DECLARATION OF PERFORMANCE
DP156EN21472501

1. Unique product identification code - type: **Sismabond.**
2. Intended uses: **See Annex I°.**
3. Manufacturer: **Diasen Srl - zona Ind.le Berbentina, 5 - 60041 Sassoferrato (AN) – www.diasen.com**
4. Systems of AVCP VVCP: **System 1.**
5. Harmonised standards and notified bodies:

	Name of the body	***System of assessment***	***Reference***	***EAD/hEN Document***
Technical Specification Document	DiBt (TAB)	1	**ETA-08/0383**	**EAD 330499-01-0601**
Constancy of performance & FCP	IFSW nr. 2873 (NB)		2873-CPR-M 527-12/10.2020	
Technical Specification Document	DiBt (TAB)		**ETA-12/0553**	**EAD 330087-00-0601**
Constancy of performance & FCP	IFSW nr. 2873 (NB)		2873-CPR-M 527-11/10.2020	
Technical Specification Document	DiBt (TAB)		**ETA-12/0543**	**ETAG029**
Constancy of performance & FCP	IFSW nr. 2873 (NB)		2873-CPR-M 527-6/10.2020	

6. Declared performance: **See Annexes**.

The performance of the product identified above is in conformity with all declared performances. This declaration of liability is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of: **Diego Mingarelli (Legal representative)**

Sassoferrato, 04/03/2020

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Annex I° – "Intended use"

Generic type	Chemical anchor for fixing **Threaded Rods** and **Reinforcing Bars** according to **ETA-08/0383**
Base material	**Concrete** from C20/25 to C50/60 according to EN206-1
Use category	• Installation in dry and wet concrete (flooded holes up to d.16); • Overhead installation;
Materials & Durability	• Galvanised steel cl. 4.6 to cl. 8.8 according to EN ISO 898 for dry indoor conditions; • Stainless steel cl. A4-50/70/80 according to EN ISO 3506 for indoor and outdoor use without particular aggressive conditions; • High Resistant Stainless Steel HCR-50/70/80 according to EN ISO 3506 for all conditions; • Rebar Class B and C according to EN 1992-1-1:2004+AC:2010, Annex C.
Loading	**Static, quasi-static** and **seismic**
Temperature (range)	• From -40 °C to +40 °C, with long-term maximum temperature +24 °C and short-term maximum temperature + 40 °C. • From -40 °C to +80 °C, with long-term maximum temperature +50 °C and short-term maximum temperature +80 °C. • From -40 °C to +120 °C, with long-term maximum temperature +72 °C and short-term maximum temperature +120 °C.
Reaction to fire	A1 according to EN 13501-1

Generic type	Chemical anchor for fixing **Post-installed Rebar Connection** according to **ETA-12/0553**
Base material	Non-carbonated concrete from C12/15 to C50/60 according to EN206-1 (max 0.4 % Cl)
Use category	• Installation and use in dry and wet concrete (no flooded holes); • Joints for overlapping to reinforce existing construction elements; • Anchoring of reinforcement bars for casting new walls or beams; • Anchorage of reinforcing bars to reinforce construction elements mainly subject to compression; • Anchorage of reinforcement rods for the extension of elements subject to bending.
Materials & Durability	• Rebar Class B and C according to EN 1992-1-1:2004+AC:2010, Annex C • ZA Tension Anchor B500 as DIN 488, for indoor and outdoor use without special aggressive conditions; • ZA Tension Anchor Stainless Steel A4 as DIN 488, for indoor and outdoor use without aggressive conditions; • ZA Tension Anchor High Strength Stainless Steel as DIN 488, for all conditions.
Loading	**Static, quasi-static** and **fire exposure** according to **EN 1992-1 (EC2)**
Temperature (range)	• From -40 °C to +80 °C, with long-term maximum temperature + 50 °C and short-term maximum temperature + 80 °C.
Reaction to fire	A1 according to EN 13501-1

