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PRODUCT DATA SHEET – WCF-PESF/WCF-PESF-E/WCF-PESF-C

Section 1. PRODUCT DESCRIPTION

Description

WCF-PESF, **WCF-PESF-E**, **WCF-PESF-C** is a low to medium performance level, cost effective, general purpose two-component (10:1 ratio), styrene-free chemical anchoring system with unsaturated polyester as chemical base, that has been formulated for anchoring in a wide variety of building materials. Ideal for standard DIY applications in uncracked concrete and masonry substrates.

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.

Base materials

-Concrete
-Solid and hollow masonry
-Solid rock
-Hard natural stone
-Voided stone or rock

Health & Safety

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

Accessories

-Applicators
-Mixing nozzles
-Cleaning blow pump
-Cleaning brushes
-Extension tubes
-Resin stoppers
-Plastic Sleeves

Approvals & Tests

-ETA according to ETAG 001 -Part 1 and Part 5 , used as European Assessment Document (EAD) for uncracked concrete

-ETA according to ETAG 029, used as European Assessment Document (EAD) for metal injection anchors in masonry

Features

-Anchors may be placed close to free edges.
-Suitable for dry, wet & flooded holes without loss of performance.
-Reduced drilling diameters i.e 22mm for M20 and 26mm for M24; results in significant material and labour savings.
-Variable embedment depths
- single piston foil pack cartridges (300 ml ; 410 ml)

Uses/Applications

-Canopies
-Ventilation systems
-Railings
-Hand rails
-Masonry supports
-Signs
-Safety barriers
-Balcony fences
-Racking

Section 2. WORKING & LOADING TIMES

WCF-PESF - 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	145 Minutes
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.

WCF-PESF-C - Working & Loading Times

Cartridge Temperature	T Work	Base Material Temperature	T Load
5°C	5 Minutes	-10°C to -5°C	4 hours
5°C		-5°C to 5°C	125 Minutes
5°C to 10°C	3,5 Minutes	5°C to 10°C	60 Minutes
10°C to 20°C	2 Minutes	10°C to 20°C	40 Minutes
20°C to 25°C	1,5 Minutes	20°C to 25°C	20 Minutes
25°C 30°C	1 Minute	25°C 30°C	15 Minutes
30°C		30°C	10 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.

WCF-PESF-E - Working & Loading Times

Cartridge Temperature	T Work	Base Material Temperature	T Load
10°C	30 Minutes	10°C	5 hours
10°C to 20°C	15 Minutes	10°C to 20°C	
20°C to 25°C	10 Minutes	20°C to 25°C	145 Minutes
25°C to 30°C	7.5 Minutes	25°C to 30°C	85 Minutes
30°C to 35°C	5 minutes	30°C to 35°C	50 Minutes
35°C to 40°C	3.5 Minutes	35°C to 40°C	40 Minutes
40°C to 45°C	2,5 Minutes	40°C to 45°C	35 Minutes
45°C		45°C	12 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.

Section 3. PHYSICAL PROPERTIES

Physical Properties

Property		Value	Unit	Test Standard
Density		1.7	g/cm³	ASTM D 1875 @ +20°C
Compressive Strength	24 hrs	60	N/mm²	BS6319
	7 days	70		
Tensile Strength	24 hrs	11.5	N/mm²	ASTM D 638 @ +20°C
	7 days	12.2		
Elongation at Break	24 hrs	0.1	%	ASTM D 638 @ +20°C
	7 days	0.1		
Tensile Modulus	24 hrs	3.4	GN/m²	ASTM D 638 @ +20°C
	7 days	4.5		

Flexural Strength	7 days	28.3	N/mm²	ASTM D 790 @ +20°C
HDT	7 days	80.8	°C	ASTM D 648 @ +20°C

