Declaration of Performance

ATS evo

Heavy duty safety bolt anchor made of galvanised steel

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Intended use or uses of the construction product according to ETAG001 p.1, 2 and TR020	
Generic type	Torque controlled expansion anchor wedge type
Base material	Cracked and un-cracked concrete C20/25 to C50/60 acc. to EN 206-1
Material	Steel galvanised acc. to EN ISO 4042 (bolt cl. 8.8 acc. to EN ISO 898-1)
Durability	Internal dry conditions
Loading	Static, quasi-static and Seismic
Fire Resistance	F120 acc.to TR020
Fire Reaction	A1 according to EN 13501-1
ETA-10/0423 issued by	**ZAG** approval body nr.1404
On the basis of	**ETAG 001 p.1-2-Annex E**
Certificate of Conformity **1404-CPD-1657** issued by	**ZAG** notified body nr.1404
Under System (AVCP)	**1**

Declared performances according to ETA-10/0423 (ETAG001 p.1-2)
Design method according to ETAG 001 Annex C or CEN/TS 1992-4

ESSENTIAL CHARACTERISTICS			**PERFORMANCE**				
Installation parameters			**M6**	**M8**	**M10**	**M12**	**M16**
d_0	Nominal diameter of drill bit	[mm]	10	12	15	18	24
h_{nom}	Minimum installation depth	[mm]	60	70	80	100	115
h_{ef}	Effective anchorage depth	[mm]	49	59	67	88	99
h_{min}	Minimum thickness of the concrete member	[mm]	100	120	140	180	200
T_{inst}	Nominal torque moment	[Nm]	10	20	45	80	150
s_{min}	Minimum spacing	[mm]	50	60	70	80	100
for c ≥	Edge distance	[mm]	75	90	100	150	200
c_{min}	Minimum edge distance	[mm]	50	60	70	80	100
for s ≥	Anchor spacing	[mm]	75	90	100	150	200
Tension Steel failure mode							
$N_{Rk,s}$	Tension Steel characteristic failure	[kN]	16	29	46	67	126
$\gamma_{m,sN}$ [1)]	Partial safety factor for tension steel failure	[-]	1,5				
Pull-out failure mode			M6	M8	M10	M12	M16
$N_{Rk,p,cr}$	Tension characteristic load in cracked concrete C20/25	[kN]	**9**	**12**	**16**	**25**	**35,5** [2)]
$N_{Rk,p,ucr}$	Tension characteristic load in un-cracked concrete C20/25	[kN]	**16**	**22,8** [2)]	**27,6** [2)]	**41,6** [2)]	**49,7** [2)]
γ_2	Partial safety factor	[-]	1,0				
$\gamma_{m,c}$ [1)]	Partial safety factor	[-]	1,5				
$\psi_{c\ C30/37}$	Increasing factor for concrete C30/37	[-]	1,22				
$\psi_{c\ C40/50}$	Increasing factor for concrete C40/50	[-]	1,41				
$\psi_{c\ C50/60}$	Increasing factor for concrete C50/60	[-]	1,55				
Splitting failure mode							
K_{cr}	Factor for cracked concrete ref. CEN/TS 1992-4-4 §. 6.2.1.4	[-]	7,2				
K_{ucr}	Factor for un-cracked concrete ref. CEN/TS 1992-4-4 §. 6.2.1.4	[-]	10,1				
$s_{cr,N}$	Critical spacing	[mm]	150	180	200	270	300
$c_{cr,N}$	Critical edge distance	[mm]	75	90	100	135	150
$s_{cr,sp}$	Critical spacing (splitting)	[mm]	150	180	200	270	300
$c_{cr,sp}$	Critical edge distance(splitting)	[mm]	75	90	100	135	150
$\gamma_{m,c}$ [1)]	Partial safety factor	[-]	1,5				
Displacement on Tension Load			M6	M8	M10	M12	M16
N_{cr}	Service tension load in cracked concrete C20/25	[kN]	**4,3**	**5,7**	**7,6**	**11,9**	**16,9**
$\delta_{N0,cr}$	Short term displacement under tension load	[mm]	1,21	0,83	1,25	0,98	0,96
$\delta_{N\infty,cr}$	Long term displacement under tension load	[mm]	2,38	2,49	1,99	1,12	2,15
N_{ucr}	Service tension load in un-cracked concrete C20/25	[kN]	**7,7**	**10,9**	**13,2**	**19,8**	**23,6**
$\delta_{N0,ucr}$	Short term displacement under tension load	[mm]	0,47	0,81	0,30	0,25	0,20
$\delta_{N\infty,ucr}$	Long term displacement under tension load	[mm]	2,38	2,49	1,99	1,12	2,15

[1)] In absence of other national regulations, [2)] Pull-out failure not decisive.