Generic type	Chemical anchor for fixing in **masonry** according to **ETA-12/0543**
Base material	**b, c** and **d,** solid and hollowed brick, and autoclaved aerated concrete according to EN 771
Use category	• d/d: installation in dry masonry; • w/w: installation in wet masonry
Materials & Durability	• Galvanised Steel cl. 4.6 to cl. 8.8 according to EN ISO 898 for dry indoor conditions; • Stainless steel cl. A4-50/70/80 according to EN ISO 3506 for indoor and outdoor use without particular aggressive conditions; • High Resistant Stainless Steel HCR-50/70/80 according to EN ISO 3506 for all conditions;
Loading	**Static** and **quasi-static**
Temperature (range)	• From -40 °C to +40 °C, with long-term maximum temperature +24 °C and short-term maximum temperature + 40 °C. • From -40 °C to +80 °C, with long-term maximum temperature +50 °C and short-term maximum temperature +80 °C. • From -40 °C to +120 °C, with long-term maximum temperature +72 °C and short-term maximum temperature +120 °C.
Reaction to fire	A1 according to EN 13501-1

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Annex II°

Declared performance according to ETA-08/0383 and EAD 330499-01-0601
Design method according to EN 1992-4:2018 and TR055

ESSENTIAL CHARACTERISTICS				PERFORMANCE							
d	**THREADED BARS**			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
d_0	Nominal diameter of drill bit		mm	10	12	14	18	24	28	32	35
h_{ef}	Effective embedment depth	$h_{ef,min}$	mm	60	60	70	80	90	96	108	120
		$h_{ef,std}$	mm	80	90	110	125	170	210	240	270
		$h_{ef,max}$	mm	160	200	240	320	400	480	540	600
h_{min}	Minimum thickness of concrete support		mm	$h_{ef} + 30 \geq 100$			$h_{ef} + 2d_0$				
T_{inst}	Torque moment (max)		Nm	10	20	40	80	120	160	180	200
s_{min}	Minimum spacing		mm	40	50	60	80	100	120	135	150
c_{min}	Minimum edge distance		mm	40	50	60	80	100	120	135	150
TENSILE Steel Failure											
$N_{Rk,s}$	Tension Steel characteristic Failure	cl. 4.6-4.8	kN	15	23	34	63	98	141	184	224
		cl. 5.6-5.8		18	29	42	78	122	176	230	280
		cl. 8.8		29	46	67	125	196	282	368	449
		A4-70 (50)		26	41	59	110	171	247	(230)	(281)
$N_{Rk,s,eq,C1}$	Tensile Steel characteristic Failure Seismic Cat. **C1**		kN	$1,0 \times N_{Rk,s}$							
$\gamma_{Ms,N}$ [1)]	Partial safety factor	cl. 4.6-5.6	-	2,0							
		cl. 4.8-5.8-8.8		1,5							
		A4-70 (50)		1,87						(2,86)	
Combined slip-concrete fracture:		**"DRY-WET"**		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
$\tau_{Rk,ucr}$	Characteristic bond resistance for un-**cracked concrete** C20/25	40/24 °C	MPa	10	12	12	12	12	11	10	9
		80/50 °C		7,5	9	9	9	9	8,5	7,5	6,5
		120/72 °C		5,5	6,5	6,5	6,5	6,5	6,5	5,5	5
$\tau_{Rk,cr}$	Characteristic bond resistance for **cracked concrete** C20/25	40/24 °C	MPa	4	5	5,5	5,5	5,5	5,5	6,5	6,5
		80/50 °C		2,5	3,5	4	4	4	4	4,5	4,5
		120/72 °C		2	2,5	3	3	3	3	3,5	3,5
$\tau_{Rk,eq,C1}$	Characteristic bond resistance for **seismic category C1** C20/25	40/24 °C	MPa	2,5	3,1	3,7	3,7	3,7	3,8	4,5	4,5
		80/50 °C		1,6	2,2	2,7	2,7	2,7	2,8	3,1	3,1
		120/72 °C		1,3	1,6	2	2	2	2,1	2,4	2,4
Combined slip-concrete fracture:		**"FLOODED HOLES"**		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
$\tau_{Rk,ucr}$	Characteristic bond resistance for un-**cracked concrete** C20/25	40/24 °C	MPa	7,5	8,5	8,5	8,5	NPD			
		80/50 °C		5,5	6,5	6,5	6,5				
		120/72 °C		4	5	5	5				
$\tau_{Rk,cr}$	Characteristic bond resistance for **cracked concrete** C20/25	40/24 °C	MPa	4	4	5,5	5,5	NPD			
		80/50 °C		2,5	3	4	4				
		120/72 °C		2	2,5	3	3				
$\tau_{Rk,eq,C1}$	Characteristic bond resistance for **seismic category C1** C20/25	40/24 °C	MPa	2,5	2,5	3,7	3,7	NPD			
		80/50 °C		1,6	1,9	2,7	2,7				
		120/72 °C		1,3	1,6	2	2				
ψ_c	Increasing factor for concrete	C30/37	-	1,04							
		C40/50		1,08							

