



INSTYTUT TECHNIKI BUDOWLANEJ



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European Technical Assessment

**ETA-25/1168
of 04/12/2025**



General Part

Technical Assessment Body issuing the European Technical Assessment

Instytut Techniki Budowlanej

Trade name of the construction product

Sympafix chemical anchor C200Plus-UltraBond

Product family to which the construction product belongs

Bonded fasteners for use in concrete

Manufacturer

SYMPAFIX B.V.
Fluorietweg 25E
1812 RR Alkmaar
Netherlands

Manufacturing plant

Sympafix, Plant 2

This European Technical Assessment contains

18 pages including 3 Annexes which form an integral part of this Assessment

This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of

European Assessment Document (EAD)
330499-02-0601 "Bonded fasteners and bonded expansion fasteners for use in concrete"



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Specific Part

1 Technical description of the product

The “Sympafix chemical anchor C200Plus-UltraBond” are bonded fasteners (injection type) consisting of an injection mortar cartridge using an applicator gun equipped with a special mixing nozzle and steel element: commercial threaded rod of the sizes M10 to M24 with hexagon nut and washer. The steel element is made of galvanized carbon steel, stainless steel or high corrosion resistant stainless steel.

The steel element is placed into a drilled hole previously injected (using an applicator gun) with a mortar with a slow and slight twisting motion. The steel element is anchored by the bond between steel element, mortar and concrete.

An illustration and the description of the products are given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document (EAD)

The performances given in clause 3 are only valid if the fasteners are used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of the fastener of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Performance of the product

3.1.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance to static and quasi static tension load	Annex C1 and C2
Characteristic resistance to static and quasi static shear load	Annex C3
Displacements for static and quasi static load	Annex C4
Characteristic resistance for seismic category C1 and C2	No performance assessed

3.1.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	No performance assessed

3.1.3 Hygiene, health and the environment (BWR 3)

No performance assessed.

3.2 Methods used for the assessment

The assessment has been made in accordance with EAD 330499-02-0601.

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to Decision 96/582/EC of the European Commission the system 1 of assessment and verification of constancy of performance applies (see Annex V to regulation (EU) No 305/2011).

5 Technical details necessary for the implementation of the AVCP system, as provided in the applicable European Assessment Document (EAD)

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

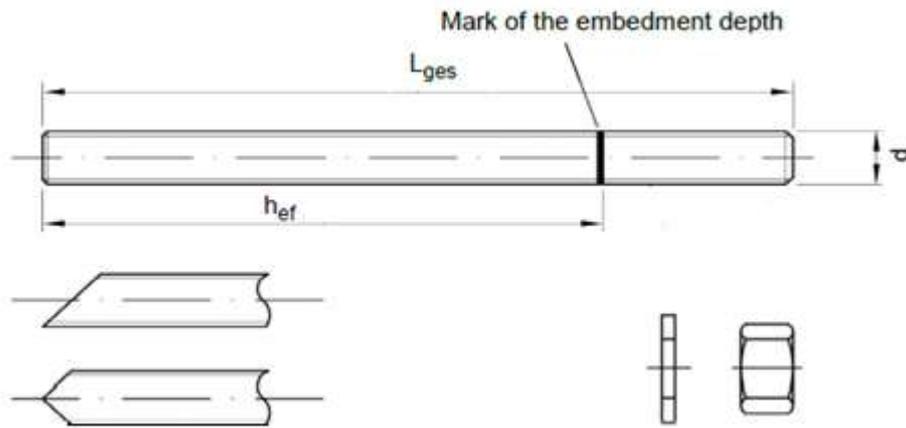
For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 04/12/2025 by Instytut Techniki Budowlanej



