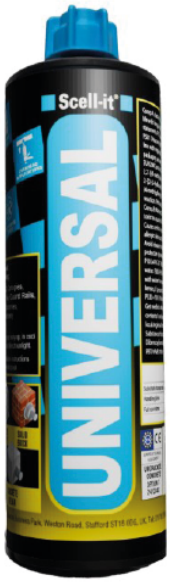
SCELL-IT UNIVERSAL RESIN

For universal applications.



Available in 420ml

Universal

Description

Scell-it Universal is an economical styrene-free chemical anchoring system formulated to cure quickly and is suitable for medium load applications in masonry and medium to high load applications in concrete.

Storage

Cartridges should be stored in their original packaging, the correct way up, in cool conditions (+5°C to +25°C) out of direct sunlight. When stored correctly, the product shelf life will be 12 months from the date of manufacture.

Health & Safety

For health and safety information, please refer to the relevant Safety Data Sheet.

Base Materials	Accessories	Uses/Applications
-Uncracked Concrete	-Applicators	-Canopies
-Hard natural stone	-Mixing nozzles	-Bicycle Racks
-Solid rock	-Cleaning blow pump	-Hand Rails
-Hard natural stone	-Cleaning brushes	-Safety Barriers
-Voided stone or rock		-Balcony Fences
		-Racking
		-Machinery
		-Satellite Dishes

Features

-Suitable for use with close edge distance and small anchor spacings
-Suitable for dry, wet & flooded holes with no loss of performance.
-Medium load capacities

Approvals & Tests

-ETA for uncracked concrete - Option 7

Universal - Working & Loading Times			
Cartridge Temperature	**T Work**	**Base Material Temperature**	**T Load**
5°C	18 Minutes	5°C	145 Minutes
5°C to 10°C	10 Minutes	5°C to 10°C	
10°C to 20°C	6 Minutes	10°C to 20°C	85 Minutes
20°C to 25°C	5 Minutes	20°C to 25°C	50 Minutes
25°C to 30°C	4 Minutes	25°C to 30°C	40 Minutes
30°C		30°C	35 Minutes

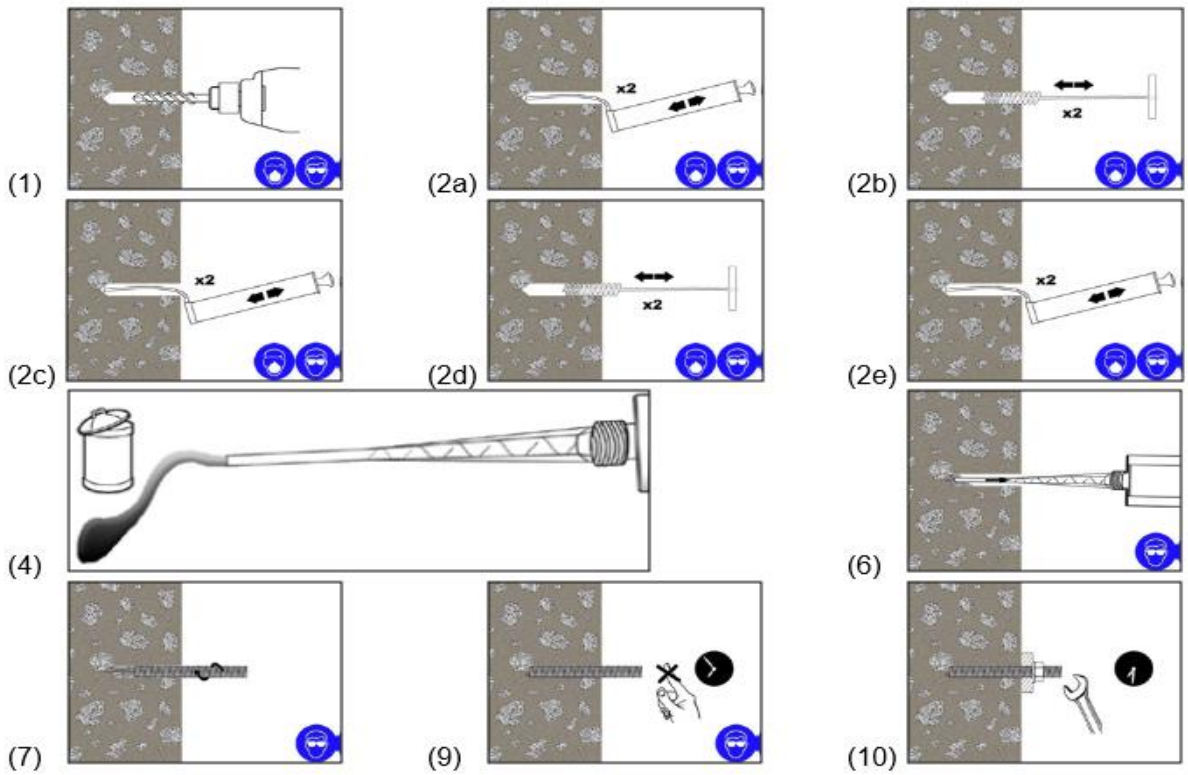
Note: T Work is typical gel time at highest base material temperature in the range.
T Load is minimum set time required until load can be applied at the lowest base material temperature in the range.