Section 4. CHEMICAL RESISTANCE

Chemical Resistance

Chemical Environment	Concentration	Result	Chemical Environment	Concentration	Result
Aqueous Solution Acetic Acid	10%	✓	Hydrochloric Acid	10%	✓
Acetone	100%	✗		15%	✓
Aqueous Solution Aluminium Chloride	Saturated	✓		20%	C
Aqueous Solution Aluminium Nitrate	10%	✓	Hydrogen Sulphide Gas	100%	✓
Ammonia Solution	5%	✗	Isopropyl Alcohol	100%	✗
Jet Fuel	100%	✗	Linseed Oil	100%	✓
Benzoic Acid	Saturated	✓	Lubricating Oil	100%	✓
Sodium Hypochlorite Solution	5 - 15%	✓	Mineral Oil	100%	✓
Butyl Alcohol	100%	C	Paraffin / Kerosene (Domestic)	100%	C
Calcium Sulphate Aqueous Solution	Saturated	✓	Phenol	1%	✗
Carbon Monoxide	Gas	✓	Phosphoric Acid	50%	✓
Carbon Tetrachloride	100%	C	Potassium Hydroxide	10% / pH13	C
Chlorine Water	Saturated	✗	Sea Water	100%	C
Chloro Benzene	100%	✗	Sulphur Dioxide Solution	10%	✓
Citric Acid Aqueous Solution	Saturated	✓	Sulphur Dioxide (40°C)	5%	✓
Cyclohexanol	100%	✓	Sulphuric Acid	10%	✓
Diesel Fuel	100%	✓		30%	✓
Diethylene Glycol	100%	✓	Turpentine	100%	C
Ethanol	95%	✗	White Spirit	100%	✓
Heptane	100%	C	Xylene	100%	✗
Hexane	100%	C			

✓ = Resistant to 75°C with at least 80% of physical properties retained. C = Contact only to a maximum of 25°C. ✗ = Not resistant.