Anna Panek, MSc
Deputy Director of ITB

Threaded rod M10 to M24 with washer and hexagon nut



Sympafix chemical anchor C200Plus-UltraBond

Product description
Steel elements

Annex A1
of European
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Table A1: Threaded rods					
Designation		Material			
Steel according to EN ISO 683-4 or EN 10263-1, zinc plated					
electroplated $\geq 5 \mu\text{m}$		according to EN ISO 4042			
hot-dip galvanized $\geq 40 \mu\text{m}$		according to EN ISO 1461 and EN ISO 10684			
sherardized $\geq 45 \mu\text{m}$		according to EN ISO 17668			
Threaded rod	Property class	Characteristic steel ultimate strength	Characteristic steel yield strength	Fracture elongation	EN ISO 898-1
	4.6	$f_{uk} \geq 400 \text{ N/mm}^2$	$f_{yk} \geq 240 \text{ N/mm}^2$	$A_5 > 8\%$	
	4.8	$f_{uk} \geq 400 \text{ N/mm}^2$	$f_{yk} \geq 320 \text{ N/mm}^2$	$A_5 > 8\%$	
	5.6	$f_{uk} \geq 500 \text{ N/mm}^2$	$f_{yk} \geq 300 \text{ N/mm}^2$	$A_5 > 8\%$	
	5.8	$f_{uk} \geq 500 \text{ N/mm}^2$	$f_{yk} \geq 400 \text{ N/mm}^2$	$A_5 > 8\%$	
Hexagon nut	4	for class 4.6 or 4.8 rods			EN 898-2
	5	for class 5.6 or 5.8 rods			
	8	for class 8.8 rods			
Washer	Steel according to EN ISO 887, EN ISO 7089, EN ISO 7093 or EN ISO 7094, zinc plated; corresponding to anchor rod material				
Stainless steel A2		(Materials) 1.4301, 1.4307, 1.4311, 1.4567, 1.4541			
Stainless steel A4		(Materials) 1.4401, 1.4404, 1.4571, 1.4362, 1.4578			
High corrosion resistance stainless steel (HCR)		(Materials) 1.4529, 1.4565			
Threaded rod ¹⁾	Property class	Characteristic steel ultimate strength	Characteristic steel yield strength	Fracture elongation	EN 10088 EN ISO 3506
	50	$f_{uk} \geq 500 \text{ N/mm}^2$	$f_{yk} \geq 210 \text{ N/mm}^2$	$A_5 > 8\%$	
	70	$f_{uk} \geq 700 \text{ N/mm}^2$	$f_{yk} \geq 450 \text{ N/mm}^2$	$A_5 \geq 8\%$	
Hexagon nut ¹⁾	80	$f_{uk} \geq 800 \text{ N/mm}^2$	$f_{yk} \geq 600 \text{ N/mm}^2$	$A_5 \geq 8\%$	EN 10088 EN ISO 3506
	50	for class 50 rods			
	70	for class 70 rods			
Washer	80	for class 80 rods			EN 10088 EN ISO 3506
	Steel according to EN 10088; corresponding to anchor rod material				
¹⁾ property class 80 only for stainless steel A4 and HCR					

Commercial standard threaded rods may be used, with:

- material and mechanical properties according to Table A1,
- confirmation of material and mechanical properties by inspection certificate 3.1 according to EN-10204:2004,
- marking of the threaded rod with the embedment depth.

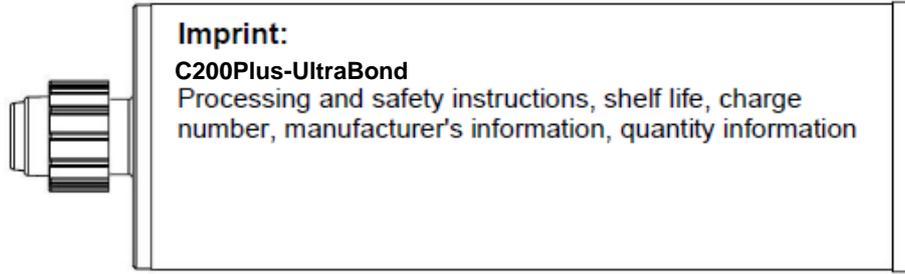
Note: Commercial standard threaded rods made of galvanized steel with property class above 8.8 are not permitted in some Member States.

