

## Declaration of Performance

No. **DPGEB1002 v2**

1. Unique identification code of the product-type: **Gamma Acciaio CE1**

2. Intended uses:

Intended use of the construction product according to ETA-11/0181	
Anchorage subject to:	static and quasi-static loads, seismic action for Performance Category C1, fire exposure
Base materials:	cracked and non-cracked, reinforced or unreinforced normal weight concrete C20/25 to C50/60 according to EN 206-1:2000
Environmental conditions:	dry internal conditions
Reaction to fire:	anchorage satisfy requirements for Class A1
Resistance to fire:	F120
Installation:	Perforation by hammer drilling Installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on job site

3. Manufacturer: **G&B Fissaggi S.r.l.** C.so Savona 22, Villastellone (TO), Italy

5. System of AVCP: 1

6b.

European Assessment Document: ETAG 001

European Technical Assessment: ETA-11/0181

Technical Assessment Body: Deutsches Institut für Bautechnik (DIBt)

Notified body: 1109 IFBT GmbH Institut für Fassaden- und Befestigungstechnik

7. Declared performances:

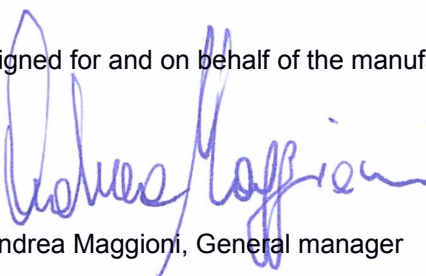
Declared performances according to ETAG 001:2013 Part 1 and Part 2, EOTA Technical Report TR 020:2004-05, ETA-11/0181 (Design method A - ETAG 001 Annex C or CEN/TS 1992-4:2009, TR 045)							
Thread diameter			M6	M8	M10	M12	M16
Essential characteristics			Performance				
<i>Installation parameters</i>							
$d_0$	Nominal diameter of drill bit	[mm]	10	12	16	18	24
$h_{ef}$	Effective anchorage depth	[mm]	55	60	70	90	105
$h_{nom}$	Minimum installation depth	[mm]	65	70	80	100	120
$h_{min}$	Minimum thickness of the concrete member	[mm]	110	120	140	180	210
$T_{inst}$	Installation torque	[Nm]	15	30	50	100	160
$s_{min}$	Minimum spacing	[mm]	55	110	80	135	130
for $c \geq$	Edge distance	[mm]	110	145	120	220	240
$c_{min}$	Minimum edge distance	[mm]	70	100	90	175	180
for $s \geq$	Anchor spacing	[mm]	110	160	175	255	290
<i>Tension steel failure mode</i>							
$N_{Rk,s} = N_{Rk,s,seis,C1}$	Tension steel characteristic resistance	[kN]	16	29	46	67	125
$\gamma_{M,s}$	Partial safety factor	[-]	1.5				

<i>Pull-out failure mode</i>							
$N_{Rk,p,ucr}$	Tension characteristic resistance in non-cracked concrete C20/25	[kN]	16	16	20	35	45
$N_{Rk,p,cr}$	Tension characteristic resistance in cracked concrete C20/25	[kN]	5	6	16	25	35
$N_{Rk,p,seis,C1}$	Tension characteristic resistance for seismic performance category C1	[kN]	5	4.2	14.4	25	35
$\gamma_2 = \gamma_{inst}$	Installation safety factor	[-]	1.0				
$\psi_{c,C30/37}$	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				
<i>Concrete cone failure mode</i>							
$s_{cr,N}$	Critical spacing	[mm]	165	180	210	270	315
$c_{cr,N}$	Critical edge distance	[mm]	85	90	105	135	160
$k_{ucr}$	Factor according to CEN/TS 1992-4 in non-cracked concrete	[-]	10.1				
$k_{cr}$	Factor according to CEN/TS 1992-4 in cracked concrete	[-]	7.2				
$\gamma_2 = \gamma_{inst}$	Installation safety factor	[-]	1.0				
<i>Splitting failure mode</i>							
$s_{cr,sp}$	Critical spacing (splitting)	[mm]	220	320	240	370	390
$c_{cr,sp}$	Critical edge distance (splitting)	[mm]	110	160	120	185	195
$\gamma_2 = \gamma_{inst}$	Installation safety factor	[-]	1.0				
<i>Displacement on tension load, non-cracked concrete C20/25</i>							
$N$	Service tension load	[kN]	7.6	7.6	9.5	16.7	21.4
$\delta_{N0}$	Short term displacement under tension load	[mm]	1.3	1.5	1.0	1.3	1.8
$\delta_{N\infty}$	Long term displacement under tension load	[mm]	1.3	1.5	1.0	1.3	1.8
<i>Displacement on tension load, cracked concrete C20/25</i>							
$N$	Service tension load	[kN]	2.4	2.9	7.6	11.9	16.7
$\delta_{N0}$	Short term displacement under tension load	[mm]	1.0	0.7	1.0	1.2	1.5
$\delta_{N\infty}$	Long term displacement under tension load	[mm]	1.6	1.3	1.6	1.7	1.5
<i>Shear steel failure mode</i>							
$V_{Rk,s}$	Shear steel characteristic resistance	[kN]	16	25	43	58	107
$V_{Rk,s,seis,C1}$	Shear steel characteristic resistance for seismic performance category C1	[kN]	11.4	17	28	43.5	96.3
$M_{Rk,s}^0$	Bending characteristic resistance	[Nm]	12	30	60	105	266
$\gamma_{MsV}$	Partial safety factor	[-]	1.45				
<i>Concrete pry-out failure mode</i>							
$h_{ef}$	Effective anchorage depth	[mm]	55	60	70	90	105
$k = k_3$	Factor for pry-out	[-]	1	2			
$\gamma_2 = \gamma_{inst}$	Installation safety factor	[-]	1.0				
<i>Concrete edge failure mode</i>							
$l_{ef}$	Effective anchorage length	[mm]	55	60	70	90	105
$d_{nom}$	Effective external diameter	[mm]	10	12	16	18	24
$\gamma_2 = \gamma_{inst}$	Installation safety factor	[-]	1.0				