[1)] In the absence of other national regulations

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		C50/60		1,10						
ψ^0_{sus}	Reduction factor for C20/25 cracked and non-cracked concrete and seismic category	40/24 °C	-	0,73						
		80/50 °C		0,65						
		120/72 °C		0,57						
ψ_c	Increase factor for concrete per seismic category	Da C25/30 a C50/60	-	1,0						
Concrete Cone Failure										
$K_{cr,N}$	Factor according to EN 1992-4 § 7.2.1.4 cracked		-	7,7						
$K_{ucr,N}$	Factor according to EN 1992-4 § 7.2.1.4 un-cracked		-	11,0						
$c_{cr,N}$	Edge distance		mm	1,5 *x* h_{ef}						
$s_{cr,N}$	Centre distance		mm	2,0 x $c_{cr,N}$						
***Splitting* Failure**										
$c_{cr,sp}$	Characteristic edge distance	$h/h_{ef} \geq 2,0$	mm	1,0 x h_{ef}						
		$2,0 > h/h_{ef} > 1,3$		2 x h_{ef} (2,5 – h/h_{ef})						
		$h/h_{ef} \leq 1,3$		2,4 x h_{ef}						
$s_{cr,sp}$	Characteristic spacing		mm	2,0 x $c_{cr,sp}$						
γ_{inst}	Installation coefficient dry and wet concrete		-	1,0	1,2					
γ_{inst}	Installation coefficient in flooded hole		-	1,4				(NPD)		
d	**THREADED ROD**			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
SHEAR Steel Failure										
$V_{Rk,s}$	Shear Steel Characteristic Failure	cl. 4.6-4.8	kN	9	14	20	38	59	58	110	115
		cl. 5.6-5.8		11	17	25	47	74	106	138	168
		cl. 8.8		15	23	34	63	98	141	184	224
		A4-70 (50)		13	20	30	55	86	124	(115)	(140)
$V_{Rk,eq,C1}$	Shear Steel Characteristic Failure Seismic Cat. **C1**		kN	0,70 x $V_{Rk,s}$							
M^0_{Rk}	Characteristic bending moment	cl. 4.6-4.8	Nm	15	30	52	133	260	449	666	900
		cl. 5.6-5.8		19	37	65	166	324	560	833	1123
		cl. 8.8		30	60	105	266	519	896	1333	1797
		A4-70 (50)		26	52	92	232	454	784	(832)	(1125)
$M^0_{Rk,eq,C1}$	Characteristic bending moment Seismic category C1		Nm	(NPD)							
$\gamma_{Ms,V}$ [1)]	Partial safety factor	cl. 4.6-5.6	-	1,67							
		cl. 4.8-5.8-8.8		1,25							
		A4-70 (50)		1,56						(2,38)	
K_7	Ductility factor according to EN 1992-4 § 7.2.2.3.1		-	1,0							
Concrete Pry-out failure										
K_8	Ductility factor according to EN 1992-4 § 7.2.2.4		-	2,0							
γ_{inst}	Installation coefficient		-	1,0							
Concrete Edge failure										
l_f	Effective anchor length		-	min (h_{ef}; 12 x d_{nom})						min (h_{ef}; 300mm)	
d_{nom}	Outer diameter of the anchor		mm	8	10	12	16	20	24	27	30
γ_{inst}	Installation safety factor		-	1,0							
α_{gap}	Factor for annular gap		-	0,5 (1,0)[2)]							