Table A2: Injection mortar

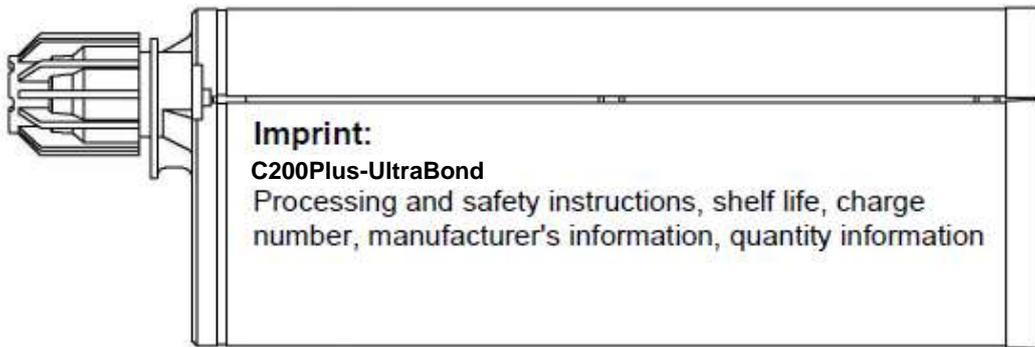
Product	Composition
C200-PLUS UltraBond (two component injection mortar)	Additive: Methacrylate Bonding agent: Polyurethane resin Hardener: Dibenzoyl peroxide

Sympafix chemical anchor C200Plus-UltraBond	Annex A2 of European Technical Assessment ETA-25/1168
Product description Materials	

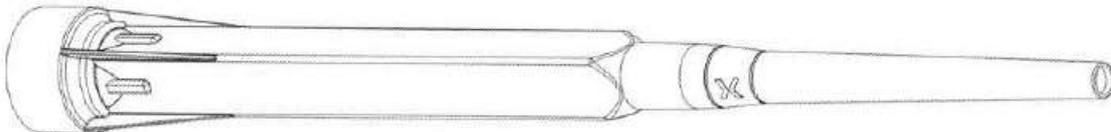
Coaxial cartridges: 150 ml, 280 ml, 300 ml to 333 ml and 380 ml to 420 ml



Side-by-Side cartridges: 235 ml, 345 ml to 360 ml and 825 ml



Static mixer Nozzle-square



Piston plug Vlotter and mixer extension EXT



Sympafix chemical anchor C200Plus-UltraBond

Product description
Cartridge types and sizes

Annex A3
of European
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Specifications of intended use

Anchors subject to:

- Static and quasi-static loads.

Base material:

- Reinforced or unreinforced normal weight concrete (without of fibres) of strength class C20/25 to C50/60 according to EN 206.

Temperature ranges:

Installation temperature (temperature of substrate):

- -5°C to +40°C.

In-service temperature:

The anchors may be used in the following temperature range:

- -40°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C).
- -40°C to +80°C (max. short term temperature +80°C and max. long term temperature +50°C).

Use conditions (environmental conditions):

- Structures subject to dry internal conditions: all materials according to Table A1 and A2.
- For all other conditions according to EN 1993-1-4:2006+A1:2015 corresponding to corrosion resistance class:
 - stainless steel A2 according to Annex A2, Table A1 - CRC II,
 - stainless steel A4 according to Annex A2, Table A1 - CRC III,
 - high corrosion resistance steel (HCR) according to Annex A2, Table A1 - CRC V.

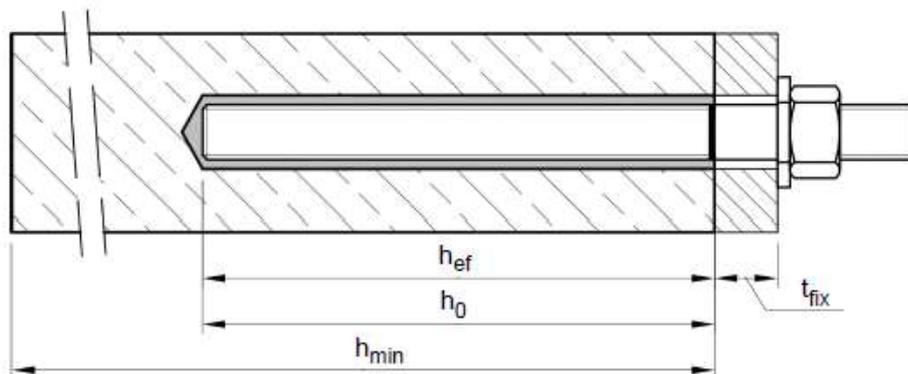
Installation:

- Dry or wet concrete (use category I1).
- Flooded holes with the exception of seawater (use category I2).
- Installation direction D3 (downward and horizontal and upwards installation).
- The anchors are suitable for diamond drilled holes (DD).

