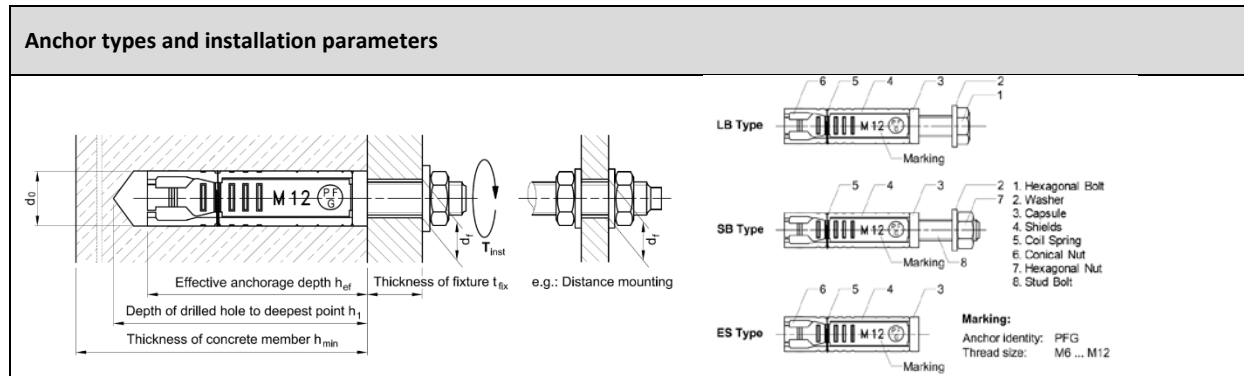# DECLARATION OF PERFORMANCE

SM00K001

$C\epsilon$

- *Code d' identification unique du type de produit:*
  SMART TYPE K

- *Type, lot ou numéro de série ou tout autre élément permettant l'identification du produit de construction comme requis en application de l'article 11(4):*
  Numéro de lot: voir l'emballage du produit

- *Usage(s) prévu(s) du produit de construction selon la spécification technique harmonisée applicable comme envisagée par le fabricant:*

Usage prévu ou usage du produit de construction selon l'ETAG 001 parts 1 - 2	
Generic type	Torque controlled expansion anchor with threaded rod
Base material	Un-cracked concrete C20/25 to C50/60 acc. to EN 206-1:2003
Material:	Galvanized steel, zinc plated ISO 4042 A2K ≥ 5µm
Durability	internal dry conditions
Loading	static or quasi-static loads
Fire Resistance	R120
Assumed working life	50 years

- *Nom, nom commercial enregistré ou marque commerciale enregistrée et adresse de contact du fabricant comme requis en application de l'article 11 (5):*
  pgb-Polska sp. Z o.o. – Ul. Jondy 5 – 44-100 Gliwice – Polska

- *Système ou systèmes d'évaluation et vérification de la consistance des performances du produit de construction comme stipulé à l'annexe V:*
  System 1

- *Cas d'une déclaration des performances concernant un produit de construction pour lequel une Evaluation Technique Européenne a été émise:*

ETA - 14/0239 issued by	CSTB
Body nr	NB 0679
On the basis of	ETAG 001, part 1 and 2 option 8
Under System	1
And issued	Certificate CE 0679-CPR-1032

Anchor types and installation parameters

- *Performances déclarées*

Installation parameters (ETAG001 part 1 and 2)				M6	M8	M10	M12
	d_o	Nominal diameter of drill bit	[mm]	10	14	16	20
	h_{ef}	Effective standard embedment depth	[mm]	40	50	60	80
	d_f	Fixture clearance hole diameter	[mm]	7	9	11	13
	T_{inst}	Nominal installation torque	[Nm]	10	25	50	85
	h_1	Depth of drilled hole	[mm]	45	55	65	85
	$T_{fix,min…max}$	Fixture thickness	[mm]	0…100	0…120	0…140	0…160
	h_{min}	Min. thickness of concrete member	[mm]	100	100	120	160
	s_{min}	Minimum spacing	[mm]	60	75	90	120
	c_{min}	Minimum edge distance	[mm]	60	75	90	120
Characteristic values for tension loads							
Steel failure							
	$N_{Rk,s}$	Tension steel characteristic resistance	[kN]	16	29	46	67
	γ_{Ms} [1]	Partial safety factor	[-]	1,50			
Pull-out failure							
	$N_{Rk,p}$	Tension characteristic resistance in concrete C20/25	[kN]	5	9	12	16
	γ_{Mp} [1]	Partial safety factor [1]	[-]	1,50 [2]			
Concrete cone failure							
	h_{ef}	Effective standard embedment depth	[mm]	40	50	60	80
	$s_{cr,N}$	Critical spacing	[mm]	120	150	180	240
	$c_{cr,N}$	Critical edge distance	[mm]	60	75	90	120
	γ_{Mc} [1]	Partial safety factor	[-]	1,50 [2]			
Concrete splitting failure							
	$s_{cr,sp}$	Critical spacing (splitting)	[mm]	240	300	360	480
	$c_{cr,sp}$	Critical edge distance (splitting)	[mm]	120	150	180	240
	γ_{Msp} [1]	Partial safety factor [1]	[-]	1,50 [2]			

