In accordo al regolamento UE n 305/2011

DECLARATION OF PERFORMANCE N. 20/0831





1. Codice identificativo unico del prodotto tipo / Unique identification code of the product-type:

VITE E PIASTRA PER CALCESTRUZZO CONNETTORE TECNARIA CTCEM-E

VITE PER CALCESTRUZZO CONNETTORE TECNARIA VCEM-E

VITE PER CALCESTRUZZO CONNETTORE TECNARIA MINICEM-E

VITE PER CALCESTRUZZO CONNETTORE TECNARIA NANOCEM-E

CONCRETE SCREW + PLATE TECNARIA CONNECTOR CTCEM-E

CONCRETE SCREW TECNARIA CONNECTOR VCEM-E

CONCRETE SCREW TECNARIA CONNECTOR MINICEM-E

CONCRETE SCREW TECNARIA CONNECTOR NANOCEM-E

2. Uso previsto / Intended use:

I prodotti per calcestruzzo CONNETTORE TECNARIA CTCEM-E, CONNETTORE TECNARIA VCEM-E, CONNETTORE TECNARIA MINICEM-E e CONNETTORE TECNARIA NANOCEM-E sono ancoranti in acciaio al carbonio. Sono avvitati in un foro cilindrico. L'apposito filetto dell'ancorante taglia una filettatura interna nel calcestruzzo mentre si inserisce. L'ancoraggio è caratterizzato dall'ingranamento meccanico nell'apposito filetto. Il connettore Tecnaria CTCEM-E ha inoltre una piastra di ancoraggio meccanico.

The CTCEM-E TECNARIA CONNECTOR, VCEM-E TECNARIA CONNECTOR, MINICEM-E TECNARIA CONNECTOR and NANOCEM-E TECNARIA CONNECTOR concrete screws are anchors made of carbon steel. They are screwed into a predrilled cylindrical drill hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterised by mechanical interlock in the special thread. The Tecnaria CTCEM-E connector also has a mechanical anchor plate.

3. Fabbricante / Manufacturer:

Tecnaria S.p.A. Viale Pecori Giraldi 55 – 36061 Bassano del Grappa VI Italy

4. Rappresentate autorizzato / Authorised representative:

Non applicabile / Not relevant

5. Sistema VVCP / System of AVCP:

1

6. Documento per la Valutazione Europea / European Assessment Document:

EAD-330232-00-0601

Valutazione Tecnica Europea / European Technical Assessment:

ETA-20/0831 of 2023/09/18

Organismo di Valutazione Tecnica / Technical Assesment Body:

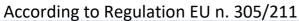
IETcc

Organismo Notificato / Notified body:

IETcc n 1219

In accordo al regolamento UE n 305/2011





7. Prestazione dichiarata / Declared performances:

CTCME-E = CT-CEM-E

VCEM-E = 12.5 h_{nom}= 70 mm MINICEM-E = $10.5 h_{nom}$ = 60 mm NANOCEM-E = $7.5 h_{nom}$ = 55 mm

Table C1: Characteristic values to tension loads for Carbon Steel

Characteristic values of resistance to tension loads of design method A						Perforn	nance				
tension l	loads of design method A		7	.5	10.	.5		12.5			
hnom	Overall anchor embedment depth in the concrete:	[mm]	40	55	50	60	60	70	85		
Tension	loads: steel failure										
NRk,s	NRk,s Tension steel characteristic resistance:			3.7	32	.7		51.2			
γMs				.5	1.5	5		1.5			
Tension	loads: pull-out failure in concr	rete									
N _{Rk,p,ucr}	Tension characteristic resistance in C20/25 uncracked concrete:	[kN]	6.0	9.0	12.5 ²⁾	12.0 ²⁾	22.0 ²⁾	20.0 ²⁾	34.0 ²⁾		
$N_{Rk,p,cr}$	Tension characteristic resistance in C20/25 cracked concrete:	[kN]	3.0	6.0	6.0	9.0	14.0 ²⁾	12.0	24.0 ²⁾		
Ψο	C30/37	[-]	1.16	1.22	1.16	1.08	1.14	1.04	1.18		
Ψο	C40/45	[-]	1.29	1.41	1.28	1.15	1.25	1.07	1.33		
ψο	C50/60	[-]	1.40	1.55	1.39	1.19	1.34	1.09	1.46		
Tension	loads: concrete cone and spli	tting fa	ilure								
Yins	Installation safety factor: 1)	[-]	1.2	1.2	1.2	1.2	1.2	1.2	1.0		
hef	Effective embedment depth:	[mm]	29	42	37	45	44	52	65		
kuar,N	Factor for uncracked concrete:	[-]				11.	0				
$N^0_{\text{Rk,c,ucr}}$	Tension characteristic resistance in C20/25 uncracked concrete: 3)	[kN]	7.7	13.4	11.1	14.8	14.4	18.4	25.8		
kcr,N	Factor for cracked concrete:	[-]				7.7	7				
$N^0_{Rk,c,cr}$	Tension characteristic resistance in C20/25 cracked concrete: 3)	[kN]	5.4	9.4	7.8	10.4	10.1	12.9	18.0		
Scr,N	Critical spacing:	[mm]				3.0 x	her				
C _{cr,N}						1.5 x	her				
S _{cr,sp}	Critical spacing (splitting):	[mm]	3.0 x her								
C _{cr,sp}	Critical edge distance (splitting):	[mm]				1.5 x	her				