Physical Properties				
Property		**Value**	**Unit**	**Test Standard**
Density		1.7	g/cm^3	ASTM D 1875 @ +20°C
Compressive Strength	24 hrs	65	N/mm^2	BS6319
	7 days	70		
Tensile Strength	24 hrs	10	N/mm^2	ASTM D 638 @ +20°C
	7 days	10.5		
Elongation at Break	24 hrs	0.11	%	ASTM D 638 @ +20°C
	7 days	0.13		
Tensile Modulus	24 hrs	3.3	GN/m^2	ASTM D 638 @ +20°C
	7 days	4.3		
Flexural Strength	7 days	27	N/mm^2	ASTM D 790 @ +20°C
HDT	7 days	80.9	°C	ASTM D 648 @ +20°C

Solid Substrate Installation Method

1. Drill the hole to the correct diameter and depth. This can be done with either a rotary percussion or rotary hammer drilling machine depending upon the substrate.
2. Thoroughly clean the hole in the following sequence using a brush with the required extensions and a source of clean compressed air. For holes of 400mm or less deep, a blow pump may be used: Blow Clean x2 → Brush Clean x2 → Blow Clean x2 → Brush Clean x2 → Blow Clean x2.

   If the hole collects water, the current best practice is to remove standing water before cleaning the hole and injecting the resin. Ideally, the resin should be injected into a properly cleaned, dry hole.
3. Select the appropriate static mixer nozzle for the installation, open the cartridge/foil pack and screw nozzle onto the mouth of the cartridge. Insert the cartridge into a good quality applicator.
4. Extrude the first part of the cartridge to waste until an even colour has been achieved without streaking in the resin.
5. If necessary, cut the extension tube to the depth of the hole and push onto the end of the mixer nozzle, and (for rebars 16mm dia. or more) fit the correct resin stopper to the other end. Attach extension tubing and resin stopper.
6. Insert the mixer nozzle (resin stopper / extension tube if applicable) to the bottom of the hole. Begin to extrude the resin and slowly withdraw the mixer nozzle from the hole ensuring that there are no air voids as the mixer nozzle is withdrawn. Fill the hole to approximately ½ to ¾ full and withdraw the nozzle completely.
7. Insert the clean threaded bar, free from oil or other release agents, to the bottom of the hole using a back and forth twisting motion ensuring all the threads are thoroughly coated. Adjust to the correct position within the stated working time.
8. Any exces resin will be expelled from the hole evenly around the steel element showing that the hole is full. This excess resin should be removed from around the mouth of the hole before it sets.
9. Leave the anchor to cure. Do not disturb the anchor until the appropriate loading time, has elapsed depending on the substrate conditions and ambient temperature.
10. Attach the fixture and tighten the nut to the recommended torque. Do not overtighten.



