

Expandet ESP Pro Injection Mortar

Expandet ESP Pro is the professional bonded anchor solution that provides expansion free, safe and fast fixing of threaded rods in non-cracked concrete.

ESP Pro is also suitable for use in wet and flooded holes. ETA and CE marked in option 7 (non-cracked concrete). Use of a professional injection gun (H245) is recommended.



ADVANTAGES

- ESP Pro is suitable for expansion free use in non-cracked concrete.
- ETA and CE marked for use in loadbearing constructions when using steel grade 4.6, 5.8, 8.8, 10.9, A4-50 & A4-70 in concrete.
- Wide range of embedment depth - allows for optimized embedment depth.
- Applicable in dry/wet and flooded holes.
- Can be used close to the edge and with a small spacing.
- Anchorages can be designed in Expandet Anchor Calculation Programme. For download go to www.expandet.dk



ACCESSORIES

Wide range of accessories.

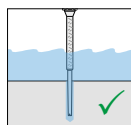
ESP Pro - Maximum working time and minimum curing time

Temperature ¹⁾	Geltime	Curingtime
-5°C → -1°C	90 min	360 min
0°C → +4°C	45 min	180 min
+5°C → +9°C	25 min	120 min
+10°C → +14°C	20 min	100 min
+15°C → +19°C	15 min	80 min
+20°C → +29°C	6 min	45 min
+30°C → +34°C	4 min	25 min
+35°C → +39°C	2 min	20 min

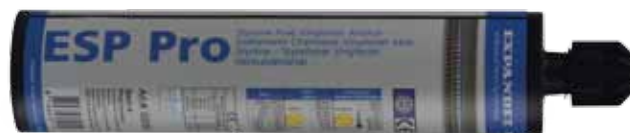
¹⁾ In concrete
* Cartridge temp. from + 5°C to + 30°C

INSTALLATION:

- 1] Drill a hole with correct diameter and depth
- 2] Clean the drilled hole thoroughly - follow above illustration
- 3] Eject approximately 10-15 cm mortar in order to ensure correct mixing ratio for injection
- 4] Insert the mixer into the drilled hole, and while the mixer is slowly retracted inject the correct volume of styrene free injection mortar
- 5] Insert the treaded rod or socket in a slowly rotating motion, complying with specified embedment depth. For optimal filling of the hole excess mortar should flow out. Observe temperature dependent curing time - see cartridge or matrix on the following page
OBS: Use allways oil free treaded rod!
- 6] After ended curing time the fixing can be loaded - installation is finished



Expandet ESP Pro Injection Mortar



EXPANDET ESP PRO STYRENE FREE INJECTION MORTAR for concrete

TYPE DIMENSION	EXPANDET ARTICLE NO.	PCS. PER CARTON	EAN 13 PER CARTRIDGE
300 ml incl. mixer nozzle	820300	12	5708620103846

Professional Injection Gun (H245) is recommended for ESP Pro

Design load capacities in non-cracked concrete C20/25

Dimension of threaded rod (mm)	M8	M10	M12	M16	M20	M24
Effective anchorage depth, h_{ef} (mm)	80	90	110	125	170	210
Drill hole diameter (mm)	10	12	14	18	22	26
Minimum thickness of submaterial, h_{min} (mm)	110	120	140	161	218	266
Tension load, Design resistance N_{rd} kN*						
4.6 steel	7,5	11,5	17,0	27,9	47,5	70,3
5.8 steel	11,4	12,6	18,4	27,9	47,5	70,3
8.8 steel	11,4	12,6	18,4	27,9	47,5	70,3
A4-70 Stainless Steel	11,4	12,6	18,4	27,9	47,5	70,3
A4-80 Stainless Steel	11,4	12,6	18,4	27,9	47,5	70,3
HCR steel	11,4	12,6	18,4	27,9	47,5	70,3
Shear load, Design resistance V_{rd} kN*						
4.6 steel	4,2	7,2	10,2	18,6	29,3	42,5
5.8 steel	7,2	12,0	16,8	31,2	48,8	70,4
8.8 steel	12,0	18,4	27,2	50,4	78,4	112,8
A4-70 Stainless Steel	8,3	12,8	19,2	35,3	55,1	79,5
A4-80 Stainless Steel	11,3	17,3	25,6	47,4	73,7	106,0
HCR Steel	10,4	16,0	24,0	44,0	68,8	99,2