¹⁾ In absence of other national regulations

Note: 12.5 CT-CEM-E made of carbon steel and tested for hoom=70 works under tension loads as regular 12.5 with hoom=70.

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²⁾ Pull-out failure is not decisive (N⁰_{RK,c} < N_{RK,p})
³⁾ Equation 7.2 from EN 1992-4:2018

In accordo al regolamento UE n 305/2011









Chann		landa			Pe	erforma	ance			
Cnara	acteristic values of resistance to shear	loads	7.	5	10.	5	12.5			
h _{nom}	Overall anchor embedment depth in the concrete:	[mm]	40	55	50	60	60	70	85	
Shear	loads: steel failure without lever arm									
V _{Rk,s}	Shear steel characteristic resistance:	[kN]	9.3	7.5	16	.3		25.6		
k7 k7 factor:1)			0.	8	0.8	8		0.8		
YMs	Partial safety factor: 2)	[-]	1.2	25	1.2	25				
Shear	loads: steel failure with lever arm									
M ⁰ RK,s	Characteristic bending moment:	[Nm]	15.	15.2		35.3		69.3		
YMs	Partial safety factor: 2)	[-]	1.25		1.25		1.25			
Shear	loads: concrete pryout failure									
ks.	ks factor:	[-]	1.0	1.0	1.2	1.0	1.0	1.0	2.0	
Yinst	Installation safety factor: 2)	[-]	1.	0	1.0	0		1.0		
Shear	r loads: concrete edge failure									
lf	Effective anchorage depth under shear loads:	[mm]	29	42	37	45	44	52	65	
dnom	Nominal outer diameter of screw:	[mm]	6	6	8	8	10	10	10	
Yinst	Installation safety factor: 2)	[-]	1.0	Ó	1.0	Ò		1.0	•	

¹⁾ The diameter of the clearance hole does not meet the values given in EN 1992-4 Table 6.1. However, the group resistance under shear loading has been verified in the assessment through testing and accounted for in the factor k₇.

²⁾ In absence of other national regulations.

Chara	acteristic values of resistance to shea	r		Perfori	mance		
loads			12.5 CT-CEM-E	14	.2	16	.5
h _{nom}	Overall anchor embedment depth in the concrete:	[mm]	70	75	105	75	110
Shear	r loads: steel failure without lever arm						
V _{Rk,s}	Shear steel characteristic resistance:	[kN]	53.5	40	.3	57	.9
k7	k7 factor:1)	[-]	0.8	0.	8	0.	.8
YMs	Partial safety factor: 2)	[-]	1.25	1.2	25	1.3	25
Shear	loads: steel failure with lever arm						
M ⁰ Rk,s	Characteristic bending moment:	[Nm]	69.3	137	7.1	23	5.9
YMs	Partial safety factor: 2)	[-]	1.25	1.2	25	1.3	25
Shear	r loads: concrete pryout failure						
k8	ks factor:	[-]	4.5	1.5	2.0	1.6	2.0
Yinst	Installation safety factor: 2)	[-]	1.0	1.	0	1.	0
Shear	r loads: concrete edge failure						
ŝ	Effective anchorage depth under shear loads:	[mm]	52	57	82	56	86
dnom	Nominal outer diameter of screw:	[mm]	10	12	12	14	14
Yinst	Installation safety factor: 2)	[-]	1.0	1.	0	1.	0

¹⁾ The diameter of the clearance hole does not meet the values given in EN 1992-4 Table 6.1. However, the group resistance under shear loading has been verified in the assessment through testing and accounted for in the factor k₇.

2) In absence of other national regulations.

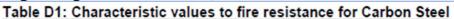
Note: 12.5 CT-CEM-E made of carbon steel and tested for h_{nom} =70 works under shear loads better than regular 12.5 with h_{nom} =70 and, in this line, its assessment values are updated in the table above.