Installation Parameters - Threaded Rods								
Size			M8	M10	M12	M16	M20	M24
Nominal Drill Hole Diameter	d_o	mm	10	12	14	18	22	26
Diameter of Cleaning Brush	d_b	mm	14	14	20	20	29	29
Torque Moment	T_{inst}	Nm	10	20	40	80	120	160
Minimum Embedment Depth	h_{ef}	mm	64	80	96	128	160	192
Maximum Embedment Depth	h_{ef}	mm	96	120	144	192	240	288
Minimum Edge Distance	c_{min}	mm	40	40	40	60	80	95
Minimum Spacing	s_{min}	mm	40	40	40	60	80	95
Minimum Member Thickness	h_{min}	mm	h_{ef} + 30 mm ≥ 100mm			h_{ef} + $2d_o$		

Characteristic Resistance - Combined Pullout & Concrete Cone Failure Using Threaded Rods								
Size			M8	M10	M12	M16	M20	M24
Characteristic Bond Resistance in Uncracked Concrete -40°C to 80°C	$\tau_{Rk,uncr}$	N/mm^2	6.0	6.0	5.0	5.0	4.0	4.0
Partial Safety Factor — Dry/Saturated Concrete, Flooded Holes	γ_{mc}	[-]	1.8					
Factor for Concrete	Ψ_c	C25/30	1.04					
		C30/37	1.08					
		C35/45	1.12					
		C40/50	1.15					
		C45/55	1.17					
		C50/60	1.19					

Splitting Failure								
Size			M8	M10	M12	M16	M20	M24
Edge Distance	$c_{cr,sp}$	mm	2hef					
Spacing	$s_{cr,sp}$	mm	4hef					

Resistance Values for Threaded Rod in Uncracked Concrete
Combined Pullout & Concrete Cone Failure and Concrete Cone Failure
Temperature Range: -40°C to 80°C

Property	Unit		Anchor Diameter					
			M8	M10	M12	M16	M20	M24
Effective Embedment Depth = 8d	h_{ef}	mm	64	80	96	128	160	192
Design Resistance	N_{Rd}	kN	5.0	8.0	10.0	17.5	22.0	32.0
Effective Embedment Depth = STD	h_{ef}	mm	80	90	110	128	170	210
Design Resistance	N_{Rd}	kN	6.5	9.0	11.5	17.5	23.5	35.0
Effective Embedment Depth = 12d	h_{ef}	mm	96	120	144	192	240	288
Design Resistance	N_{Rd}	kN	8.0	12.5	15.0	26.5	33.5	48.0

1. Resistance values are based on combined pullout & concrete cone failure and concrete cone failure according to EC2-4 Design. Resistance for steel failure must also be considered - the lowest value controls.

2. Resistance values are for single anchors without close edges or eccentric loading considerations.

3. Tabulated values correspond to the above stated temperature range and installation conditions only.

4. Long term temperatures are those that remain roughly constant over prolonged periods. Short term temperatures occur over brief intervals, e.g.: diurnal cycling.

5. The compressive strength of the concrete ($f_{ck,cylinder}$) is assumed to be 20 N/mm^2.

6. Tabulated resistance values assume that the geometry of the anchor(s) and concrete member is sufficient to avoid splitting failure.

Threaded Rods - Characteristic Values for Steel Failure (Tension)								
Size	**Unit**		M8	M10	M12	M16	M20	M24
Steel Grade 4.6	$N_{Rk,s}$	kN	15	23	34	63	98	141
Partial Safety Factor	y_{Ms}	[-]	2					
Steel Grade 4.8	$N_{Rk,s}$	kN	15	23	34	63	98	141
Partial Safety Factor	y_{Ms}	[-]	1.5					
Steel Grade 5.6	$N_{Rk,s}$	kN	18	29	42	79	123	177
Partial Safety Factor	y_{Ms}	[-]	2.00					
Steel Grade 5.8	$N_{Rk,s}$	kN	18	29	42	79	123	177
Partial Safety Factor	y_{Ms}	[-]	1.50					
Steel Grade 8.8	$N_{Rk,s}$	kN	29	46	67	126	196	282
Partial Safety Factor	y_{Ms}	[-]	1.50					
Steel Grade 10.9*	$N_{Rk,s}$	kN	37	58	84	157	245	353
Partial Safety Factor	y_{Ms}	[-]	1.40					
Stainless Steel Grade A4-70	$N_{Rk,s}$	kN	26	41	59	110	172	247
Partial Safety Factor	y_{Ms}	[-]	1.90					
Stainless Steel Grade A4-80	$N_{Rk,s}$	kN	29	46	67	126	196	282
Partial Safety Factor	y_{Ms}	[-]	1.60					
Stainless Steel Grade 1.4529	$N_{Rk,s}$	kN	26	41	59	110	172	247
Partial Safety Factor	y_{Ms}	[-]	1.50					