Section 5. SOLID SUBSTRATE INSTALLATION METHOD

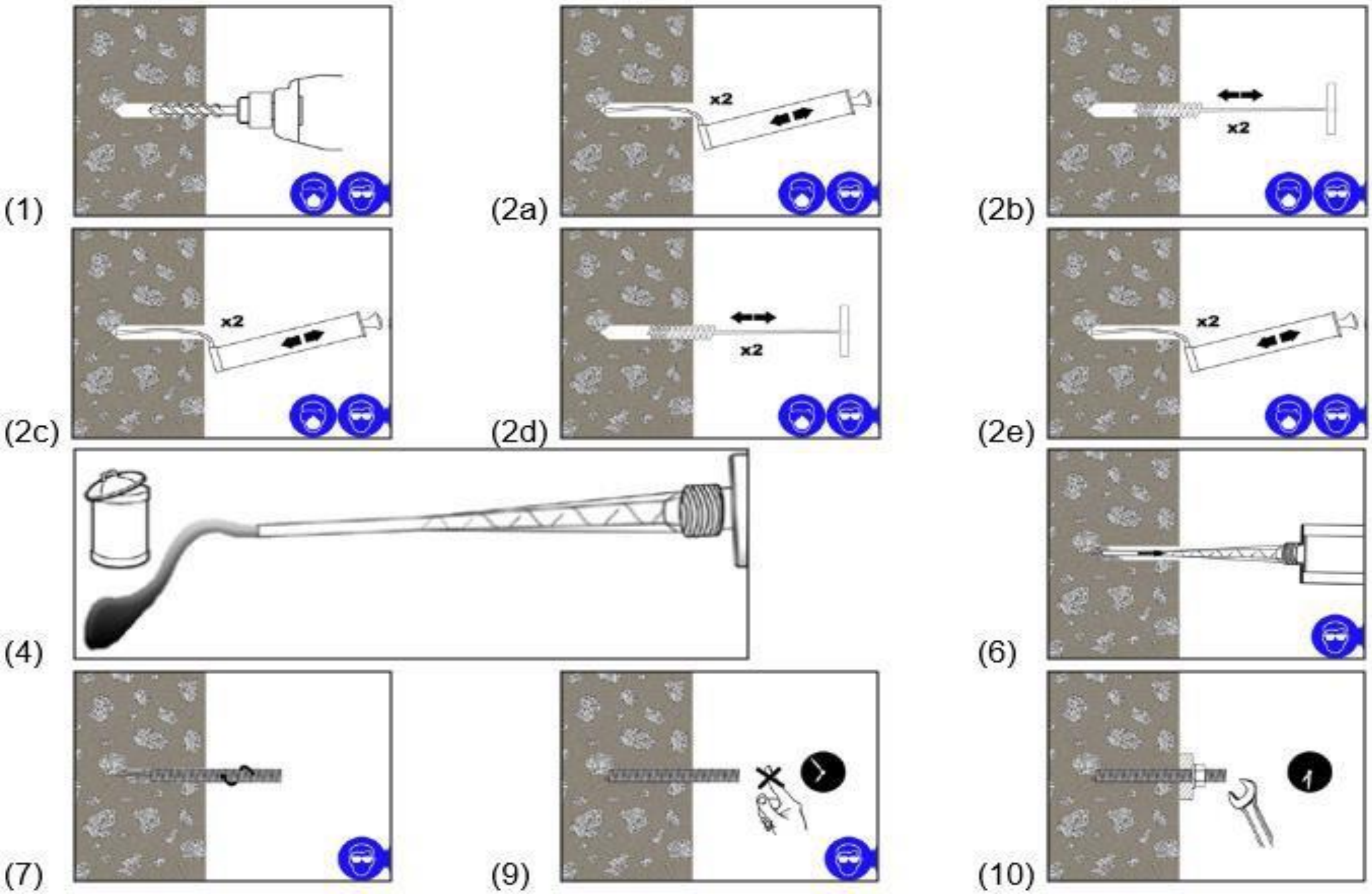
Solid Substrate Installation Method

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.



Section 6. INSTALLATION PARAMETERS – THREADED RODS

Installation Parameters - Threaded Rods									
Size				M8	M10	M12	M16	M20	M24
Nominal Drill Hole Diameter		d_0	[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	150	200
$h_{ef,min}$ = 8d									
Depth of drill hole		h_0	[mm]	64	80	96	128	160	192
Minimum Edge Distance		c_{min}	[mm]	35	40	50	65	80	96
Minimum Spacing		s_{min}	[mm]	35	40	50	65	80	96
Minimum Member Thickness		h_{min}	[mm]	h_{ef} + 30 mm ≥ 100mm				$h_{ef} + 2d_o$	
$h_{ef,max}$= 12d									
Depth of drill hole		h_0	[mm]	96	120	144	192	240	288
Minimum Edge Distance		c_{min}	[mm]	50	60	70	95	120	145
Minimum Spacing		s_{min}	[mm]	50	60	70	95	120	145
Minimum Member Thickness		h_{min}	[mm]	hef + 30 mm ≥ 100 mm				$h_{ef} + 2d_o$	

Section 7. CHARACTERISTIC RESISTANCE – COMBINED PULL-OUT & CONCRETE CONE FAILURE USING THREADED RODS

Characteristic Resistance - Combined Pullout & Concrete Cone Failure Using Threaded Rods for working life of 50 years								
Size			M8	M10	M12	M16	M20	M24
Characteristic Bond Resistance in Uncracked Concrete, -40°C to 80°C	$\tau_{Rk,uncr}$	N/mm²	8.5	8.0	9.0	9.0	8.0	7.5
Partial Safety Factor — Dry Concrete, Wet Concrete, Flooded Holes	γ_{Mp}	[-]	1.8					
Factor for Concrete	Ψ_c	C30/37	1.12					
		C35/45	1.19					
		C50/60	1.30					

Section 8. SPLITTING FAILURE

Splitting Failure								
Size			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
Edge Distance	$c_{cr,sp}$	mm	2hef			1.5hef		
Spacing	$s_{cr,sp}$	mm	4hef			3hef		

Section 9. RESISTANCE VALUES FOR THREADED ROD IN UNCRACKED CONCRETE -50 YEARS WORKING LIFE

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 = MIN = 8d	h_{ef}	mm	64	80	96	128	160	192
Design Resistance	N_{Rd}	kN	7.5	11.0	18.0	32.0	44.5	60.0
Effective Embedment Depth = 10d	h_{ef}	mm	80	100	120	160	200	240
Design Resistance	N_{Rd}	kN	9.0	13.5	22.5	40.0	55.5	75.0
Effective Embedment Depth = 12d	h_{ef}	mm	96	120	144	192	240	288
Design Resistance	N_{Rd}	kN	11.0	16.5	27.0	48.0	67.0	90.0

1. Resistance values are based on combined pullout & concrete cone failure and concrete cone failure according to EC2-4. 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. The ratio of sustained tension loading is 0.
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/mm².
6. Tabulated resistance values assume that the geometry of the anchor(s) and concrete member is sufficient to avoid splitting failure.