2) In brackets the value with hole filling on the workpiece: Use a special washer to fill as required by ETA-08/0383

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Annex III°

Displacement under TENSION load (threaded rods) [4]				**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
$\delta_{N0,ucr}$ - factor	Short-term displacement **Normal Concrete**	40/24 °C	mm/MPa	0,021	0,023	0,026	0,031	0,036	0,041	0,045	0,049
		80/50 °C		0,050	0,056	0,063	0,075	0,088	0,100	0,110	0,119
		120/72 °C		0,050	0,056	0,063	0,075	0,088	0,100	0,110	0,119
$\delta_{N\infty,ucr}$ - factor	Long-term displacement in **Normal Concrete**	40/24 °C	mm/MPa	0,030	0,033	0,037	0,045	0,052	0,060	0,065	0,071
		80/50 °C		0,072	0,081	0,090	0,108	0,127	0,145	0,159	0,172
		120/72 °C		0,072	0,081	0,090	0,108	0,127	0,145	0,159	0,172
$\delta_{N0,cr}$ - factor	Short-term displacement **Cracked Concrete**	40/24 °C	mm/MPa	0,090		0,070					
		80/50 °C		0,219		0,170					
		120/72 °C		0,219		0,170					
$\delta_{N\infty,cr}$ - factor	Long-term displacement **Cracked Concrete**	40/24 °C	mm/MPa	0,105		0,105					
		80/50 °C		0,255		0,245					
		120/72 °C		0,255		0,245					

[4] Calculation of the displacement: $\delta N0 = \delta_{N0}$ – factor · τ $\quad$ $\delta N\infty = \delta_{N\infty}$ – factor · τ $\quad$ τ : action bond stress for tension

Displacement under SHEAR load (threaded rod) [5]			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
$\delta_{V0,ucr}$ - factor	Short-term displacement **Normal Concrete**	mm/kN	0,06	0,06	0,05	0,04	0,04	0,03	0,03	0,03
$\delta_{V\infty,ucr}$ - factor	Long-term displacement in **Normal Concrete**	mm/kN	0,09	0,08	0,08	0,06	0,06	0,05	0,05	0,05
$\delta_{V0,cr}$ - factor	Short-term displacement **Cracked Concrete**	mm/kN	0,12	0,12	0,11	0,10	0,09	0,08	0,08	0,07
$\delta_{V\infty,cr}$ - factor	Long-term displacement **Cracked Concrete**	mm/kN	0,18	0,18	0,17	0,15	0,14	0,13	0,12	0,10

[5] Calculation of the displacement: $\delta V0 = \delta_{V0}$ – factor · **V** $\quad$ $\delta V\infty = \delta_{V\infty}$ – factor · **V** $\quad$ **V** : action shear load

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Annex IV°

Declared performance according to ETA-08/0383 and **EAD 330499-01-0601**
Design method according to EN 1992-4:2018 and TR055

