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DICHIARAZIONE DI PRESTAZIONE

ai sensi del Regolamento (UE) n. 305/2011

N° 0084

1. Codice identificativo unico del prodotto tipo: **0084 – Connettore CentroStorico Calcestruzzo Plus Vite D12 e Vite Mini Connettore**
2. Uso previsto del prodotto da costruzione: **Vite Calcestruzzo per uso in calcestruzzo fessurato e non fessurato**
3. Nome e indirizzo del Fabbricante:
   LATERLITE S.p.A.
   Via Vittorio Veneto, 30
   43046 Rubbiano di Solignano (PR)
   Plant J
4. Rappresentate autorizzato: **Non applicabile**
5. Sistema AVCP: **1**
6. Documento per la valutazione europea: **EAD 330232-00-0601**
   Valutazione tecnica europea: **ETA-20/0830; 2023-10-23**
   Organismo di valutazione tecnica: **Instituto de Ciencias de la Construccion Eduardo Torroja (IETcc)**
   Organismo notificato: **n. 1219 – IETcc -CPR-0271**
7. Prestazioni dichiarate:

Caratteristiche essenziali	**Prestazione**
Materiale e geometria	Vedi Annex A1 ETA-20/0830 allegato
Prestazioni per azioni statiche o quasi statiche	Vedi Annex C ETA-20/0830 allegato
Reazione al fuoco	Classe A1
Resistenza al fuoco	Vedi Annex D ETA-20/0830 allegato

La prestazione del prodotto sopra identificato è conforme all'insieme delle prestazioni dichiarate. La presente dichiarazione di responsabilità viene emessa in accordo al Regolamento UE N 305/2011 sotto la sola responsabilità del fabbricante sopra identificato.

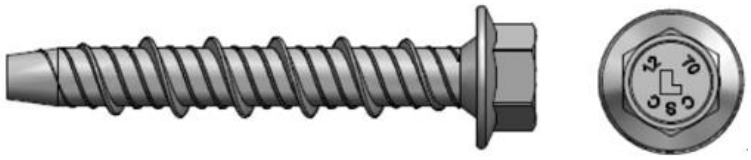
Firmato a nome e per conto del fabbricante da:
Ing. Massimo Nicolosi, Responsabile Qualità

Massimo Nicolosi

Rubbiano, rev.01 20 Maggio 2024

Product and identification

CS-W



CSC

Marking/Identification on anchor:

- Company logo
- Outer diameter
- Length
- Anchor type:

  - Hex head with washer CS-W
  - Hexagon head with bevelled shoulder CS-C

CONNETTORE CENTROSTORICO CALCESTRUZZO concrete screw	
Product description Identification	**Annex A1**

Table C1: Characteristic values to tension loads

Characteristic values of resistance to tension loads of design method A			Performance		
			7.5	10.5	12.5
h_{nom}	Overall anchor embedment depth in the concrete:	[mm]	55	60	70
Tension loads: steel failure					
$N_{Rk,s}$	Tension steel characteristic resistance:	[kN]	18.7	32.7	51.2
γ_{Ms}	Partial safety factor: 1)	[-]	1.5	1.5	1.5
Tension loads: pull-out failure in concrete					
$N_{Rk,p,ucr}$	Tension characteristic resistance in C20/25 uncracked concrete:	[kN]	9.0	12.0 2)	20.0 2)
$N_{Rk,p,cr}$	Tension characteristic resistance in C20/25 cracked concrete:	[kN]	6.0	9.0	12.0
ψ_c	C30/37	[-]	1.22	1.08	1.04
ψ_c	C40/45	[-]	1.41	1.15	1.07
ψ_c	C50/60	[-]	1.55	1.19	1.09
Tension loads: concrete cone and splitting failure					
γ_{ins}	Installation safety factor: 1)	[-]	1.2	1.2	1.2
h_{ef}	Effective embedment depth:	[mm]	42	45	52
$k_{ucr,N}$	Factor for uncracked concrete:	[-]	11.0		
$N^0_{Rk,c,ucr}$	Tension characteristic resistance in C20/25 uncracked concrete: 3)	[kN]	13.4	14.8	18.4
$k_{cr,N}$	Factor for cracked concrete:	[-]	7.7		
$N^0_{Rk,c,cr}$	Tension characteristic resistance in C20/25 cracked concrete: 3)	[kN]	9.4	10.4	12.9
$s_{cr,N}$	Critical spacing:	[mm]	3.0 x h_{ef}		
$c_{cr,N}$	Critical edge distance:	[mm]	1.5 x h_{ef}		
$s_{cr,sp}$	Critical spacing (splitting):	[mm]	3.0 x h_{ef}		
$c_{cr,sp}$	Critical edge distance (splitting):	[mm]	1.5 x h_{ef}		