Section 10. THREADED RODS – CHARACTERISTIC VALUES FOR STEEL FAILURE (TENSION)

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

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

Section 11. THREADED RODS – CHARACTERISTIC VALUES FOR STEEL FAILURE (SHEAR – WITHOUT LEVER ARM)

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

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

Section 12. THREADED RODS – CHARACTERISTIC VALUES FOR STEEL FAILURE (SHEAR – WITH LEVER ARM)

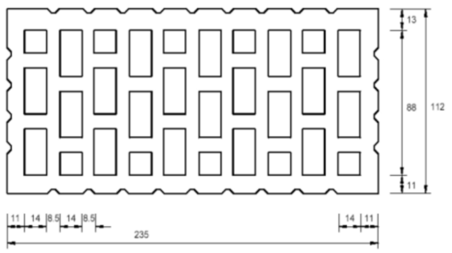
Threaded Rods - Characteristic Values for Steel Failure (Shear – with lever arm)								
Size			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
Steel Grade **5.8**	$M^0_{Rk,s}$	N.m	19	37	66	166	325	561
Partial Safety Factor	γ_{Ms}	[-]	1.25					
Steel Grade **8.8**	$M^0_{Rk,s}$	N.m	30	60	105	266	519	898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

Stainless Steel Grade **A4-80**	$M^0_{Rk,s}$	N.m	30	60	105	266	519	898
Partial Safety Factor	γ_{Ms}	[-]	1.33					
Stainless Steel Grade **1.4529**	$M^0_{Rk,s}$	N.m	26	52	92	233	454	786
Partial Safety Factor	γ_{Ms}	[-]	1.25					
Concrete pryout failure								
Factor k **			2					
Partial Safety Factor	γ_{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*

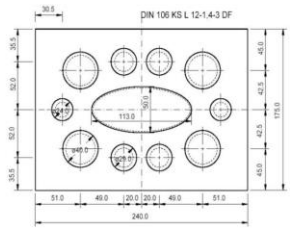
Section 13. TYPES AND DIMENSIONS OF BLOCK AND BRICKS

Brick N° 1



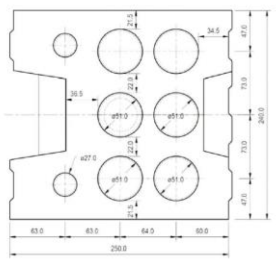
Hollow clay brick HLz 12-1,0-2DF
according to EN 771-1
length/width/height = 235 mm/112 mm/115 mm
$f_b \geq 12$ N/mm² / ρ ≥ 1,0 kg/dm³

Brick N° 2



Hollow sand lime brick KSL 12-1,4-3DF
according to EN 771-2
length/width/height = 240 mm/175 mm/113 mm
$f_b \geq 12$ N/mm² / ρ ≥ 1,4 kg/dm³

Brick N° 3



Hollow sand lime brick KSL 12-1,4-8DF
according to EN 771-2
length/width/height = 250 mm/240 mm/237 mm
$f_b \geq 12$ N/mm² / ρ ≥ 1,4 kg/dm³

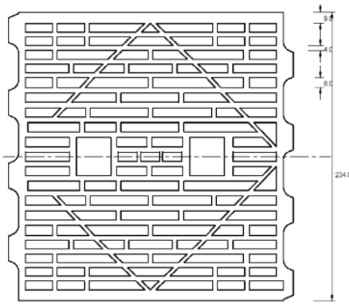
Brick N° 4

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 / ρ ≥ 2,0 kg/dm³

Brick N° 5

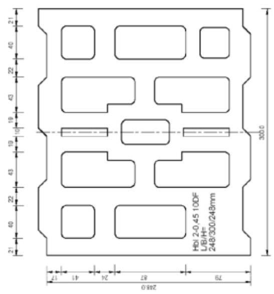
Solid sand lime brick KS 12-2,0-NF
according to EN 771-2
length/width/height = 240 mm/115 mm/70 mm
$f_b \geq 12$ N/mm² / ρ ≥ 2,0 kg/dm³