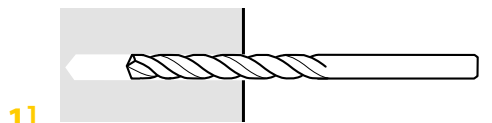
- Design resistance is valid for a single anchor in dry/wet non-cracked concrete C20/25 not influenced by edge distance and/or spacing.
 $\Psi_{re,N} = 1$ (Normal reinforcement according to TR029 5.2.2.3 - 5.2i & 5.2.2.4 - 5.3d).

Expandet ESP Pro for use in masonry type materials

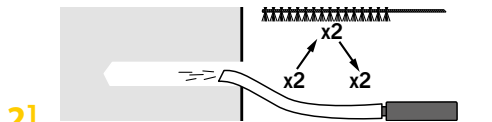


Solid Brick, Aerated Concrete, Lightweight Aggregate Concrete (LAC) and Solid Sand-Lime Brick/Block.

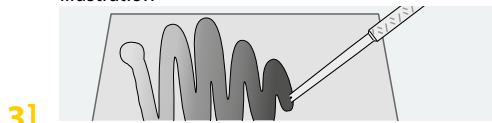
INSTALLATION:



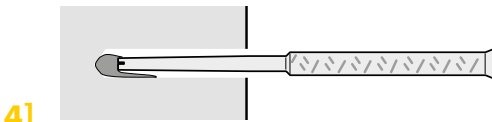
1] Drill a hole with correct diameter and depth



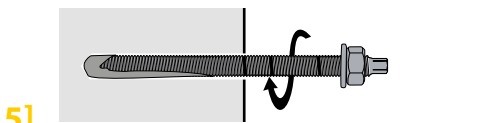
2] Clean the drilled hole thoroughly - follow above illustration



3] Eject approximately 10-15 cm mortar in order to ensure correct mixing ratio for injection



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



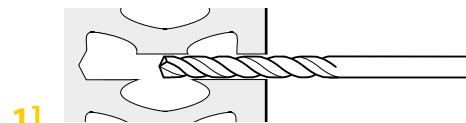
5] Insert the threaded rod or socket in a slowly rotating motion. for optimal filling of the hole excess mortar should flow out. Observe temperature depending on curing time. OBS: Use always oil free threaded rods!



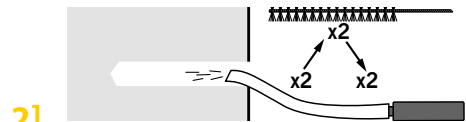
6] After ended curing time the fixing can be loaded and the installation is finished

In hollow materials with sleeve.

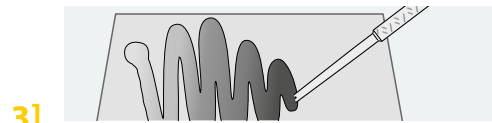
INSTALLATION:



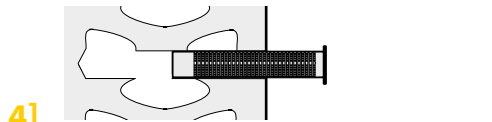
1] Drill a hole with correct diameter and depth