ESSENTIAL CHARACTERISTICS				**PERFORMANCE**								
d	**REINFORCING BARS**			**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**	**Ø28**	**Ø32**
d_0	Nominal diameter of drill bit		mm	12	14	16	18	20	24	32	35	40
h_{ef}	Effective embedment depth	$h_{ef,min}$	mm	60	60	70	75	80	90	100	112	128
		$h_{ef,std}$	mm	80	90	110	115	125	170	210	250	270
		$h_{ef,max}$	mm	160	200	240	280	320	400	500	580	640
h_{min}	Minimum thickness of concrete support		mm	$h_{ef} + 30 \geq 100$		$h_{ef} + 2d_0$						
s_{min}	Minimum spacing		mm	40	50	60	70	80	100	125	140	160
c_{min}	Minimum edge distance		mm	40	50	60	70	80	100	125	140	160
TENSILE Steel Failure												
$N_{Rk,s}$	Tension Steel Characteristic Failure		kN	$A_s \times f_{uk}$ [3]								
$N_{Rk,s,eq,C1}$	Tension Steel Characteristic Failure under Seismic Category C1		kN	$1,0 \times A_s \times f_{uk}$ [3]								
A_s	Resistant Area		mm^2	50	79	113	154	201	314	491	616	804
$\gamma_{Ms,N1}$)	Partial safety factor		-	1,4								
Combined pull-out and concrete failure: "DRY-WET"				**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**	**Ø28**	**Ø32**
$\tau_{Rk,ucr}$	Characteristic bond resistance for un-**cracked concrete** C20/25	40/24 °C	MPa	10	12	12	12	12	12	11	10	8,5
		80/50 °C		7,5	9	9	9	9	9	8	7	6
		120/72 °C		5,5	6,5	6,5	6,5	6,5	6,5	6	5	4,5
$\tau_{Rk,cr}$	Characteristic bond resistance for **cracked concrete** C20/25	40/24 °C	MPa	4	5	5,5	5,5	5,5	5,5	5,5	6,5	6,5
		80/50 °C		2,5	3,5	4	4	4	4	4	4,5	4,5
		120/72 °C		2	2,5	3	3	3	3	3,5	3,5	3,5
$\tau_{Rk,eq,C1}$	Characteristic bond resistance for **seismic category C1** C20/25	40/24 °C	MPa	2,5	3,1	3,7	3,7	3,7	3,7	3,8	4,5	4,5
		80/50 °C		1,6	2,2	2,7	2,7	2,7	2,7	2,8	3,1	3,1
		120/72 °C		1,3	1,6	2	2	2	2	2,1	2,4	2,4
Combined pull-out and concrete failure: "FLOODED HOLES"												
$\tau_{Rk,ucr}$	Characteristic bond resistance for un-**cracked concrete** C20/25	40/24 °C	MPa	7,5	8,5	8,5	8,5	8,5	NPD			
		80/50 °C		5,5	6,5	6,5	6,5	6,5				
		120/72 °C		4	5	5	5	5				
$\tau_{Rk,cr}$	Characteristic bond resistance for **cracked concrete** C20/25	40/24 °C	MPa	4	4	5,5	5,5	5,5	NPD			
		80/50 °C		2,5	3	4	4	4				
		120/72 °C		2	2,5	3	3	3				
$\tau_{Rk,eq,C1}$	Characteristic bond resistance for **seismic category C1** C20/25	40/24 °C	MPa	2,5	2,5	3,7	3,7	3,7	NPD			
		80/50 °C		1,6	1,9	2,7	2,7	2,7				
		120/72 °C		1,3	1,6	2	2	2				
ψ^0_{sus}	Reduction factor for C20/25 **cracked** and **non-cracked concrete** and **seismic category**	40/24 °C	-	0,73								
		80/50 °C		0,65								
		120/72 °C		0,57								
ψ_c	Increase factor for concrete per **seismic category**	Da C25/30 a C50/60	-	1,0								
Concrete Cone Failure												