Design methods:

- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e. g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Anchorages under static or quasi-static loads are designed according to EN 1992-4 and EOTA Technical Report TR 055.

Sympafix chemical anchor C200Plus-UltraBond	Annex B1
Intended use Specifications	of European Technical Assessment ETA-25/1168

Installation threaded rod M10 up to M24

Table B1: Installation data for threaded rods

Threaded rod		M10	M12	M16	M20	M24
Diameter of the steel element	d [mm]	10	12	16	20	24
Nominal drilling diameter	d ₀ [mm]	12	14	18	22	28
Maximum diameter hole in the fixture - prepositioned installation	d _{fix} [mm]	12	14	18	22	26
Maximum diameter hole in the fixture - push through installation (annular gap filled with mortar)	d _{fix} [mm]	14	16	20	24	30
Effective embedment depth	h _{ef,min} [mm]	60	70	80	90	96
	h _{ef,max} [mm]	200	240	320	400	480
Depth of the drilling hole	h ₀ [mm]	h _{ef} + 5 mm				
Minimum thickness of the concrete slab	h _{min} [mm]	h _{ef} + 30 mm; ≥ 100 mm		h _{ef} + 2d ₀		
Maximum setting torqued moment	T _{fix} [N·m]	20	40	60	100	170
Minimum spacing	s _{min} [mm]	50	60	75	95	115
Minimum edge distance	c _{min} [mm]	40	45	50	60	65

Sympafix chemical anchor C200Plus-UltraBond
Intended use
 Installation data for threaded rods

Annex B2
 of European
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Table B2: Maximum processing time and minimum curing time

C200Plus-UltraBond		
Concrete temperature [C°]	Maximum processing time [min.]	Minimum curing time ¹⁾ [min.]
-5 to -1	50	360
0 to +4	25	210
+5 to +9	15	120
+10 to +14	10	60
+15 to +19	6	40
+20 to +29	3	30
+30 to +40	2	30

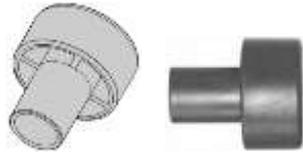
¹⁾ The minimum time from the end of the mixing to the time when the anchor may be torque or loaded (whichever is longer). Cartridge temperature from +5°C to +40°C.
For wet condition and flooded holes, the curing time must be double.

Sympafix chemical anchor C200Plus-UltraBond

Intended use
Maximum processing time and minimum curing time

Annex B3
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Table B3: Parameter cleaning and installation tools

							
Threaded rod	Diamond drill bit diameter	-	Brush diameter		Installation direction and use of piston plug		
			$d_{b, max}$	$d_{b, min}$	-	  	
[mm]	[mm]		[mm]	[mm]			
M10	12	BRSDS14	13,5	12,5	No plug required		
M12	14	BRSDS16	15,5	14,5			
M16	18	BRSDS20	20,0	18,5	VL#18	h _{ef} ≥ 250 mm	all
M20	22	BRSDS26	24,0	22,5	VL#22		
M24	28	BRSDS30	30,0	28,5	VL#28		

Compressed air tool
(min 6 bar)