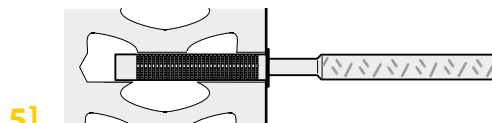
2] Clean the drilled hole thoroughly



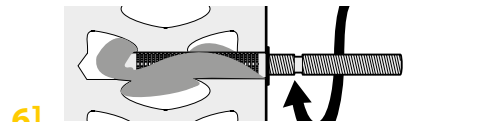
3] Eject approximately 10-15 cm mortar in order to ensure correct mixing ratio for injection



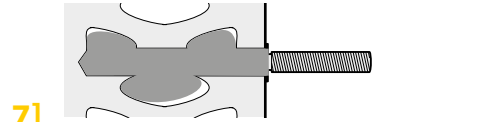
4] Insert sleeve flush with wall



5] Inject mortar from bottom of drilled hole - fill the sleeve completely

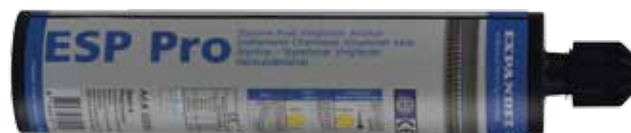


6] Insert the threaded rod or socket in a slowly rotating motion. for optimal filling of the hole excess mortar should flow out. Observe temperature depending on curing time. OBS: Use always oil free threaded rods!



7] After ended curing time the fixing can be loaded and the installation is finished

Installation specifics & Design loads for ESP Pro in different masonry types according ETA at ambient temperatures (24/40)



ESP Pro in Solid Clay Brick (Mz-DF) using hammer or rotary drilling¹⁾

THREADED ROD DIAMETER ³⁾	SLEEVE	DRILL DIAMETER	DRILL/ EMBEDMENT DEPTH IN BRICK (MM)	BRICK SIZE (LENGTH X WIDTH X HEIGHT) (MM)	MIN. COMPRESSIVE STRENGTH (N/MM ²)	DESIGN LOAD, TENSION ²⁾ (kN)	DESIGN LOAD, SHEAR (kN)
(MM)	(MM)	(MM)	(MM)	(MM)	(N/MM ²)	(kN)	(kN)
M8	-	10	80	240 x 115 x 55	20	1,0 (1,45)	1,8
M10	-	12	90			1,0 (1,45)	2,2
M12	-	14	100			0,8 (1,18)	3,0
M16	-	18	100			1,4 (2,0)	3,0

¹⁾ Basic load capacities for the brick without edge distance and/or spacing. For details and other configurations see ETA

²⁾ Values in brackets () are with γ_m 1,7 according to Danish National Annex

³⁾ Threaded rod: Zinc plated or Hot dipped galvanised minimum: \geq 5.6 steel. Stainless steel A4: \geq class 70

ESP Pro in Aerated Concrete AA2 using rotary drilling only¹⁾

THREADED ROD DIAMETER ³⁾	SLEEVE	DRILL DIAMETER	DRILL/ EMBEDMENT DEPTH IN BRICK (MM)	BRICK SIZE (LENGTH X WIDTH X HEIGHT) (MM)	MIN. COMPRESSIVE STRENGTH (N/MM ²)	DESIGN LOAD, TENSION ²⁾ (kN)	DESIGN LOAD, SHEAR (kN)
(MM)	(MM)	(MM)	(MM)	(MM)	(N/MM ²)	(kN)	(kN)
M8	-	10	80	599 x 375 x 249	2	0,45 (0,53)	0,75
M10	-	12	90			0,45 (0,53)	1,0
M12	-	14	100			0,75 (0,87)	1,2
M16	-	18	100			0,75 (0,87)	1,2

¹⁾ Basic load capacities for the brick without edge distance and/or spacing. For details and other configurations see ETA

²⁾ Values in brackets () are with γ_m 1,7 according to Danish National Annex

³⁾ Threaded rod: Zinc plated or Hot dipped galvanised minimum: \geq 5.6 steel. Stainless steel A4: \geq class 70