Brick N° 6



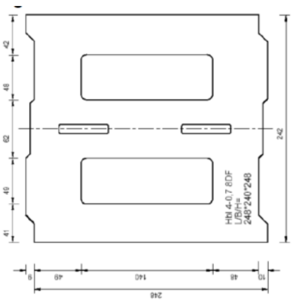
Hollow clay brick HLzW 6-0,7-8DF
according to EN 771-1
length/width/height = 250 mm/240 mm/240 mm
$f_b \geq 6$ N/mm^2 / $\rho \geq 0{,}8$ kg/dm^3

Brick N° 7



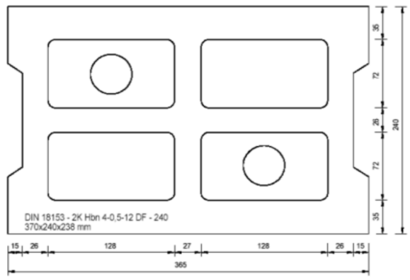
Lightweight concrete hollow block
Hbl 2-0,45-10DF
according to EN 771-3
length/width/height = 250 mm/300 mm/248 mm
$f_b \geq 2{,}0$ N/mm^2 / $\rho \geq 0{,}45$ kg/dm^3

Brick N° 8



Lightweight concrete hollow block Hbl 4-0,7-8DF
according to EN 771-3
length/width/height = 250 mm/240 mm/248 mm
$f_b \geq 4{,}0$ N/mm^2 / $\rho \geq 0{,}7$ kg/dm^3

Brick N° 9



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/mm^2 / $\rho \geq 1{,}2$ kg/dm^3

Section 14. INSTALLATION PARAMETERS IN SOLID AND HOLLOW MASONRY

Installation parameters in solid and hollow masonry

Anchor Type			Anchor Rod								Internal threaded socket			
Size			M8	M10	M12	M8		M10		M12	M8		M10	M12
Internal Threaded Socket	d_{to} x l_t	[mm]	-	-	-	-		-		-	12x80		14x80	16x80
Sieve Sleeve	l_s	[mm]	-	-	-	85		85		85	85		85	85
	d_s	[mm]	-	-	-	15	16	15	16	20	15	16	20	20
Nominal drill hole diameter	d_0	[mm]	15	15	20	15	16	15	16	20	15	16	20	20
diameter of cleaning brush	d_b	[mm]	$20^{\pm1}$	$20^{\pm1}$	$22^{\pm1}$	$20^{\pm1}$		$20^{\pm1}$		$22^{\pm1}$	$20^{\pm1}$		$22^{\pm1}$	$22^{\pm1}$
depth of drill hole	h_0	[mm]	90											
Effective anchorage depth	h_{ef}	[mm]	85								80			
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	9	12	14	9		12		14	9		12	14
Torque moment	$T_{inst} \leq$	[mm]	2											