3) f_{uk} secondo la specifica del ferro di armatura

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$K_{cr,N}$	Factor according to 1992-4 § 7.2.1.4 cracked		-	7,7							
$K_{ucr,N}$	Factor according to EN 1992-4 § 7.2.1.4 un-cracked		-	11,0							
$c_{cr,N}$	Critical Edge distance		mm	1,5 *x* h_{ef}							
$s_{cr,N}$	Critical spacing		mm	2,0 x $c_{cr,N}$							
Splitting Failure											
$c_{cr,sp}$	Characteristic edge distance from Splitting	$h/h_{ef} \geq 2,0$	mm	1,0 x h_{ef}							
		$2,0 > h/h_{ef} > 1,3$		2 x h_{ef} (2,5 – h/h_{ef})							
		$h/h_{ef} \leq 1,3$		2,4 x h_{ef}							
$s_{cr,sp}$	Critical Spacing for Splitting		mm	2,0 x $c_{cr,sp}$							
γ_{inst}	Installation safety coefficient dry and wet concrete		-	1,2							
γ_{inst}	Installation safety coefficient in flooded holes		-	1,4					(NPD)		
d	**REBAR**			**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**	**Ø28**	**Ø32**
SHEAR Steel Failure											
$V_{Rk,s}$	Characteristic shear failure steel		kN	0,5 x A_s x f_{uk} [3]							
$V_{Rk,s,seis,C1}$	Characteristic shear failure steel **Seismic category C1**		kN	0,35 x A_s x f_{uk} [3]							
A_s	Resistant section of reinforcing steel		mm^2	50	79	113	154	201	314	491	616	804
M^0_{Rk}	Characteristic bending moment		Nm	1,2 x W_{el} x f_{uk} [3]							
$M^0_{Rk,eq,C1}$	Characteristic bending moment **Seismic category C1**		Nm	(NPD)							
W_{el}	Elastic Section Modulus		mm^3	50	98	170	269	402	785	1534	2155	3217
$\gamma_{Ms,V}$ [1]	Partial safety factor		-	1,5							
Concrete *Pryout* Failure											
K_8	Factor according to EN 1992-4 § 7.2.2.4		-	2,0							
γ_{inst}	Installation safety coefficient		-	1,0							
Concrete Edge Failure											
l_f	Effective anchor length		-	min (h_{ef}; 12 x d_{nom})						min (h_{ef}; 300mm)		
d_{nom}	Outer diameter of the anchor		mm	8	10	12	14	16	20	25	28	32
γ_{inst}	Installation safety coefficient		-	1,0							
α_{gap}	Factor for annular gap		-	0,5 (1,0) [2]							

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ANNEX V°

Displacements under TENSION load (rebar) [4]				Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
$\delta_{N0,ucr}$ -factor	Short-term displacement **Normal Concrete**	40/24 °C	mm/MPa	0,021	0,023	0,026	0,028	0,031	0,036	0,043	0,075	0,052
		80/50 °C		0,050	0,056	0,063	0,069	0,075	0,088	0,104	0,113	0,126
		120/72 °C		0,050	0,056	0,063	0,069	0,075	0,088	0,104	0,113	0,126
$\delta_{N^{\infty},ucr}$ - factor	Long-term displacement in **Normal Concrete**	40/24 °C	mm/MPa	0,030	0,033	0,037	0,041	0,045	0,052	0,061	0,071	0,075
		80/50 °C		0,072	0,081	0,090	0,099	0,108	0,127	0,149	0,163	0,181
		120/72 °C		0,072	0,081	0,090	0,099	0,108	0,127	0,149	0,163	0,181
$\delta_{N0,cr}$ - factor	Short-term displacement **Cracked Concrete**	40/24 °C	mm/MPa	0,090		0,070						
		80/50 °C		0,219		0,170						
		120/72 °C		0,219		0,170						
$\delta_{N^{\infty},cr}$ - factor	Long-term displacement **Cracked Concrete**	40/24 °C	mm/MPa	0,105		0,105						
		80/50 °C		0,255		0,245						
		120/72 °C		0,255		0,245						

[4] Calculation of the displacement: $\delta N0 = \delta_{N0} - \text{factor} \cdot \tau$ $\quad$ τ : action bond stress for tension

$\delta N\infty = \delta_{N\infty} - \text{factor} \cdot \tau$

Displacements under TENSION load (rebar) [5]			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
$\delta_{V0,ucr}$ - factor	Short-term displacement **Normal Concrete**	mm/kN	0,06	0,05	0,05	0,04	0,04	0,04	0,03	0,03	0,03
$\delta_{V^{\infty},ucr}$ - factor	Long-term displacement in **Normal Concrete**	mm/kN	0,09	0,08	0,08	0,06	0,06	0,05	0,05	0,04	0,04
$\delta_{V0,cr}$ - factor	Short-term displacement **Cracked Concrete**	mm/kN	0,12	0,12	0,11	0,11	0,10	0,09	0,08	0,07	0,06
$\delta_{V^{\infty},cr}$ - factor	Long-term displacement **Cracked Concrete**	mm/kN	0,18	0,18	0,17	0,16	0,15	0,14	0,12	0,11	0,10