Brush extension BRSDS-EXT



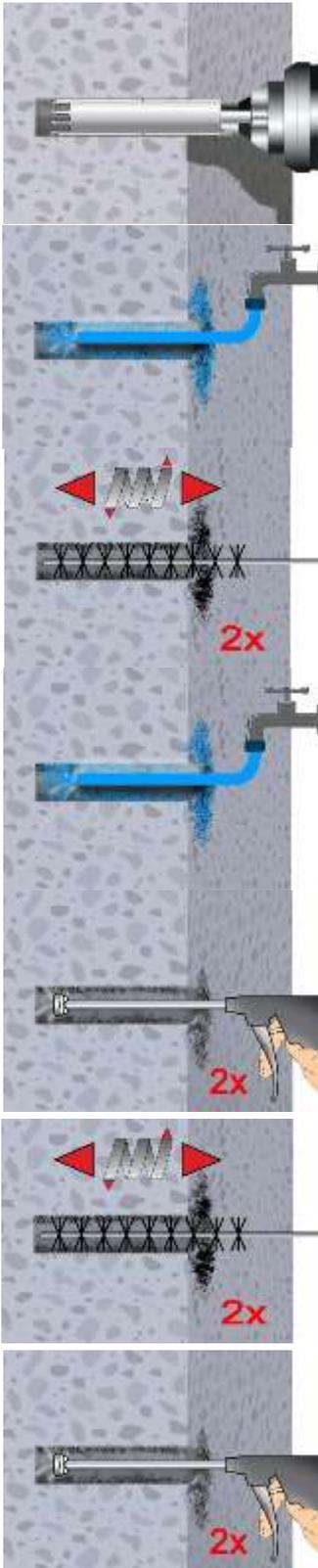
Applicator



Sympafix chemical anchor C200Plus-UltraBond

Intended use
Cleaning and installation tools

Annex B4
of European
Technical Assessment
ETA-25/1168



Diamond drilling (DD)
 Drill a hole to the required embedment depth required drill bit diameter according to Table B3. Aborted drill holes shall be filled with mortar.

Flushing with water until clear water comes out.

Brush the bore hole minimum 2x with brush BRSDS according to Table B3 over the entire embedment depth in a twisting motion. If necessary, a brush extension BRSDS-EXT shall be used.

Flushing with water until clear water comes out.

Attention! Standing water in the bore hole must be removed before proceeding.

Blow the bore hole clean minimum 2x with compressed air (min. 6 bar, oil-free) (Annex B4) over the entire embedment depth until return air stream is free of noticeable dust. If necessary, an extension shall be used.

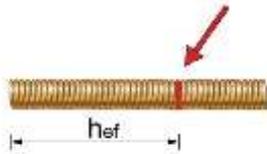
Brush the bore hole minimum 2x with brush BRSDS according to Table B3 over the entire embedment depth in a twisting motion. If necessary, a brush extension BRSDS-EXT shall be used.

Blow the bore hole clean minimum 2x with compressed air (min. 6 bar, oil-free) (Annex B4) over the entire embedment depth until return air stream is free of noticeable dust. If necessary, an extension shall be used.

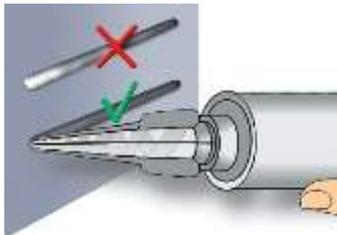
<p>Sympafix chemical anchor C200Plus-UltraBond</p>	<p>Annex B5 of European Technical Assessment ETA-25/1168</p>
<p>Intended use Installation instruction (1)</p>	



Screw on static-mixing nozzle Nozzle-square and load the cartridge into an appropriate dispensing tool.
For every working interruption longer than the maximum processing time (Annex B3) as well as for new cartridges, a new static-mixer shall be used.



Mark embedment depth on the anchor rod. Consider t_{fix} in case of push through installations. The anchor rod shall be free of dirt, grease, oil or other foreign material.



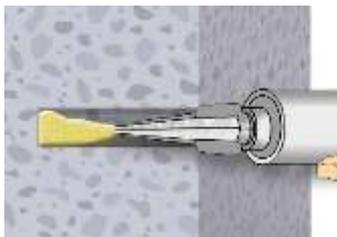
Not proper mixed mortar is not sufficient for fastening. Dispense and discard mortar until an uniform grey colour is shown (at least 3 full strokes).



Piston plugs Vlotter and mixer nozzle extensions EXT shall be used according to Table B3 for the following applications:

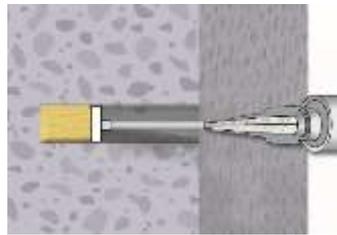
- Horizontal and vertical downwards direction: drill bit $d_0 \geq 18$ mm and embedment depth $h_{ef} > 250$ mm
- Vertical upwards direction: drill bit $d_0 \geq 18$ mm

Assemble mixing nozzle, mixer extension and piston plug before injecting mortar.