**Galvanized rods of high strength are sensitive to hydrogen induced brittle failure.*

Threaded Rods - Characteristic Values for Steel Failure (Shear – without lever arm)								
Size	**Unit**		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
Steel Grade 4.6	$V_{Rk,s}$	kN	7	12	17	31	49	71
Partial Safety Factor	y_{Ms}	[-]	1.67					
Steel Grade 5.8	$V_{Rk,s}$	kN	9	15	21	39	61	88
Partial Safety Factor	y_{Ms}	[-]	1.25					
Steel Grade 8.8	$V_{Rk,s}$	kN	15	23	34	63	98	141
Partial Safety Factor	y_{Ms}	[-]	1.25					
Steel Grade 10.9*	$V_{Rk,s}$	kN	18	29	42	79	123	177
Partial Safety Factor	y_{Ms}	[-]	1.50					
Stainless Steel Grade A4-70	$V_{Rk,s}$	kN	13	20	30	55	86	124
Partial Safety Factor	y_{Ms}	[-]	1.56					
Stainless Steel Grade A4-80	$V_{Rk,s}$	kN	15	23	34	63	98	141
Partial Safety Factor	y_{Ms}	[-]	1.33					
Stainless Steel Grade 1.4529	$V_{Rk,s}$	kN	13	20	30	55	86	124
Partial Safety Factor	y_{Ms}	[-]	1.25					

**Galvanized rods of high strength are sensitive to hydrogen induced brittle failure.*

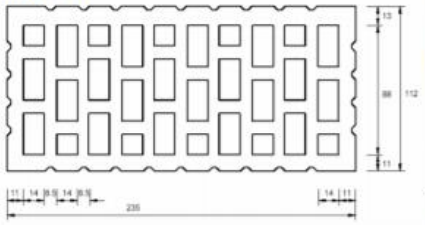
Threaded Rods - Characteristic Values for Steel Failure (Shear – with lever arm)								
Size			M8	M10	M12	M16	M20	M24
Steel Grade 4.6	$M^0_{Rk,s}$	N.m	15	30	52	133	260	449
Partial Safety Factor	y_{Ms}	[-]	1.67					
Steel Grade 5.8	$M^0_{Rk,s}$	N.m	19	37	66	166	325	561
Partial Safety Factor	y_{Ms}	[-]	1.25					
Steel Grade 8.8	$M^0_{Rk,s}$	N.m	30	60	105	266	519	898
Partial Safety Factor	y_{Ms}	[-]	1.25					
Steel Grade 10.9*	$M^0_{Rk,s}$	N.m	37	75	131	333	649	1123
Partial Safety Factor	y_{Ms}	[-]	1.50					
Stainless Steel Grade A4-70	$M^0_{Rk,s}$	N.m	26	52	92	233	454	786
Partial Safety Factor	y_{Ms}	[-]	1.56					
Stainless Steel Grade A4-80	$M^0_{Rk,s}$	N.m	30	60	105	266	519	898
Partial Safety Factor	y_{Ms}	[-]	1.33					
Stainless Steel Grade 1.4529	$M^0_{Rk,s}$	N.m	26	52	92	233	454	786
Partial Safety Factor	y_{Ms}	[-]	1.25					
Concrete pryout failure								
Factor k **			2					
Partial Safety Factor	y_{Ms}		1.50					