Section 15. EDGE DISTANCE AND SPACING IN SOLID OR HOLLOW MASONRY

Edge distances and spacing

Anchor rod									
	M8			M10			M12		
Base Material	C_{cr}=C_{min}	S_{cr} ǁ = S_{min} ǁ	S_{cr}⊥ = S_{min}⊥	C_{cr}=C_{min}	S_{cr} ǁ = S_{min} ǁ	Scr⊥ = Smin⊥	Ccr=Cmin	S_{cr} ǁ = S_{min} ǁ	S_{cr}⊥ = S_{min}⊥
	mm	mm	mm	mm	mm	mm	mm	mm	mm
Brick No 1	100	235	115	100	235	115	120	235	115
Brick No 2	100	240	113	100	240	113	120	240	113
Brick No 3	100	250	237	100	250	237	120	250	237
Brick No 4	128	255	255	128	255	255	128	255	255
Brick No 5	128	255	255	128	255	255	128	255	255
Brick No 6	100	250	240	100	250	240	120	250	240
Brick No 7	100	250	248	100	250	248	-	-	-
Brick No 8	100	250	248	100	250	248	120	250	248
Brick No 9	100	370	238	100	370	238	120	370	238
Internal Threaded Socket									
	M8			M10			M12		
Base Material	C_{cr}=C_{min}	S_{cr} ǁ = S_{min} ǁ	S_{cr}⊥ = S_{min}⊥	C_{cr}=C_{min}	S_{cr} ǁ = S_{min} ǁ	Scr⊥ = Smin⊥	Ccr=Cmin	S_{cr} ǁ = S_{min} ǁ	S_{cr}⊥ = S_{min}⊥
	mm	mm	mm	mm	mm	mm	mm	mm	mm
Brick No 1	100	235	115	120	235	115	120	235	115
Brick No 2	100	240	113	120	240	113	120	240	113
Brick No 3	-	-	-	120	250	237	120	250	237
Brick No 4	128	255	255	128	255	255	128	255	255
Brick No 5	100	255	255	128	255	255	128	255	255
Brick No 6	100	250	240	120	250	240	120	250	240
Brick No 7	100	250	248	120	250	248	120	250	248
Brick No 8	-	-	-	120	250	248	120	250	248
Brick No 9	100	370	238	120	370	238	120	370	238

Section 16. CHARACTERISTIC RESISTANCE UNDER TENSION AND SHEAR LOADING (SOLID AND HOLLOW MASONRY)

Characteristic resistance under tension and shear loading

Base Material	Anchor Rods		
	M8	M10	M12
	N_{RK}=V_{RK} [KN] 1)	N_{RK}=V_{RK} [KN] 1)	N_{RK}=V_{RK} [KN] 1)
Brick No 1	2.5	2.0	2.0
Brick No 2	0.75	1.2	0.50
Brick No 3	0.75	1.2	0.50
Brick No 4	1.50	1.5	3.0
Brick No 5	0.75	0.90	1.5
Brick No 6	1.2	1.2	0.90
Brick No 7	0.60	0.30	-
Brick No 8	0.60	1.5	1.2
Brick No 9	2.5	1.5	2.5

1) For design according ETAG 029, Annex C: N_{Rk} = $N_{Rk,p}$ = $N_{Rk,b}$ = $N_{Rk,s}$; $N_{Rk,pb}$ according to ETAG 029, Annex C For $V_{Rk,s}$ see Annex C1, Table C2; Calculation of $V_{Rk,pb}$ and $V_{Rk,c}$ according to ETAG 029, Annex C

Section 17. CHARACTERISTIC BENDING MOMENT (SOLID AND HOLLOW MASONRY)

Characteristic Bending Moment			
Steel Grade	Anchor Diameter		
	M8	M10	M12
	$M_{Rk,s}$	$M_{Rk,s}$	$M_{Rk,s}$
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

Section 18. DISPLACEMENTS UNDER TENSION AND SHEAR LOAD (SOLID AND HOLLOW MASONRY)

Displacements under tension and shear load					
Base Material	F (kN)	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	δ_{V0} [mm]	$\delta_{V\infty}$ [mm]
Solid Bricks	$N_{Rk}/(1.4 \cdot \gamma_M)$	0.6	1.2	1.0	1.5
Perforated & Hollow Bricks		0.14	0.28	1.0	1.5