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Shear Steel failure mode			**M6**	**M8**	**M10**	**M12**	**M16**
$V_{Rk,s}$	Shear Steel characteristic failure	[kN]	**14**	**26**	**42**	**50**	**97**
$M^0_{Rk,s}$	Bending Moment characteristic failure	[Nm]	12	30	60	105	266
$\gamma_{m,sV}$ [1)]	Partial safety factor for shear steel failure	[-]	1,25				
Shear Concrete Pry-out failure			M6	M8	M10	M12	M16
k	Factor equation (5.6) of ETAG, Annex C, § 5.2.3.3	[-]	1,0		2,0		
k_3	Factor equation (16) of CEN/TS 1992-4-4, § 6.2.2.3	[-]	1,0		2,0		
$\gamma_{mc,pr}$ [1)]	Partial safety factor	[-]	1,5				
Concrete Edge failure			M6	M8	M10	M12	M16
l_{ef}	Effective anchorage length	[mm]	49	59	67	88	99
d_{nom}	Nominal diameter of anchor	[mm]	10	12	15	18	24
γ_{mc} [1)]	Partial safety factor	[-]	1,5				
Displacement on Shear Load			M6	M8	M10	M12	M16
V	Service shear load in concrete	[kN]	**8,0**	**14,9**	**24,0**	**28,6**	**55,4**
δ_{V0}	Short term displacement under shear load	[mm]	1,39	1,94	2,71	1,69	2,69
$\delta_{V\infty}$	Long term displacement under shear load	[mm]	2,09	2,91	4,07	2,54	4,04

[1)] In absence of other national regulations.

FIRE RESISTANCE Declared performances according to ETA-10/0423 **Design Method according to TR020**							
ESSENTIAL CHARACTERISTICS			**PERFORMANCE**				
FIRE RESISTANCE			**M6**	**M8**	**M10**	**M12**	**M16**
$F_{Rk,s,fi,30}$	Characteristic Tensile/Shear Resistance = 30 min.	[kN]	0,20	0,37	0,87	1,69	3,14
$F_{Rk,s,fi,60}$	Characteristic Tensile/Shear Resistance = 60 min.	[kN]	0,18	0,33	0,75	1,26	2,36
$F_{Rk,s,fi,90}$	Characteristic Tensile/Shear Resistance = 90 min.	[kN]	0,14	0,26	0,58	1,10	2,04
$F_{Rk,s,fi,120}$	Characteristic Tensile/Shear Resistance = 120 min.	[kN]	0,10	0,18	0,46	0,84	1,57
$M^0_{Rk,s,fi,R30}$	Characteristic Bending Moment = 30 min.	[Nm]	0,15	0,37	1,12	2,62	6,66
$M^0_{Rk,s,fi,R60}$	Characteristic Bending Moment = 60 min.	[Nm]	0,14	0,34	0,97	1,96	5,00
$M^0_{Rk,s,fi,R90}$	Characteristic Bending Moment = 90 min.	[Nm]	0,11	0,26	0,75	1,70	4,33
$M^0_{Rk,s,fi,R120}$	Characteristic Bending Moment = 120 min.	[Nm]	0,08	0,19	0,60	1,31	3,33
$\gamma_{M,fi}$ [3)]	Partial safety factor under fire exposure	[-]	1,0				
$S_{cr,N,fi}$	Critical spacing under fire exposure	[mm]	$4xh_{ef}$				
$C_{cr,N,fi}$	Critical edge distance under fire exposure	[mm]	$2xh_{ef}$				

[3)] In absence of other national regulations, under fire exposure is recommended the safety factor $\gamma_{M,fi} = 1,0$.