**Galvanized rods of high strength are sensitive to hydrogen induced brittle failure.*

*** K Value from TR029 Design of bonded anchors pt 5.2.3.3*

Types and Dimensions of Bricks

Brick N° 1



Hollow clay brick HLz 12-1,0-2DF
according to EN 771-1
length/width/height = 235 mm/112 mm/115 mm
$f_b \geq 12$ N/mm² / $\rho \geq 1{,}0$ kg/dm³

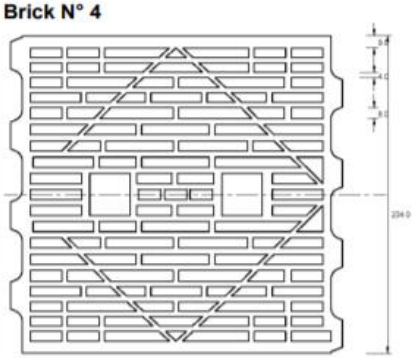
Brick N° 2

Solid clay brick Mz 12-2,0-NF
according to EN 771-1
length/width/height = 240 mm/116 mm/71 mm
$f_b \geq 12$ N/mm² / $\rho \geq 2{,}0$ kg/dm³

Brick N° 3

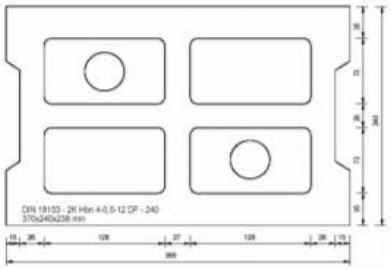
Solid sand lime brick KS 12-2,0-NF
according to EN 771-2
length/width/height = 240 mm/115 mm/70 mm
$f_b \geq 12$ N/mm² / $\rho \geq 2{,}0$ kg/dm³

Brick N° 4



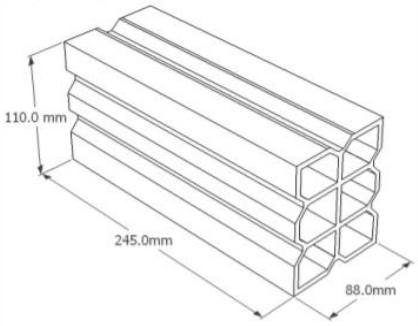
Hollow clay brick HLzW 6-0,7-8DF
according to EN 771-1
length/width/height = 250 mm/240 mm/240 mm
$f_b \geq 6$ N/mm² / $\rho \geq 0{,}8$ kg/dm³

Brick N° 5



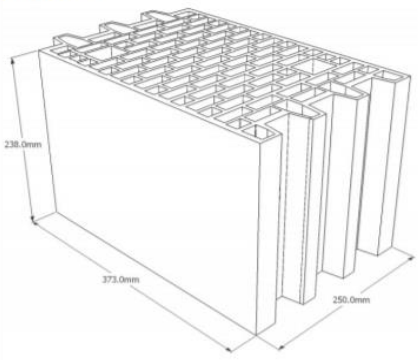
Concrete masonry unit Hbn 4-12DF
according to EN 771-3
length/width/height = 370 mm/240 mm/238 mm
$f_b \geq 4$ N/mm² / $\rho \geq 1{,}2$ kg/dm³

Brick N° 6



Hollow clay brick Hueco Doble
according to EN 771-1
length/width/height = 245 mm/110 mm/88 mm
$f_b \geq 2{,}5$ N/mm² / $\rho \geq 0{,}74$ kg/dm³

Brick N° 7



Hollow clay brick Porotherm 25 P+W KL15
according to EN 771-1
length/width/height = 373 mm/250 mm/238 mm
$f_b \geq 12$ N/mm² / $\rho \geq 0{,}9$ kg/dm³