<i>Displacement on shear load, cracked and non-cracked concrete C20/25</i>							
V	Service shear load in concrete	[kN]	7.7	12.3	21.0	23.3	52.5
$\delta_{V0}$	Short term displacement under shear load	[mm]	2.4	2.6	2.5	3.0	4.0
$\delta_{V\infty}$	Long term displacement under shear load	[mm]	3.6	3.9	3.8	4.5	6.0
<i>Fire Resistance – 30 minutes</i>							
$N_{Rk,s,fi,30}$	Tension steel characteristic resistance	[kN]	0.2	0.4	0.9	1.7	3.1
$N_{Rk,p,fi,30}$	Pull-out characteristic resistance	[kN]	1.3	1.5	4.0	6.3	8.8
$N_{Rk,p,fi,30}$	Concrete cone characteristic resistance	[kN]	4.0	5.0	7.4	13.8	20.3
$s_{min}$	Minimum spacing	[mm]	55	110	80	135	130
$V_{Rk,s,fi,30}$	Shear steel characteristic resistance	[kN]	0.3	0.5	1.2	2.1	3.9
$M^0_{Rk,s,fi,30}$	Bending steel characteristic resistance	[Nm]	0.2	0.4	1.1	2.6	6.7
<i>Fire Resistance – 60 minutes</i>							
$N_{Rk,s,fi,60}$	Tension steel characteristic resistance	[kN]	0.2	0.3	0.8	1.3	2.4
$N_{Rk,p,fi,60}$	Pull-out characteristic resistance	[kN]	1.3	1.5	4.0	6.3	8.8
$N_{Rk,p,fi,60}$	Concrete cone characteristic resistance	[kN]	4.0	5.0	7.4	13.8	20.3
$s_{min}$	Minimum spacing	[mm]	55	110	80	135	130
$V_{Rk,s,fi,60}$	Shear steel characteristic resistance	[kN]	0.3	0.4	1.0	1.6	2.9
$M^0_{Rk,s,fi,60}$	Bending steel characteristic resistance	[Nm]	0.1	0.3	1.0	2.0	5.0
<i>Fire Resistance – 90 minutes</i>							
$N_{Rk,s,fi,90}$	Tension steel characteristic resistance	[kN]	0.1	0.3	0.6	1.1	2.0
$N_{Rk,p,fi,90}$	Pull-out characteristic resistance	[kN]	1.3	1.5	4.0	6.3	8.8
$N_{Rk,p,fi,90}$	Concrete cone characteristic resistance	[kN]	4.0	5.0	7.4	13.8	20.8
$s_{min}$	Minimum spacing	[mm]	55	110	80	135	130
$V_{Rk,s,fi,90}$	Shear steel characteristic resistance	[kN]	0.2	0.3	0.8	1.4	2.5
$M^0_{Rk,s,fi,90}$	Bending steel characteristic resistance	[Nm]	0.1	0.3	0.8	1.7	4.3
<i>Fire Resistance – 120 minutes</i>							
$N_{Rk,s,fi,120}$	Tension steel characteristic resistance	[kN]	0.1	0.2	0.5	0.8	1.6
$N_{Rk,p,fi,120}$	Pull-out characteristic resistance	[kN]	1.0	1.2	3.2	5.0	7.0
$N_{Rk,p,fi,120}$	Concrete cone characteristic resistance	[kN]	3.2	4.0	5.9	11.1	16.3
$s_{min}$	Minimum spacing	[mm]	55	110	80	135	130
$V_{Rk,s,fi,120}$	Shear steel characteristic resistance	[kN]	0.2	0.2	0.6	1.0	1.9
$M^0_{Rk,s,fi,120}$	Bending steel characteristic resistance	[Nm]	0	0.2	0.6	1.3	3.3

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance 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 the manufacturer by:

  
Andrea Maggioni, General manager

  
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Villastellone, 15 July 2015