[5] Calculation of the displacement: $\delta V0 = \delta_{V0} - \text{factor} \cdot \mathbf{V}$ $\quad$ **V** : action shear load

$\delta V\infty = \delta_{V\infty} - \text{factor} \cdot \mathbf{V}$

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ANNEX VI°

Declared performance according to ETA-12/0553 and EAD 330087-00-0601
Design according to EN 1992-1-1:2004+AC:2010 and ETA-12/0553

ESSENTIAL CHARACTERISTICS					PERFORMANCE										
d	**POST-INSTALLED REBAR**				**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø22**	**Ø24**	**Ø25**	**Ø28**	**Ø32**
d_0	Nominal diameter of drill bit			mm	12	14	16	18	20	25	28	32	32	35	40
$\ell_{V,MAX}$	Anchorage depth MAX			mm	See table B2 of ETA-12/0553										
$\ell_{b,MIN}$	Anchorage depth MIN			mm	§ 8.6 - § 8.7 according to EN 1992-1-1:2004+AC:2010										
$\ell_{0,MIN}$	Length of overlap			mm	§ 8.11 according to EN 1992-1-1:2004+AC:2010										
α_{lb}	Amplification factor for $\ell_{b,MIN}$ and $\ell_{0,MIN}$			-	1,0										
c [4) 5)]	Minimum concrete cover min c	*Without drilling*	rotary hammer HD	mm	30 mm + 0,06 · $l_V \geq 2 \cdot Ø$								40 mm + 0,06 · $l_V \geq 2 \cdot Ø$		
			pneumatic drill CD		50 mm + 0,08 · l_V								60 mm + 0,08 · l_V		
		With drilling	rotary hammer HD		30 mm + 0,02 · $l_V \geq 2 \cdot Ø$								40 mm + 0,02 · $l_V \geq 2 \cdot Ø$		
			pneumatic drill CD		50 mm + 0,02 · l_V								60 mm + 0,02 · l_V		
s_{min}	Minimum spacing			mm	≥ 5·Ø ≥ 50 mm										
Design values of ultimate bond resistance															
f_{bd}	Bond design value resistance *"for all drilling methods for good conditions"*		C12/15	N/mm²	1,6										
			C16/20		2,0										
			C20/25		2,3										
			C25/30		2,7										
			C30/37		3,0										
			C35/45		3,4										
			C40/50		3,7										
			C45/55		4,0 (**3,7** per **Ø28÷32**)										
			C50/60		4,3 (**3,7** per **Ø28÷32**)										
$f_{bd,c}$	*"for all other bond conditions"*			N/mm²	$f_{bd} \cdot 0,7$										
FIRE EXPOSURE Design Method according to EN 1992-1-1:2004+AC:2008															
f_{bd}	Bond design value resistance "under Fire Exposure"			N/mm²	[6)] $f_{bd,fi} = k_{fi}(\theta) \cdot f_{bd} \cdot \gamma_c / \gamma_{Mfi}$										

f_{bd} = see table above

γ_c = partial safety factor according to EN 1992-1-1

γ_{Mfi} = partial safety factor according to EN 1992-1-2 under fire exposure

4) Non ammessa perforazione carotata

5) Per la copertura minima di calcestruzzo si deve rispettare l'Eurocodice EC 1992-1-1:2004 + AC:2010;

6) Con $k_{fi}(\theta)$ fattore di riduzione sotto esposizione al fuoco (vedi grafico sotto)