Installation parameters in solid and hollow masonry								
Anchor Type			Anchor Rod					
Size			M8		M10		M12	
Sieve Sleeve	l_s	[mm]	85					
	d_s	[mm]	15	16	15	16	20	
Nominal drill hole diameter	d_0	[mm]	15	15	20	15	20	
diameter of cleaning brush	d_b	[mm]	$20^{\pm1}$		$20^{\pm1}$		$22^{\pm1}$	
depth of drill hole	h_0	[mm]	90					
Effective anchorage depth	h_{ef}	[mm]	85					
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	9		12		14	
torque moment	$T_{inst} \leq$	[mm]	2					

Edge distances and spacing									
	Anchor rod								
	M8			M10			M12		
Base Material	$C_{cr}=C_{min}$	$S_{cr} \parallel = S_{min} \parallel$	$S_{cr} \perp = S_{min} \perp$	$C_{cr}=C_{min}$	$S_{cr} \parallel = S_{min} \parallel$	Scr⊥ = Smin⊥	Ccr=Cmin	$S_{cr} \parallel = S_{min} \parallel$	$S_{cr} \perp = S_{min} \perp$
	mm	mm	mm	mm	mm	mm	mm	mm	mm
Brick No 1	100	235	115	100	235	115	120	235	115
Brick No 2	128	255	255	128	255	255	128	255	255
Brick No 3	128	255	255	128	255	255	128	255	255
Brick No 4	100	250	240	100	250	240	120	250	240
Brick No 5	100	370	238	100	370	238	120	370	238
Brick No 6	100	245	110	100	245	110	120	245	110
Brick No 7	100	373	238	100	373	238	120	373	238

Characteristic resistance under tension and shear loading			
Base Material	Anchor Rods		
	M8	M10	M12
	NRK=VRK [KN] [1)]	NRK=VRK [KN] [1)]	NRK=VRK [KN] [1)]
Brick No 1	2.0	2.0	2.0
Brick No 2	1.20	1.5	2.50
Brick No 3	0.50	0.75	1.20
Brick No 4	0.60	0.75	0.75
Brick No 5	1.20	1.20	2.0
Brick No 6	0.5	0.5	0.50
Brick No 7	1.20	1.20	1.50

1) For design according ETAG 029, Annex C: NRk = NRk,p = NRk,b = NRk,s; NRk,pb according to ETAG 029, Annex C
For VRk,s see Annex C1, Table C2; Calculation of VRk,pb and VRk,c according to ETAG 029, Annex C

Characteristic Bending Moment			
Steel Grade	Anchor Diameter		
	M8	M10	M12
	$M_{Rk,s}$	$M_{Rk,s}$	MRk,s
Steel Grade 5.8	19	37	66
Steel Grade 8.8	30	60	105
Steel Grade 10.9*	37	75	131
Stainless Steel A2-70, A4-70	26	52	92
Stainless Steel A4-80	30	60	105
Stainless Steel 1.4529 strength class 70	26	52	92
Stainless Steel 1.4565 strength class 70	26	52	92

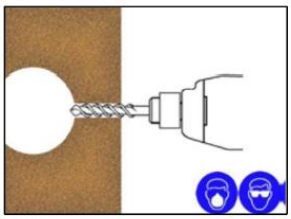
Displacements under tension and shear load					
Base Material	F (kN)	δN0 [mm]	δN∞ [mm]	δV0 [mm]	δV∞ [mm]
Solid Bricks	NRk/(1.4 · ɣM)	0.6	1.2	1.0	1.5
Perforated & Hollow Bricks		0.14	0.28	1.0	1.5

β - Factors for Job Site Test According to TR053							
Brick No.	No 1	No 2	No 3	No 4	No 5	No 6	No 7
β - Factor	0.62	0.48	0.26	0.43	0.6	0.65	0.65