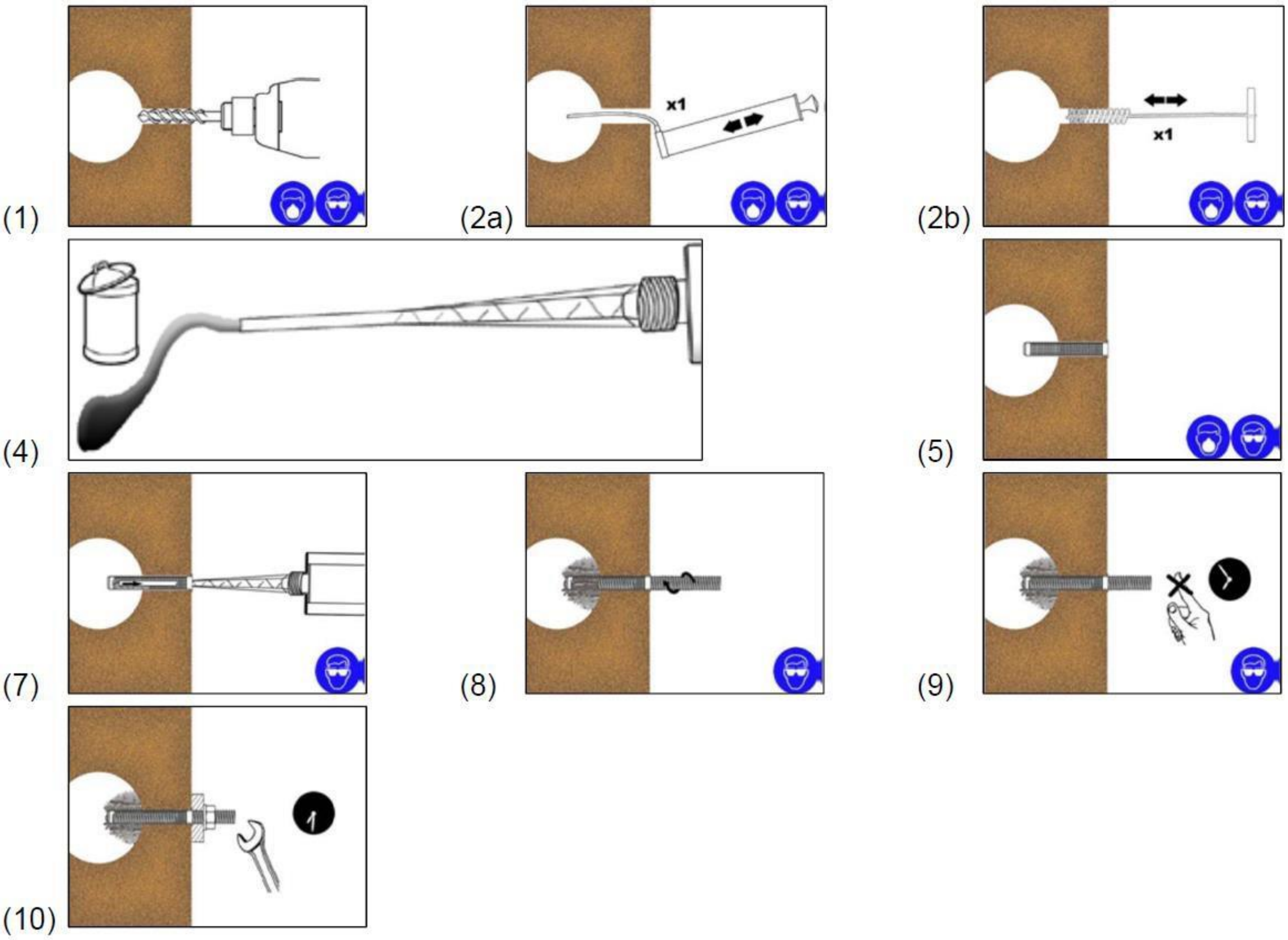
Section 19. β – FACTORS FOR JOB SITE TEST ACCORDING TO TR053

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	No.8	No.9
β - Factor	0.62	0.28	0.22	0.48	0.26	0.43	0.42	0.36	0.60

Section 20. HOLLOW MASONRY INSTALLATION METHOD

Hollow Masonry Installation Method

1. Drill the hole to the correct diameter and depth . This should be done with rotary percussion drilling machine to reduce spalling.
2. Thoroughly clean the hole in the following sequence using the Brush with the required extensions and a source of clean compressed air. For holes of 400 mm or less deep , a Blow Pump may be used: Brush Clean x1. Blow clean x1.
3. Select the appropriate static mixer nozzle for the installation , open the cartridge/foil pack and screw nozzle onto the mount 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 2-3 mm then begin to extrude the resin and slowly withdraw the mixer nozzle from the hole ensuring that there is 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 is full. This excess resin should be removed from around the mount 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.



Note:

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

Section 21. IMPORTANT NOTES

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.

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.