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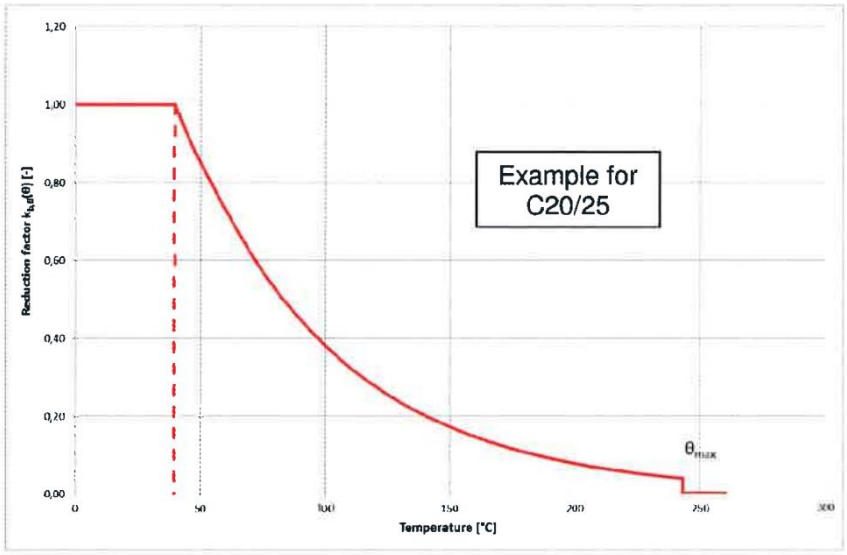
Example graph of Reduction factor $k_{b,fi}(\theta)$ for concrete classes C20/25 for good bond conditions:



Annex VII°

Declared performance according to ETA-12/0543 and ETAG029 Design method according to TR054										
ESSENTIAL CHARACTERISTICS					**PERFORMANCE**					
Installation parameters			**SOLID MASONRY**		**M8**		**M10**		**M12**	
d_0	Nominal diameter of drill			mm	10		12		14	
h_{ef}	Effective embedment depth			mm	80		90		100	
T_{inst}	Torque moment (max)			mm	2					
Characteristic resistance to TENSILE and SHEAR loads [7)]					**M8**		**M10**		**M12**	
Type[8)]	Density (kg/m^3)	Compression (N/mm^2)	Temperature Range		$N_{Rk,b}$ tensile	$V_{Rk,b}$ shear	$N_{Rk,b}$ tensile	$V_{Rk,b}$ shear	$N_{Rk,b}$ tensile	$V_{Rk,b}$ shear
Solid brick[8)]	ρ ≥ 1,6	$f_b \geq 10$	40/24 °C	kN	3,5	3,5	3,5	3,5	4,0	3,5
			80/50 °C		3,5		3,5		4,0	
			120/72 °C		2,5		3,0		3,5	
	ρ ≥ 1,6	$f_b \geq 28$	40/24 °C	kN	5,5	5,5	6,0	5,5	7,0	5,5
			80/50 °C		5,5		6,0		7,0	
			120/72 °C		4,5		5,0		6,0	
γ_M[1)]	Partial Safety Factor			-	2,5					
Installation parameters			**HOLLOWED MASONRY "with bussola"**		**M8**		**M10**		**M12**	
d_0	Nominal diameter of drill			mm	12		16		18	
h_{ef}	Effective embedment depth			mm	80		85		85	
T_{inst}	Torque moment (max)			mm	2					
Characteristic resistance to TENSILE and SHEAR loads [8)]					**M8**		**M10**		**M12**	

7) Resistance values valid with Ccr edge distances, see ETA-12/0543 even for shorter distances.

8) See ETA-12/0543 for description of bricks and for use on other types of bricks.

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Type [9]	Density (kg/m^3)	Compression (N/mm^2)	Temperature Range		$N_{Rk,b}$ tensile	$V_{Rk,b}$ shear	$N_{Rk,b}$ tensile	$V_{Rk,b}$ shear	$N_{Rk,b}$ tensile	$V_{Rk,b}$ shear
Brick doppio[8)]	$\rho \geq 1,2$	$f_b \geq 28$	40/24 °C	kN	1,2	2,5	1,2	2,5	1,2	2,5
			80/50 °C		1,2		1,2		1,2	
			120/72 °C		0,9		0,9		0,9	
Brick forato leggero[8]	$\rho \geq 0,8$	$f_b \geq 6$	40/24 °C	kN	0,5	2,5	0,5	2,5	0,5	2,5
			80/50 °C		0,5		0,5		0,5	
			120/72 °C		0,4		0,4		0,4	
γ_M [1)]	Partial Safety Factor			-	2,5					

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- *printing errors.*

9) See ETA-12/0543 for description of bricks and use on other types of bricks.