SEISMIC RESISTANCE Declared performances according to ETA-10/0423 (ETAG001 Annex E) **Design Method according to TR045**							
ESSENTIAL CHARACTERISTICS			**PERFORMANCE**				
SEISMIC RESISTANCE Category C1			**M6**	**M8**	**M10**	**M12**	**M16**
$N_{rk,p,seis\ C1}$	Tension char. load in concrete C20/25 for Seismic Category C1	[kN]	6,8	12	16	25	35,5 [2)]
$V_{rk,s,seis\ C1}$	Shear Steel characteristic failure Seismic for Category C1	[kN]	9,8	13	20	20	48,5
SEISMIC RESISTANCE Category C2			M6	M8	M10	M12	M16
$N_{rk,p,seis\ C2}$	Tension char. load in concrete C20/25 for Seismic Category C2	[kN]	-	3,9	7,8	15,3	28,8
$V_{rk,s,seis\ C2}$	Shear Steel characteristic failure Seismic for Category C2	[kN]	-	10,2	17,0	17,0	43,9
$\gamma_{m,seisN}$ [4)]	Partial safety factor for seismic actions for tension load	[-]	1,5				
$\gamma_{m,seisV}$ [4)]	Partial safety factor for seismic actions for shear load	[-]	1,25				

[2)] Pull-out failure not decisive, [4)] The safety factors recommended under seismic actions are being taken into account the same as the static action.

We inform you that Friulsider is classified in the EC 1907/2006 Reach Directive as a Downstream-user of substances.
The product supplied does not contain substances classified as SVHC according to the Candidate List in a concentration equal or greater than 0.1% (weight / weight). Article 31 is not applicable to the present product.

The above performances apply for the following article numbers (for the batch or serial number see packaging):

d [5]	L [6] [mm]	t_{fix} [7] [mm]	Marking	Cod. ATS evo-S (hexagonal head screw)	Cod. ATS evo-B (threaded bar)
M6	70	10	FM-ATS Ø10/10	79302b10070	79402b10070
	80	20	FM-ATS Ø10/20	79302b10080	79402b10080
	110	50	FM-ATS Ø10/50	79302b10110	79402b10110
M8	80	10	FM-ATS Ø12/10	79302b12080	79402b12080
	90	20	FM-ATS Ø12/20	79302b12090	79402b12090
	120	50	FM-ATS Ø12/50	79302b12120	79402b12120
M10	90	10	FM-ATS Ø15/10	79302b15090	79402b15090
	100	20	FM-ATS Ø15/20	79302b15100	79402b15100
	130	50	FM-ATS Ø15/50	79302b15130	79402b15130
	180	100	FM-ATS Ø15/100	79302b15180	79402b15180
M12	110	10	FM-ATS Ø18/10	79302b18110	79402b18110
	125	25	FM-ATS Ø18/25	79302b18125	79402b18125
	150	50	FM-ATS Ø18/50	79302b18150	79402b18150
	200	100	FM-ATS Ø18/100	79302b18200	79402b18200
M16	125	10	FM-ATS Ø24/10	79302b24125	79402b24125
	140	25	FM-ATS Ø24/25	79302b24140	79402b24140
	165	50	FM-ATS Ø24/50	79302b24165	79402b24165
	215	100	FM-ATS Ø24/100	79302b24215	79402b24215

d [5]	L [6] [mm]	t_{fix} [7] [mm]	Marking	Cod. ATS evo-SK (countersunk head screw)
M6	70	15	FM-ATS Ø10/15 sk	79303b10070
	80	25	FM-ATS Ø10/25 sk	79303b10080
M8	80	16	FM-ATS Ø12/16 sk	79303b12080
	90	26	FM-ATS Ø12/26 sk	79303b12090
M10	90	17	FM-ATS Ø15/17 sk	79303b15090
	100	27	FM-ATS Ø15/27 sk	79303b15100
M12	125	33	FM-ATS Ø18/33 sk	79303b18125

[5] Nominal diameter of thread; [6] Length of anchor; [7] Thickness fixture max.

The performances of the product identified by the above identification code are in conformity with the declared performance.
This declaration of performance is issued under the sole responsibility of **Friulsider SpA**.
Signed for and behalf of the manufacturer by:

Name and functions	Place and date of issue	Signature
Eng.Vittorio Pilla General Director	San Giovanni al Natisone, 05-09-2014