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Fire resistance duration = 30							Per	rforma	nces				
minutes			7	.5	10	.5	12.5			14.2		16.5	
h _{nom}	Overall anchor embedment depth in the concrete:	[mm]	40	55	50	60	60	70	85	75	105	75	110
Tension	loads, steel failure	loads, steel failure											
N _{Rk,s,fl,30}	Characteristic resistance:	[kN]	0.23	0.23	0.41	0.41	0.95	0.95	0.95	2.02	2.02	2.91	2.91
Pull-out	failure												
N _{Rk,p,f1,30}	Character. resistance in concrete:	[kN]	0.77	1.43	1.58	2.28	3.66	3.60	6.09	4.85	8.38	5.04	7.43
Concret	e cone failure 1)												
N _{Rk,c,fl,30}	Character. resistance in concrete:	[kN]	0.78	1.97	1.43	2.34	2.21	3.36	5.86	4.22	10.48	4.04	11.81
Shear lo	ads steel failure w	ithout	lever a	arm				_					
V _{Rk,s,fl,30}	Characteristic resistance	[kN]	0.23	0.23	0.41	0.41	0.95	0.95	0.95	2.02	2.02	2.91	2.91
Shear lo	ads, steel failure v	vith lev	er arn	n									
M _{Rk,6,f1,30}	Characteristic bending resistance:	[Nm]	0.19	0.19	0.44	0.44	1.29	1.29	1.29	3.43	3.43	5.93	5.93

Fire resi					Per	rforma	nces						
minutes			7	.5	10).5		12.5		14	1.2	10	5.5
h _{nom}	Overall anchor embedment depth in the concrete:	[mm]	40	55	50	60	60	70	85	75	105	75	110
Tension	loads, steel failur												
N _{Rk,s,1,60}	Characteristic resistance:	[kN]	0.21	0.21	0.37	0.37	0.83	0.83	0.83	1.51	1.51	2.18	2.18
Pull-out	failure												
N _{Rk,p,f1,60}	Character. resistance in concrete:	[kN]	0.77	1.43	1.58	2.28	3.66	3.60	6.09	4.85	8.38	5.04	7.43
Concret	e cone failure 1)												
N _{Rk,c,fl,60}	Character. resistance in concrete:	[kN]	0.78	1.97	1.43	2.34	2.21	3.36	5.86	4.22	10.48	4.04	11.81
Shear lo	ads steel failure w	vithout	lever a	arm									
V _{Rk,s,fl,60}	Characteristic resistance:	[kN]	0.21	0.21	0.37	0.37	0.83	0.83	0.83	1.51	1.51	2.18	2.18
Shear lo	ads, steel failure v	with lev	er arn	n									
MRk,s,fl,60	Characteristic bending resistance:	[Nm]	0.17	0.17	0.40	0.40	1.12	1.12	1.12	2.57	2.57	4.45	4.45

¹⁾ As a rule, splitting failure can be neglected when cracked concrete and reinforcement is assumed.

Note: In absence of other national regulations, the partial safety factor for resistance under fire exposure $\gamma_{M,\text{fi}} = 1.0$ is recommended for steel failure and concrete related failure modes under shear loading. In case of concrete related failure modes under tension $\gamma_{M,\text{fi}} = \gamma_{\text{inst.}}$.

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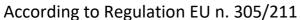




Table D1: Characteristic values to fire resistance for Carbon Steel (continuation)

Fire resistance duration = 90							Pe	rforma	nces				
minutes			7.	.5	10).5		12.5		14	1.2	16	6.5
h _{nom}	Overall anchor embedment depth in the concrete:	[mm]	40	55	50	60	60	70	85	75	105	75	110
Tension	loads, steel failur	ė											
N _{Rk,s,f,90}	Characteristic resistance:	[kN]	0.16	0.16	0.29	0.29	0.64	0.64	0.64	1.31	1.31	1.89	1.89
Pull-out	failure												
N _{Rk,p,f,90}	Character. resistance in concrete:	[kN]	0.77	1.43	1.58	2.28	3.66	3.60	6.09	4.85	8.38	5.04	7.43
Concret	e cone failure 1)												
N _{Rk,e,fl,90}	Character. resistance in concrete:	[kN]	0.78	1.97	1.43	2.34	2.21	3.36	5.86	4.22	10.48	4.04	11.81
Shear lo	ads steel failure v	vithout	lever :	arm									
V _{Rk,4,1,90}	Characteristic resistance:	[kN]	0.16		0.29	0.29	0.64	0.64	0.64	1.31	1.31	1.89	1.89
Shear lo	ads, steel failure	with lev	er am	n									
M _{Rk,s,f,50}	Characteristic bending resistance:	[Nm]	0.13	0.13	0.31	0.31	0.86	0.86	0.86	2.23	2.23	3.85	3.85