1) In absence of other national regulations
2) Pull-out failure is not decisive ($N^0_{Rk,c} < N_{Rk,p}$)
3) Equation 7.2 from EN 1992-4:2018

CONNETTORE CENTROSTORICO CALCESTRUZZO concrete screw	
Performances Characteristic values for tension loads	**Annex C1**

Table C2: Displacements under tension loads

Characteristic values of displacements under tension loads of design method A			Performance		
			7.5	10.5	12.5
h_{nom}	Overall anchor embedment depth in the concrete:	[mm]	55	60	70
Displacements under tension loads in uncracked concrete					
N	Service tension load in uncracked concrete C20/25 to C50/60:	[kN]	3.6	4.8	9.5
δ_{N0}	Short term displacement under tension loads:	[mm]	0.40	0.40	0.40
$\delta_{N\infty}$	Long term displacement under tension loads:	[mm]	1.00	1.10	1.40
Displacements under tension loads in cracked concrete					
N	Service tension load in cracked concrete C20/25 to C50/60:	[kN]	2.4	3.6	5.7
δ_{N0}	Short term displacement under tension loads:	[mm]	0.60	0.70	0.50
$\delta_{N\infty}$	Long term displacement under tension loads:	[mm]	1.40	1.20	1.40

Table C3: Characteristic values to shear loads

Characteristic values of resistance to shear loads			Performance		
			7.5	10.5	12.5
h_{nom}	Overall anchor embedment depth in the concrete:	[mm]	55	60	70
Shear loads: steel failure without lever arm					
$V_{Rk,s}$	Shear steel characteristic resistance:	[kN]	7.5	16.3	25.6
k_7	k_7 factor:[1)]	[-]	0.8	0.8	0.8
γ_{Ms}	Partial safety factor: [2)]	[-]	1.25	1.25	1.25
Shear loads: steel failure with lever arm					
$M^0_{Rk,s}$	Characteristic bending moment:	[Nm]	15.2	35.3	69.3
γ_{Ms}	Partial safety factor: [2)]	[-]	1.25	1.25	1.25
Shear loads: concrete pryout failure					
k_8	k_8 factor:	[-]	1.0	1.0	1.0
γ_{inst}	Installation safety factor: [2)]	[-]	1.0	1.0	1.0
Shear loads: concrete edge failure					
l_f	Effective anchorage depth under shear loads:	[mm]	42	45	52
d_{nom}	Nominal outer diameter of screw:	[mm]	6	8	10
γ_{inst}	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 k_7.
[2)] In absence of other national regulations.

CONNETTORE CENTROSTORICO CALCESTRUZZO concrete screw	**Annex C2**
Performances Displacement under tension loads Characteristic values to shear loads	

Table C4: Displacements under shear loads

Characteristic values of displacements under shear loads of design method A			Performances		
			7.5	10.5	12.5
h_{nom}	Overall anchor embedment depth in the concrete:	[mm]	55	60	70
Displacements under shear loads in uncracked concrete					
V	Service shear load in uncracked concrete C20/25 to C50/60:	[kN]	3.6	4.8	9.5
δ_{V0}	Short term displacement under shear loads:	[mm]	0.4	0.40	0.40
$\delta_{V\infty}$	Long term displacement under shear loads:	[mm]	1.0	1.10	1.40
Displacements under shear loads in cracked concrete					
V	Service shear load in cracked concrete C20/25 to C50/60:	[kN]	2.4	3.6	5.7
δ_{V0}	Short term displacement under shear loads:	[mm]	0.60	0.70	0.50
$\delta_{V\infty}$	Long term displacement under shear loads:	[mm]	1.40	1.20	1.40