ESP Pro in Aerated Concrete AA4 using rotary drilling only¹⁾

THREADED ROD DIAMETER ³⁾	SLEEVE	DRILL DIAMETER	DRILL/ EMBEDMENT DEPTH IN BRICK (MM)	BRICK SIZE (LENGTH X WIDTH X HEIGHT) (MM)	MIN. COMPRESSIVE STRENGTH (N/MM ²)	DESIGN LOAD, TENSION ²⁾ (kN)	DESIGN LOAD, SHEAR (kN)
(MM)	(MM)	(MM)	(MM)	(MM)	(N/MM ²)	(kN)	(kN)
M8	-	10	80	499 x 375 x 249	4	0,45 (0,53)	0,75
M10	-	12	90			1,25 (1,46)	1,0
M12	-	14	100			1,25 (1,46)	1,2
M16	-	18	100			1,75 (2,05)	1,7

¹⁾ Basic load capacities for the brick without edge distance and/or spacing. For details and other configurations see ETA

²⁾ Values in brackets () are with γ_m 1,7 according to Danish National Annex

³⁾ Threaded rod: Zinc plated or Hot dipped galvanised minimum: \geq 5.6 steel. Stainless steel A4: \geq class 70

ESP Pro in Solid Calcium silica Brick KS-NF using hammer or rotary drilling¹⁾

THREADED ROD DIAMETER ³⁾	SLEEVE	DRILL DIAMETER	DRILL/ EMBEDMENT DEPTH IN BRICK (MM)	BRICK SIZE (LENGTH X WIDTH X HEIGHT) (MM)	MIN. COMPRESSIVE STRENGTH (N/MM ²)	DESIGN LOAD, TENSION ²⁾ (kN)	DESIGN LOAD, SHEAR (kN)
(MM)	(MM)	(MM)	(MM)	(MM)	(N/MM ²)	(kN)	(kN)
M8	-	10	80	240 x 115 x 71	20	1,8 (2,1)	1,80
M10	-	12	90			1,8 (2,1)	1,8
M12	-	14	100			2,2 (3,2)	2,0
M16	-	18	100			1,8 (2,1)	2,0

¹⁾ Basic load capacities for the brick without edge distance and/or spacing. For details and other configurations see ETA

²⁾ Values in brackets () are with γ_m 1,7 according to Danish National Annex

³⁾ Threaded rod: Zinc plated or Hot dipped galvanised minimum: \geq 5.6 steel. Stainless steel A4: \geq class 70

Installation specifics & Design loads for ESP Pro in different masonry types according ETA at ambient temperatures (24/40)



ESP Pro in Clay Hollow Brick (Doppio Uni) using rotary drilling only¹⁾

THREADED ROD DIAMETER ³⁾	SLEEVE	DRILL DIAMETER	DRILL/ EMBEDMENT DEPTH IN BRICK (MM)	BRICK SIZE (LENGHT X WIDTH X HEIGHT) (MM)	MIN. COM-PRESSIVE STRENGHT (N/MM ²)	DESIGN LOAD, TENSION ²⁾	DESIGN LOAD, SHEAR
(MM)	(MM)	(MM)	(MM)	(MM)	(N/MM ²)	(kN)	(kN)
M8	16 x 85	16	90	250 x 120 x 120	16	0,48 (0,56)	1,0
M10	16 x 85	16	90			0,48 (0,56)	1,0
M12	20 x 85	20	90			0,60 (0,70)	1,0
M16	20 x 85	20	90			0,60 (0,70)	1,0

¹⁾ Basic load capacities for the brick without edge distance and/or spacing. For details and other configurations see ETA

²⁾ Values in brackets () are with γ_m 1,7 according to Danish National Annex

³⁾ Threaded rod: Zinc plated or Hot dipped galvanised minimum: \geq 5.6 steel. Stainless steel A4: \geq class 70

