Declaration of Performance n° 14/0403

Torque Controlled anchors VHS-C

Intended use of the construction product according to ETAG 001 part 2	
Generic type	Torque controlled expansion anchor
Base material	Non cracked concrete C20/25 a C50/60 - EN 206-1:2003
Material	Zincplated steel
Durability	Internal dry condition
Loads	Static, quasi-static
Manufacturer information	
VORPA s.r.l. Vial San Leo, 5 – 47838 – Riccione (RN) – ITALY Tel. +39 0541/607111 vorpa@vorpa.com – www.vorpa.com	
Certificate information	
ETA 14/0403 issued by (issued 09-01-2015)	Deutsches Institut für Bautechnik Anstalt des öffentlichen Rechts Kolonnenstr. 30 L 10829 Berlin Germany
On the basis of	ETAG 001 (Option 8) – EAD / 06/2013
Certificate of conformity **1220-CPR-1671** Issued by	ITeC Institut de Tecnologia de la Construcciò de Catalunya Wellington 19 – ES08018 Barcelona
Under system	1

Declared performance according to CEN/TS 1992-4 – Design method A							
Essential Characteristics			**Performance**				
			M6	**M8**	**M10**	**M12**	
Installation parameters							
d_0	Nominal diameter of drill bit	[mm]	8	10	12	16	
h_{ef}	Effective anchorage depth	[mm]	31	35	40	60	
h_{min}	Minimum thickness of the concrete member	[mm]	80	100	120	150	
T_{inst}	Setting torque	[Nm]	10	25	40	65	
s_{min}	Minimum spacing	[mm]	95	120	145	175	
c_{min}	Minimum edge distance	[mm]	50	60	75	90	
Tension – Steel failure							
$N_{Rk,s}$	Tension steel characteristic failure	[kN]	16.1	29.3	46.4	67.4	
γ_{MS}	Partial safety factor	[-]	1.5				
Pull-out failure							
$N_{Rk,p,ucr}$	Tension characteristic load in non-cracked concrete C20/25	[kN]	6.0	7.5	12.0	20.0	
γ_{inst}	Partial safety factor	[-]	1.0				
$s_{cr,N}$	Critical spacing	[mm]	3 h_{ef}				
$c_{cr,N}$	Critical edge distance	[mm]	1.5 h_{ef}				
ψ_c C30/37	Increasing factor for concrete C30/37	[-]	1.0				

Declaration of Performance n° 14/0403

ψ_c C40/50	Increasing factor for concrete C40/50	[-]	1.0				
ψ_c C50/60	Increasing factor for concrete C50/60	[-]	1.0				
Splitting failure							
$s_{cr,sp}$	Critical spacing (splitting)	[mm]	200	300	340	430	
$c_{cr,sp}$	Critical edge distance (splitting)	[mm]	100	150	170	215	
Displacement on Tension load							
N_{ucr}	Service tension load in non-cracked concrete	[kN]	3.4	5.2	5.3	11.6	
$\delta_{N0,ucr}$	Short term displacement under tension load	[mm]	0.10	0.19	0.39	0.51	
$\delta_{N\infty,ucr}$	Long term displacement under tension load	[mm]	-	-	0.39	-	
Shear – Steel failure							
$V_{Rk,s}$	Shear characteristic failure	[kN]	7.5	12.0	20.0	30.0	
γ_{MS}	Partial safety factor	[-]	1.25				
$M^0_{Rk,s}$	Bending moment characteristic failure	[Nm]	12.2	30.0	59.8	104.8	
γ_{MS}	Partial safety factor	[-]	1.25				
Shear – Concrete edge failure							
l_{ef}	Effective anchorage length	[mm]	31	35	40	60	
Displacement on shear load							
V	Service shear load in non-cracked concrete	[kN]	3.8	7.0	11.0	16.1	
δ_{V0}	Short term displacement under shear load	[mm]	1.1	1.4	2.6	2.7	
$\delta_{V\infty}$	Long term displacement under shear load	[mm]	1.6	2.1	3.9	4.1	

The above performance apply for the following article numbers:

Code	Type	d [mm]	d0 / tfix [mm]
1726	VHS-C 8	M6	Ø8 / 24
1724		M6	Ø8 / 54
1728	VHS-C 10	M8	Ø10 / 25
3473		M8	Ø10 / 45
4473		M8	Ø10 / 65
1730	VHS-C 12	M10	Ø12 / 25
3475		M10	Ø12 / 45
4475		M10	Ø12 / 65
5560	VHS-C 16	M12	Ø16 / 10
5561		M12	Ø16 / 30
5562		M12	Ø16 / 50

The performances of the product identified by the above identification code are in conformity with the declared performances.
This declaration of performance is issued on the basis of the European regulation (EU) N. 305/2011, under the sole responsibility of the indicated Manufacturer.

Signed for and in behalf of the manufacturer by:

Name and function	Place and date	Signature
Roberto Vorabbi Legale Rappresentante	Riccione, 27/03/2016