Injecting mortar without piston plug Vlotter.

Starting at bottom of the hole and fill the hole up to approximately two-thirds with mortar (if necessary, a mixer nozzle extension shall be used). Slowly withdraw of the static mixing nozzle avoid creating air pockets Observe the temperature related processing time (Annex B3).



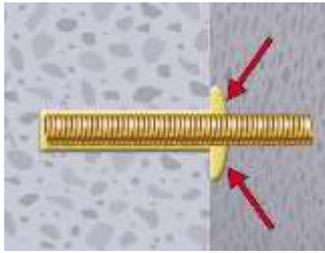
Injecting mortar with piston plug Vlotter.

Starting at bottom of the hole and fill the hole up to approximately two-thirds with mortar. (If necessary, a mixer nozzle extension shall be used.) During injection the piston plug is pushed out of the bore hole by the back pressure of the mortar. Observe the temperature related processing time (Annex B3).

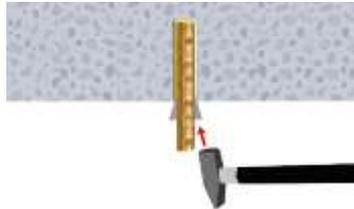


Insert the anchor rod while turning slightly up to the embedment mark.

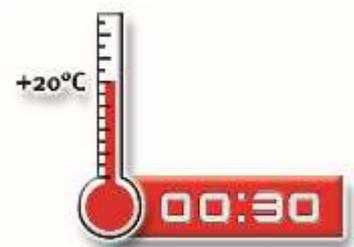
Sympafix chemical anchor C200Plus-UltraBond	Annex B6 of European Technical Assessment ETA-25/1168
Intended use Installation instruction (2)	



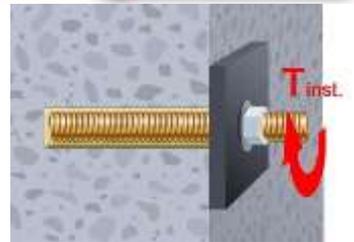
Annular gap between anchor rod and base material must be completely filled with mortar. In case of push through installation the annular gap in the fixture must be filled with mortar also. Otherwise, the installation must be repeated starting from step „Injecting mortar” before the maximum processing time has expired.



For application in vertical upwards direction the anchor rod shall be fixed (e.g. wedges).



Temperature related curing time (Annex B3) must be observed. Do not move or load the fastener during curing time.



Install the fixture by using a calibrated torque wrench. Observe maximum installation torque (Table B1).

<p>Sympafix chemical anchor C200Plus-UltraBond</p>	<p>Annex B7 of European Technical Assessment ETA-25/1168</p>
<p>Intended use Installation instruction (3)</p>	

Table C1: Characteristic values for steel tension resistance and steel shear resistance