Fire resistance duration = 120							Perf	formar	nces				
minutes			7	7.5).5	12.5			14.2		16	.5
hnom	Overall anchor embedment depth in the concrete:	[mm]	40	55	50	60	60	70	85	75	105	75	110
Tension	loads, steel failure												
N _{Rk,s,fl,120}	Characteristic resistance:	[kN]	0.11	0.11	0.20	0.20	0.51	0.51	0.51	1.01	1.01	1.45	1.45
Pull-out	failure												
N _{Rk,p,fl,120}	Character. resistance in concrete:	[kN]	0.62	1.14	1.27	1.82	2.93	2.88	4.87	3.88	6.70	4.03	5.94
Concrete	cone failure 1)												
NRK,c,fl,120	Character. resistance in concrete:	[kN]	0.62	1.57	1.15	1.87	1.77	2.69	4.69	3.38	8.39	3.23	9.45
Shear lo	ads steel failure wit	hout le	ver an	m									
VRk,4,1,120	Characteristic resistance:	[kN]	0.11	0.11	0.20	0.20	0.51	0.51	0.51	1.01	1.01	1.45	1.45
Shear lo	ads, steel failure wi	th lever	arm										
M _{Rk,s,f,,120}	Characteristic bending resistance:	[Nm]	0.09	0.09	0.22	0.22	0.69	0.69	0.69	1.71	1.71	2.96	2.96
Ac a mile c	nitting failure can be negl	acted who	on orack	ad conc	rote and	relinford	omant I	c acciling	od				

As a rule, splitting failure can be neglected when cracked concrete and reinforcement is assumed.

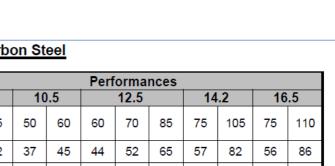
Note: In absence of other national regulations, the partial safety factor for resistance under fire exposure $\gamma_{M,0} = 1.0$ is recommended for steel failure and concrete related failure modes under shear loading. In case of concrete related failure modes under tension $\gamma_{M,0} = \gamma_{Inst.}$

In accordo al regolamento UE n 305/2011



According to Regulation EU n. 305/211

Table D2: Spacing and edge distances for Carbon Steel



TECNARIA®

				renormances									
			7.	.5	10	.5		12.5		14	.2	16	.5
h _{nom}	Overall anchor embedment depth in the concrete:	[mm]	40	55	50	60	60	70	85	75	105	75	110
h _{ef}	Effective anchorage depth:	[mm]	29	42	37	45	44	52	65	57	82	56	86
S _{cr,N}	Spacing	[mm]	116	168	148	180	176	208	260	228	328	224	344
Smin	Minimum spacing	[mm]	35	45	35	50	50	60	70	70	70	75	100
C _{cr,N}	Edge distance	[mm]	58	84	74	90	88	104	130	114	164	112	172
C _{min}	Minimum edge distance (one side fire)	[mm]	35	45	35	50	40	60	60	45	45	45	100
C _{min}	Minimum edge distance (two sides fire)	[mm]	300	300	300	300	300	300	300	300	300	300	300
γMsp	Partial safety factor*)	[-]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

^{*)} In absence of other national regulations

Concrete pry-out failure

k₈ factor values for Concrete Screw made of Carbon Steel in Table C5

According EN 1992-4:2018, these values of k_8 factor and the relevant values of $N_{Rk,c,fi}$ given in the above tables have to be considered in design.

Concrete edge failure

The characteristic resistance $V^0_{RK,c,fi}$ in C20/25 to C50/60 concrete is determined by:

 $V_{RK,c,f}^{0} = 0.25 \text{ x } V_{RK,c}^{0} (\leq R90) \text{ and } V_{RK,c,f}^{0} = 0.20 \text{ x } V_{RK,c}^{0} (R120)$

With $\bigvee^0_{RK,c}$ initial value of the characteristic resistance in cracked concrete C20/25 under normal temperature according to EN 1992-4:2018.

CT_C_DOP_23.1_IT_EN

DICHIARAZIONE DI PRESTAZIONE N. 20/0831 In accordo al regolamento UE n 305/2011 DECLARATION OF PERFORMANCE N. 20/0831



Bassano del Grappa (Italy) on 2/10/2023

According to Regulation EU n. 305/211

Le prestazioni dei prodotti identificati al punto 1 sono in conformità con le caratteristiche dichiarate al punto 7. Questa dichiarazione di prestazione è emessa in accordo al Regolamento UE N 305/2011 sotto la responsabilità esclusiva del produttore identificato al punto 3.

The performance of the product identified at point 1 is in conformity with the set of declared performances at point 7. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified at point 3.

Firmato per e in rappresentanza del produttore da: / Signed for and on behalf of the manufacturer by:

reno mo

TECNARIA S.p.A. con unico azionista

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