Table C5: Essential characteristics for seismic performance category C1

Essential characteristics for seismic performance category C1				Performances	
				7.5	10.5
h_{nom}	Overall anchor embedment depth in the concrete:		[mm]	55	60
Steel failure for tension and shear loads					
$N_{Rk,s,C1}$	Characteristic resistance:		[kN]	18.7	32.7
γ_{Ms}	Partial safety factor [1]:		[--]	1.5	1.5
$V_{Rk,s,C1}$	Characteristic resistance:		[kN]	7.5	16.3
γ_{Ms}	Partial safety factor [1]:		[--]	1.25	1.25
Pull out failure					
$N_{Rk,p,C1}$	Characteristic resistance in cracked concrete:		[kN]	5.6	9.0
γ_{inst}	Robustness:		[--]	1.2	1.2
Concrete cone failure					
h_{ef}	Effective embedment depth:		[mm]	42	45
$s_{cr,N}$	Concrete	Spacing:	[mm]	126	135
$c_{cr,N}$	cone failure	Edge distance:	[mm]	63	67
γ_{inst}	Installation safety factor:		[--]	1.2	1.2
Concrete pry-out failure					
k_8	Pry-out factor:		[--]	1.0	1.0
γ_{inst}	Installation safety factor:		[--]	1.0	1.0
Concrete edge failure					
$\ell_f = h_{ef}$	Effective length of fastener under shear loads:		[mm]	42	45
d_{nom}	Nominal outer diameter of screw:		[mm]	6	8
γ_{inst}	Installation safety factor:		[--]	1.0	1.0

[1] In absence of other national regulations

CONNETTORE CENTROSTORICO CALCESTRUZZO concrete screw	**Annex C3**
Performances Displacements under shear loads Essential characteristics for seismic performance category C1	

Table C6: Essential characteristics for seismic performance category C2

Essential characteristics for seismic performance category C2				Performances
				10.5
h_{nom}	Overall anchor embedment depth in the concrete:		[mm]	60
Steel failure for tension and shear loads				
$N_{Rk,s,C2}$	Characteristic resistance:		[kN]	32.7
γ_{Ms}	Partial safety factor [1]:		[--]	1.5
$V_{Rk,s,C2}$	Characteristic resistance:		[kN]	13.7
γ_{Ms}	Partial safety factor [1]:		[--]	1.25
Pull out failure				
$N_{Rk,p,C2}$	Characteristic resistance in cracked concrete:		[kN]	5.2
γ_{inst}	Robustness:		[--]	1.2
Concrete cone failure				
h_{ef}	Effective embedment depth:		[mm]	45
$s_{cr,N}$	Concrete cone failure	Spacing:	[mm]	135
$c_{cr,N}$		Edge distance:	[mm]	68
γ_{inst}	Installation safety factor:		[--]	1.2
Concrete pry-out failure				
k_8	Pry-out factor:		[--]	1.0
γ_{inst}	Installation safety factor:		[--]	1.0
Concrete edge failure				
$\ell_f = h_{ef}$	Effective length of fastener under shear loads:		[mm]	45
d_{nom}	Nominal outer diameter of screw:		[mm]	8.0
γ_{inst}	Installation safety factor:		[--]	1.0
Displacements				
$\delta_{N,C2\ (DLS)}$	Displacement at		[mm]	0.15
$\delta_{V\ C2\ (DLS)}$	Damage Limitation State:[2]		[mm]	4.15
$\delta_{N,C2\ (ULS)}$	Displacement at		[mm]	1.41
$\delta_{V,C2\ (ULS)}$	Ultimate Limitation State:[2]		[mm]	8.27

DLS: Damage Limitation State: see EN 1992-4, 2.2.1)
ULS: Ultimate Limitation State: see EN 1992-4 2.2.1)

[1] In absence of other national regulations.
[2] The listed displacements represent mean values.

CONNETTORE CENTROSTORICO CALCESTRUZZO concrete screw	**Annex C4**
Performances Essential characteristics for seismic performance category C2	

Table D1: Characteristic values to fire resistance

Fire resistance duration = 30 minutes			Performances		
			7.5	10.5	12.5
h_{nom}	Overall anchor embedment depth in the concrete:	[mm]	55	60	70
Tension loads, steel failure					
$N_{Rk,s,fi,30}$	Characteristic resistance:	[kN]	0.23	0.41	0.95
Pull-out failure					
$N_{Rk,p,fi,30}$	Character. resistance in concrete:	[kN]	1.43	2.28	3.60
Concrete cone failure [1)]					
$N_{Rk,c,fi,30}$	Character. resistance in concrete:	[kN]	1.97	2.34	3.36
Shear loads steel failure without lever arm					
$V_{Rk,s,fi,30}$	Characteristic resistance	[kN]	0.23	0.41	0.95
Shear loads, steel failure with lever arm					
$M_{Rk,s,fi,30}$	Characteristic bending resistance:	[Nm]	0.19	0.44	1.29