Size			M10	M12	M16	M20	M24
Cross section of steel element	A_s	[m ²]	58	84,3	157	245	353
Steel failure – characteristic tension resistance							
Steel class 4.6 and 4.8	$N_{Rk,s}$	[kN]	23	34	63	98	141
Steel class 5.6 and 5.8	$N_{Rk,s}$	[kN]	29	42	78	122	176
Steel class 8.8	$N_{Rk,s}$	[kN]	46	67	126	196	282
Stainless steel A2, A4, HCR class 50	$N_{Rk,s}$	[kN]	29	42	78	122	177
Stainless steel A2, A4, HCR class 70	$N_{Rk,s}$	[kN]	41	59	110	171	247
Stainless steel A4, HCR class 80	$N_{Rk,s}$	[kN]	46	67	126	196	282
Steel failure – characteristic tension resistance – partial factor							
Steel class 4.6 and 4.8	$\gamma_{Ms,N}^{1)}$	[-]	2,00				
Steel class 5.6, 5.8 and 8.8	$\gamma_{Ms,N}^{1)}$	[-]	1,50				
Stainless steel A2, A4, HCR class 50	$\gamma_{Ms,N}^{1)}$	[-]	2,86				
Stainless steel A2, A4, HCR class 70	$\gamma_{Ms,N}^{1)}$	[-]	1,87				
Stainless steel A4, HCR class 80	$\gamma_{Ms,N}^{1)}$	[-]	1,60				
Steel failure – characteristic shear resistance without lever arm							
Steel class 4.6 and 4.8	$V_{Rk,s}^0$	[kN]	14	20	38	59	85
Steel class 5.6 and 5.8	$V_{Rk,s}^0$	[kN]	17	25	47	74	106
Steel class 8.8	$V_{Rk,s}^0$	[kN]	23	34	63	98	141
Stainless steel A2, A4, HCR class 50	$V_{Rk,s}^0$	[kN]	15	21	39	61	88
Stainless steel A2, A4, HCR class 70	$V_{Rk,s}^0$	[kN]	20	30	55	86	124
Stainless steel A4, HCR class 80	$V_{Rk,s}^0$	[kN]	23	34	63	98	141
Steel failure – characteristic shear resistance with lever arm							
Steel class 4.6 and 4.8	$M_{Rk,s}^0$	[Nm]	30	52	133	260	449
Steel class 5.6 and 5.8	$M_{Rk,s}^0$	[Nm]	37	65	166	324	560
Steel class 8.8	$M_{Rk,s}^0$	[Nm]	60	105	266	519	896
Stainless steel A2, A4, HCR class 50	$M_{Rk,s}^0$	[Nm]	37	66	167	325	561
Stainless steel A2, A4, HCR class 70	$M_{Rk,s}^0$	[Nm]	52	92	232	454	784
Stainless steel A4, HCR class 80	$M_{Rk,s}^0$	[Nm]	59	105	266	519	896
Steel failure – characteristic shear resistance – partial factor							
Steel class 4.6 and 4.8	$\gamma_{Ms,V}^{1)}$	[-]	1,67				
Steel class 5.6, 5.8 and 8.8	$\gamma_{Ms,V}^{1)}$	[-]	1,25				
Stainless steel A2, A4, HCR class 50	$\gamma_{Ms,V}^{1)}$	[-]	1,38				
Stainless steel A2, A4, HCR class 70	$\gamma_{Ms,V}^{1)}$	[-]	1,56				
Stainless steel A4, HCR class 80	$\gamma_{Ms,V}^{1)}$	[-]	1,33				

¹⁾ In the absence of other national regulation

Sympafix chemical anchor C200Plus-UltraBond

Performances
 Characteristic values for steel: tension and shear resistance

Annex C1
 of European
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Table C2: Characteristic values for tension resistance in cracked and uncracked concrete under static and quasi-static loads

Size			M10	M12	M16	M20	M24	
Steel failure								
Characteristic resistance	$N_{Rk,s}$	[kN]	See Annex C1 – Table C1					
Partial factor	$\gamma_{Ms,N}^{1)}$	[-]	See Annex C1 – Table C1					
Combined pull-out and concrete cone failure in uncracked concrete C20/25								
Characteristic bond resistance temperature range -40°C / +40°C	$\tau_{Rk,ucr,50}$	[N/mm ²]	12,9	12,8	12,2	10,8	9,8	
Characteristic bond resistance temperature range -40°C / +80°C	$\tau_{Rk,ucr,50}$	[N/mm ²]	12,0	11,9	11,4	10,1	9,1	
Combined pull-out and concrete cone failure in cracked concrete C20/25								
Characteristic bond resistance temperature range -40°C / +40°C	$\tau_{Rk,cr,50}$	[N/mm ²]	8,5	7,9	8,4	8,0	7,8	
Characteristic bond resistance temperature range -40°C / +80°C	$\tau_{Rk,cr,50}$	[N/mm ²]	7,9	7,4	7,8	7,4	7,2	
Increasing factor	C30/37	ψ_c	[-]	1,08	1,08	1,08	1,04	1,04
	C40/50			1,15	1,15	1,15	1,07	1,07
	C50/60			1,20	1,20	1,20	1,10	1,10
Sustained load factor for temperature range -40°C / +40°C	ψ_{sus}^0	[-]	0,69					
Sustained load factor for temperature range -40°C / +80°C			0,68					
Concrete cone failure								
Factor for uncracked concrete	$k_{ucr,N}$	[-]	11,0					
Factor for cracked concrete	$k_{cr,N}$	[-]	7,7					
Edge distance	$c_{cr,N}$	[mm]	1,5 h_{ef}					
Spacing	$s_{cr,N}$	[mm]	3,0 h_{ef}					
Splitting failure								
Edge distance	$h/h_{ef} \geq 2,0$	$c_{cr,sp}$	[mm]	h_{ef}				
	$2,0 > h/h_{ef} > 1,3$			$2 \cdot h_{ef} \cdot (2,5 - h/h_{ef})$				
	$h/h_{ef} \leq 1,3$			$2,4 \cdot h_{ef}$				
Spacing	$s_{cr,sp}$	[mm]	$2 \cdot c_{cr,sp}$					
Installation factor for combined pull-out, concrete cone and splitting failure								
Installation factor for category I1 ¹⁾	γ_{inst}	[-]	1,0					
Installation factor for category I2 ¹⁾			1,0					
¹⁾ In the absence of other national regulation								