ESP Pro in Clay hollow brick HLz-16DF using rotary drilling only¹⁾

THREADED ROD DIAMETER ³⁾	SLEEVE	DRILL DIAMETER	DRILL/ EMBEDMENT DEPTH IN BRICK (MM)	BRICK SIZE (LENGHT X WIDTH X HEIGHT) (MM)	MIN. COM-PRESSIVE STRENGHT (N/MM ²)	DESIGN LOAD, TENSION ²⁾	DESIGN LOAD, SHEAR
(MM)	(MM)	(MM)	(MM)	(MM)	(N/MM ²)	(kN)	(kN)
M8	16 x 85	16	90	497 x 238 x 240	12	1,0 (1,47)	0,9
M8	16 x 130	16	135			1,4 (2,06)	1,0
M10	16 x 85	16	90			1,0 (1,47)	0,9
M10	16 x 130	16	135			1,4 (2,06)	1,0
M12	20 x 85	20	90			1,4 (2,06)	0,8
M16	20 x 85	20	90			1,4 (2,06)	0,8

¹⁾ Basic load capacities for the brick without edge distance and/or spacing. For details and other configurations see ETA

²⁾ Values in brackets () are with γ_m 1,7 according to Danish National Annex

³⁾ Threaded rod: Zinc plated or Hot dipped galvanised minimum: \geq 5.6 steel. Stainless steel A4: \geq class 70

ESP Pro in Clay hollow brick Porottherm Homebric using rotary drilling only¹⁾

THREADED ROD DIAMETER ³⁾	SLEEVE	DRILL DIAMETER	DRILL/ EMBEDMENT DEPTH IN BRICK (MM)	BRICK SIZE (LENGHT X WIDTH X HEIGHT) (MM)	MIN. COM-PRESSIVE STRENGHT (N/MM ²)	DESIGN LOAD, TENSION ²⁾	DESIGN LOAD, SHEAR
(MM)	(MM)	(MM)	(MM)	(MM)	(N/MM ²)	(kN)	(kN)
M8	16 x 85	16	90	500 x 200 x 299	8	0,48(0,71)	1,47
M8	16 x 130	16	135			0,60 (0,88)	1,76
M10	16 x 85	16	90			0,48(0,71)	1,47
M10	16 x 130	16	135			0,60 (0,88)	1,76
M12	20 x 85	20	90			0,48(0,71)	2,06
M16	20 x 85	20	90			0,48(0,71)	3,06

¹⁾ Basic load capacities for the brick without edge distance and/or spacing. For details and other configurations see ETA

²⁾ Values in brackets () are with γ_m 1,7 according to Danish National Annex

³⁾ Threaded rod: Zinc plated or Hot dipped galvanised minimum: \geq 5.6 steel. Stainless steel A4: \geq class 70

ESP Pro in Solid light weight concrete (Leca) using rotary drilling only¹⁾

THREADED ROD DIAMETER ³⁾	SLEEVE	DRILL DIAMETER	DRILL/ EMBEDMENT DEPTH IN BRICK (MM)	BRICK SIZE (LENGHT X WIDTH X HEIGHT) (MM)	MIN. COM-PRESSIVE STRENGHT (N/MM ²)	DESIGN LOAD, TENSION ²⁾	DESIGN LOAD, SHEAR
(MM)	(MM)	(MM)	(MM)	(MM)	(N/MM ²)	(kN)	(kN)
M8	-	10	80	498 x 200 x 195	3	0,8 (1,18)	1,20
M10	-	12	90			1,2 (1,76)	1,6
M12	-	14	100			1,2 (1,76)	1,6
M16	-	18	100			1,2 (1,76)	1,6

¹⁾ Basic load capacities for the brick without edge distance and/or spacing. For details and other configurations see ETA

²⁾ Values in brackets () are with γ_m 1,7 according to Danish National Annex

³⁾ Threaded rod: Zinc plated or Hot dipped galvanised minimum: \geq 5.6 steel. Stainless steel A4: \geq class 70