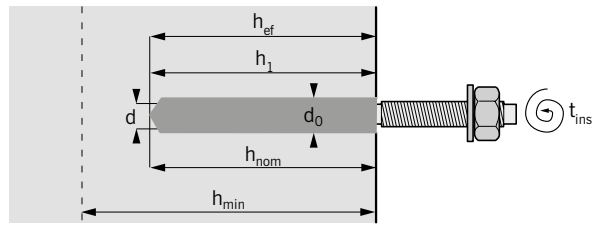
Lightweight Aggregate Concrete Element (LAC) 15/1850									
Type	Dim.	Fixing						Load Capacities	
	d	d <sub>0</sub>	h <sub>1</sub>	h <sub>nom</sub>	h <sub>min</sub>	S <sub>min</sub>	C <sub>min</sub>	LAC 15/1850	
Threaded Rods	Threaded Rod diameter mm	Drill hole diameter mm	Depth of drilled hole (Min.) mm	Embedment depth (Min.) mm	Thickness of concrete member mm	Minimum allowable spacing mm	Minimum allowable edge distance mm	Design resistance tension kN (N <sub>Rd,d</sub> ) <sup>1</sup>	Design resistance Shear kN (V <sub>Rd,d</sub> ) <sup>2</sup>
M8	8	10	70	70	100	210 <sup>3)</sup>	50	3,6	3,2
M10	10	12	70	70	100	210 <sup>3)</sup>	50	5,2	3,2
M12	12	14	70	70	100	210 <sup>3)</sup>	50	5,8	3,2

- 1) Design resistance is valid for a single anchor with 50 mm edge distance and is based on test performed with 100mm LAC elements. The tests are performed in the side of the elements with 50 mm edge distance to both sides. Load capacities are not valid for fixing where the third (corner) edge distance is < 150 mm
- 2) Design resistance for share is valid for a single anchor with 210 mm spacing distance. Load capacities are valid in both directions, against and along the edge.
- 3) If the anchor is influenced by tension load only, the spacing distance can be reduced to 150 mm.

Combined resistance shall be verified if both tension and shear actions are applied:  $\left(\frac{N_{Sd}}{N_{Rd}}\right) + \left(\frac{V_{Sd}}{V_{Rd}}\right) \leq 1,2$

With reserve too changes in technical specifications and misprints.

## ESI and EVL Xtreme Pro STYRENE FREE INJECTION MORTAR



Solid Sand-Lime Element										
Type	Dim.	Fixing							Load Capacities	
	d	d <sub>0</sub>	h <sub>1</sub>	h <sub>nom</sub>	h <sub>min</sub>	S <sub>min</sub>		C <sub>min</sub>	LAC 10/1550	
Threaded Rods	Threaded Rod diameter mm	Drill hole diameter mm	Depth of drilled hole (Min.) mm	Embedment depth (Min.) mm	Thickness of concrete member mm	Minimum allowable spacing mm	Minimum spacing to third edge mm	Minimum allowable edge distance mm	Design resistance tension kN (N <sub>Rd,d</sub> ) <sup>1)</sup>	Design resistance Shear kN (V <sub>Rd,d</sub> ) <sup>2)</sup>
M8	8	10	80	80	100	210 <sup>3)</sup>	320	50	3,1	2,0
M10	10	12	80	80	100	210 <sup>3)</sup>	320	50	5,3	2,6
M12	12	14	80	80	100	210 <sup>3)</sup>	320	50	5,3	2,6

- 1) Design resistance is valid for a single anchor with 50 mm edge distance and is based on test performed with 100mm elements. The tests are performed in the side of the elements with 50 mm edge distance to both sides. Load capacities are not valid for fixing where the third (corner) edge distance is < 320 mm
- 2) Design resistance for shear load is valid for a single anchor with 210 mm spacing distance. Load capacities are valid in both directions, against and along the edge.
- 3) If the anchor is influenced by tension load only, the spacing distance can be reduced to 150 mm

Combined resistance shall be verified if both tension and shear actions are applied:

$$\left( \frac{N_{Sd}}{N_{Rd}} \right) + \left( \frac{V_{Sd}}{V_{Rd}} \right) \leq 1,2$$