Sympafix chemical anchor C200Plus-UltraBond

Performances

Characteristic values for tension resistance in cracked and uncracked concrete under static and quasi-static loads

Annex C2
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Table C3: Characteristic values for shear resistance in cracked and uncracked concrete under static and quasi-static loads

Size			M10	M12	M16	M20	M24
Steel failure without lever arm							
Characteristic resistance	$V_{Rk,s}^0$	[kN]	See Annex C1 – Table C1				
Partial factor	$\gamma_{Ms,V}^{1)}$	[-]	See Annex C1 – Table C1				
Ductility factor	k_7	[-]	1,0				
Steel failure with lever arm							
Characteristic resistance	$M_{Rk,s}^0$	[kN]	See Annex C1 – Table C1				
Partial factor	$\gamma_{Ms,V}^{1)}$	[-]	See Annex C1 – Table C1				
Concrete pry out failure							
Factor	k_8	[-]	2,0				
Installation factor	γ_{inst}	[-]	1,0				
Concrete edge failure							
Effective length of anchor under shear loading	l_f	[-]	$l_f = h_{ef}$ and $\leq 12 d_{nom}$				
Installation factor	γ_{inst}	[-]	1,0				
1) In the absence of other national regulations							

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Performances

Characteristic values for shear resistance in cracked and uncracked concrete under static and quasi-static loads

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Table C4. Displacement under tension loads under static and quasi-static loads

Size			M10	M12	M16	M20	M24
Characteristic displacement in uncracked concrete C20/25 to C50/60 under tension loads							
Displacement ¹⁾	δ_{N0} -factor	[mm/(N/mm ²)]	0,018	0,023	0,027	0,039	0,050
	$\delta_{N\infty}$ -factor	[mm/(N/mm ²)]	0,056	0,056	0,056	0,068	0,077
Characteristic displacement in cracked concrete C20/25 to C50/60 under tension loads							
Displacement ¹⁾	δ_{N0} -factor	[mm/(N/mm ²)]	0,050	0,058	0,067	0,083	0,090
	$\delta_{N\infty}$ -factor	[mm/(N/mm ²)]	0,234	0,260	0,271	0,272	0,260
¹⁾ Calculation of the displacement: $\delta_{N0} = \delta_{N0}\text{-factor} \cdot \tau$ $\delta_{N\infty} = \delta_{N\infty}\text{-factor} \cdot \tau$ τ : action bond stress for tension							

Table C5: Displacement under shear loads under static and quasi-static loads

Size			M10	M12	M16	M20	M24
Characteristic displacement in uncracked concrete C20/25 to C50/60 under shear loads							
Displacement ¹⁾	δ_{V0} -factor	[mm/kN]	0,014	0,012	0,008	0,006	0,005
	$\delta_{V\infty}$ -factor	[mm/kN]	0,021	0,018	0,011	0,009	0,007
Characteristic displacement in cracked concrete C20/25 to C50/60 under shear loads							
Displacement ¹⁾	δ_{V0} -factor	[mm/kN]	0,021	0,017	0,010	0,008	0,006
	$\delta_{V\infty}$ -factor	[mm/kN]	0,031	0,025	0,015	0,012	0,009
¹⁾ Calculation of the displacement: $\delta_{V0} = \delta_{V0}\text{-factor} \cdot V$ $\delta_{V\infty} = \delta_{V\infty}\text{-factor} \cdot V$ V : action shear load							

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Performances
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