Hollow Masonry Installation Method

1. Drill the hole to the correct diameter and depth. This should be done with a rotary percussion drilling machine to reduce spalling.
2. Thoroughly clean the hole in the following sequence using a Brush with the required extensions and a source of clean compressed air. For holes 400mm or less deep, a blow pump may be used: Brush clean x 1 Blow Clean x1
3. Select the appropriate static mixer nozzle for the installation, open the cartridge foil pack and screw nozzle onto the mouth of the cartridge. Insert the cartridge into a good quality applicator.
4. Extrude the first part of the cartridge to waste until an even colour has been achieved without streaking in the resin.
5. Select the appropriate perforated sleeve and insert into the hole.
6. Insert the mixer nozzle to the bottom of the perforated sleeve, withdraw 2-3mm then begin to extrude the resin and slowly withdraw the mixer nozzle from the hole ensuring that there are no air voids as the mixer nozzle is withdrawn. Fill the perforated sleeve and withdraw the nozzle completely.
7. Insert the clean threaded bar, free from oil or other release agents, to the bottom of the hole using a back and forth twisting motion ensuring all the threads are thoroughly coated. Adjust to the correct position within the stated working time.
8. Any excess resin will be expelled from the hole evenly around the steel element showing that the hole if full. This excess resin should be removed from around the mouth of the hole before it sets.
9. Leave the anchor to cure. Do not disturb the anchor until the appropriate loading time has elapsed depending on the substrate conditions and ambient temperature.
10. Attach the fixture and tighten the nut to the recommended torque. Do not overtighten.

(1)



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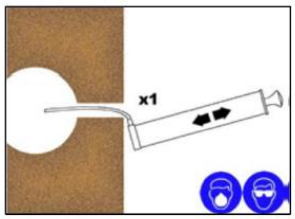

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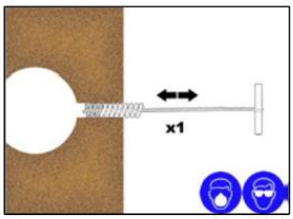

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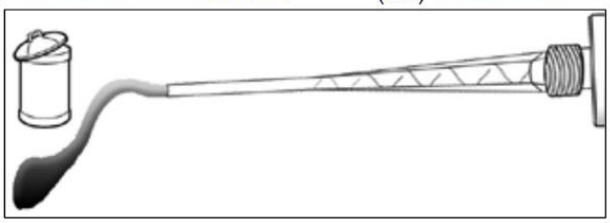

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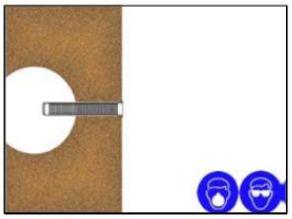

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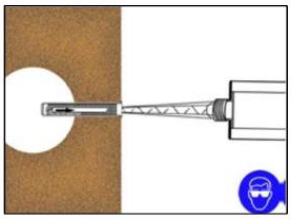

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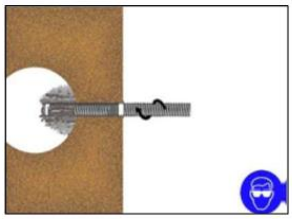

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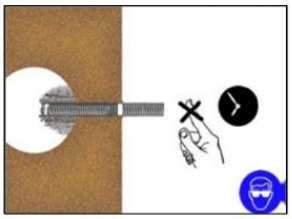

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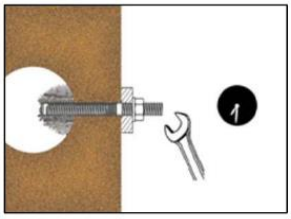

Note:
For solid masonry applications, please refer to 'Solid Substrate Installation Method'.

Important Notes:

Use in Porous Substrates

This bonded anchor is not intended for use as a cosmetic or decorative product. When anchoring into porous or reconstituted stone it is recommended that technical assistance is sought. Due to the nature of the product, migration of the monomer in the resin may cause staining in certain materials. If you are still uncertain, it is advisable to test the resin by applying it in a small, discrete area and testing before using the resin on the project.

Important Note

Whilst all reasonable care is taken in compiling technical data on the Company's products, all recommendations or suggestions regarding the use of such products are made without guarantee, since the conditions of use are beyond the control of the Company. It is the customer's responsibility to satisfy himself that each product is fit for the purpose for which he intends to use it, that the actual conditions of use are suitable and that, in the light of our continual research and development programme the information relating to each product has not been superseded.

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