Fire resistance duration = 60 minutes			Performances		
			7.5	10.5	12.5
h_{nom}	Overall anchor embedment depth in the concrete:	[mm]	55	60	70
Tension loads, steel failure					
$N_{Rk,s,fi,30}$	Characteristic resistance:	[kN]	0.21	0.37	0.83
Pull-out failure					
$N_{Rk,p,fi,30}$	Character. resistance in concrete:	[kN]	1.43	2.28	3.60
Concrete cone failure [1)]					
$N_{Rk,c,fi,30}$	Character. resistance in concrete:	[kN]	1.97	2.34	3.36
Shear loads steel failure without lever arm					
$V_{Rk,s,fi,30}$	Characteristic resistance	[kN]	0.21	0.37	0.83
Shear loads, steel failure with lever arm					
$M_{Rk,s,fi,30}$	Characteristic bending resistance:	[Nm]	0.17	0.40	1.12

[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 $\gamma_{M,fi} = 1.0$ is recommended for steel failure and concrete related failure modes under shear loading. In case of concrete related failure modes under tension $\gamma_{M,fi} = \gamma_{inst}$..

CONNETTORE CENTROSTORICO CALCESTRUZZO concrete screw	**Annex D1**
Performances Characteristic values for fire resistance	

Table D1: Characteristic values to fire resistance (continuation)

Fire resistance duration = 90 minutes			Performances		
			7.5	10.5	12.5
h_{nom}	Overall anchor embedment depth in the concrete:	[mm]	55	60	70
Tension loads, steel failure					
$N_{Rk,s,fi,30}$	Characteristic resistance:	[kN]	0.16	0.29	0.64
Pull-out failure					
$N_{Rk,p,fi,30}$	Character. resistance in concrete:	[kN]	1.43	2.28	3.60
Concrete cone failure [1)]					
$N_{Rk,c,fi,30}$	Character. resistance in concrete:	[kN]	1.97	2.34	3.36
Shear loads steel failure without lever arm					
$V_{Rk,s,fi,30}$	Characteristic resistance	[kN]	0.16	0.29	0.64
Shear loads, steel failure with lever arm					
$M_{Rk,s,fi,30}$	Characteristic bending resistance:	[Nm]	0.13	0.31	0.86

Fire resistance duration = 120 minutes			Performances		
			7.5	10.5	12.5
h_{nom}	Overall anchor embedment depth in the concrete:	[mm]	55	60	70
Tension loads, steel failure					
$N_{Rk,s,fi,30}$	Characteristic resistance:	[kN]	0.11	0.20	0.51
Pull-out failure					
$N_{Rk,p,fi,30}$	Character. resistance in concrete:	[kN]	1.14	1.82	2.88
Concrete cone failure [1)]					
$N_{Rk,c,fi,30}$	Character. resistance in concrete:	[kN]	1.57	1.87	2.69
Shear loads steel failure without lever arm					
$V_{Rk,s,fi,30}$	Characteristic resistance	[kN]	0.11	0.20	0.51
Shear loads, steel failure with lever arm					
$M_{Rk,s,fi,30}$	Characteristic bending resistance:	[Nm]	0.09	0.22	0.69

[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 $\gamma_{M,fi} = 1.0$ is recommended for steel failure and concrete related failure modes under shear loading. In case of concrete related failure modes under tension $\gamma_{M,fi} = \gamma_{inst.}$.

CONNETTORE CENTROSTORICO CALCESTRUZZO concrete screw	**Annex D2**
Performances Characteristic values for fire resistance	

Table D2: Spacing and edge distances

Spacing and edge distances			Performances		
			7.5	10.5	12.5
h_{nom}	Overall anchor embedment depth in the concrete:	[mm]	55	60	70
h_{ef}	Effective anchorage depth:	[mm]	42	45	52
$S_{cr,N}$	Spacing	[mm]	168	180	208
S_{min}	Minimum spacing	[mm]	45	50	60
$C_{cr,N}$	Edge distance	[mm]	84	90	104
C_{min}	Minimum edge distance (one side fire)	[mm]	45	50	60
C_{min}	Minimum edge distance (two sides fire)	[mm]	300	300	300
γ_{Msp}	Partial safety factor*)	[-]	1.0	1.0	1.0

*) In absence of other national regulations

Concrete pry-out failure

k_8 factor values for Concrete Screw 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:
$V^0_{RK,c,fi} = 0.25 \times V^0_{RK,c}$ (≤ R90) and $V^0_{RK,c,fi} = 0.20 \times V^0_{RK,c}$ (R120)
With $V^0_{RK,c}$ initial value of the characteristic resistance in cracked concrete C20/25 under normal temperature according to EN 1992-4:2018.

CONNETTORE CENTROSTORICO CALCESTRUZZO concrete screw	**Annex D3**
Performances Spacing and edge distances	