[1] In absence of other national regulations

[2] The installation safety factor of γ_2= 1,0 is included.

Displacements under tension loads								
	N	Tension service load	[kN]	2,0	3,6	4,8	6,3
	δ_{N0}	Displacements under short term tension loads	[mm]	0,1	0,1	0,1	0,1
	$\delta_{N\infty}$	Displacements under long term tension loads	[mm]	0,3	0,3	0,3	0,3

Characteristic values for shear loads

Steel failure

$V_{Rk,s}$	Shear steel characteristic resistance	[kN]	8	14	23	33
$M^0_{Rk,s}$	Characteristic bending moment (steel failure with lever arm)	[Nm]	12	30	60	105
γ_{Ms} [3]	Partial safety factor	[-]	1,25			

Concrete pryout failure

K	K factor (in equation (5.6) of ETAG Annex C, § 5.2.3.3)	[-]	1		2	
γ_{Mcp} [3]	Partial safety factor	[-]	1,5 [4]			

Concrete edge failure

l_f	Effective anchorage depth under shear loads	[mm]	26	33	40	53
d_{nom}	Outside anchor diameter	[mm]	10	14	16	20
γ_{Mc} [3]	Partial safety factor	[-]	1,5 [4]			

Displacements under shear loads C20/25 – C50/60

V	Service shear load	[kN]	4,6	8,3	13,2	19,2
δ_{V0}	Short term displacement under shear loads	[mm]	1,5 (+0,7)	1,9 (+1,2)	2,4 (+1,2)	3,3 (+1,2)
$\delta_{V\infty}$	Long term displacement under shear loads	[mm]	2,3 (+0,7)	2,9 (+1,2)	3,6 (+1,2)	4,9 (+1,2)

Characteristic tension resistance in non-cracked C20/25 to C50/60 under fire exposure

R30 min	$N_{rk,s,fi,30}$	Tension load - fire duration = 30 min - steel failure	[kN]	0,2	0,4	0,9	1,7
	$N_{rk,p,fi,30}$	Tension load- fire duration = 30 min - pull-out failure	[kN]	1,3	2,3	3,0	4,0
	$N^0_{rk,c,fi,30}$	Tension load- fire duration = 30 min - concrete cone failure [5]	[kN]	1,8	3,2	5,0	10,3
R60 min	$N_{rk,s,fi,60}$	Tension load - fire duration = 60 min -steel failure	[kN]	0,2	0,3	0,8	1,3
	$N_{rk,p,fi,60}$	Tension load - fire duration = 60 min - pull-out failure	[kN]	1,3	2,3	3,0	4,0
	$N^0_{rk,c,fi,60}$	Tension load - fire duration = 60 min - concrete cone failure [5]	[kN]	1,8	3,2	5,0	10,3
R90 min	$N_{rk,s,fi,90}$	Tension load - fire duration = 90 min - steel failure	[kN]	0,1	0,3	0,6	1,1
	$N_{rk,p,fi,90}$	Tension load -fire duration = 90 min- pull-out failure	[kN]	1,3	2,3	3,0	4,0
	$N^0_{rk,c,fi,90}$	Tension load - fire duration = 90 min- concrete cone failure [5]	[kN]	1,8	3,2	5,0	10,3
R120 min	$N_{rk,s,fi,120}$	Tension load - fire duration = 120 min - steel failure	[kN]	0,1	0,2	0,5	0,8
	$N_{rk,p,fi,120}$	Tension load - fire duration = 120 min -pull-out failure	[kN]	1,0	1,8	2,4	3,2
	$N^0_{rk,c,fi,120}$	Tension load- f ire duration = 120 min- concrete cone failure [5]	[kN]	1,5	2,5	4,0	8,2

In absence of other national regulations the partial safety factor for resistance under fire exposure γM,fi = 1,0 is recommended.

[3] In absence of other national regulations
[4] The installation safety factor of γ_2= 1,0 is included.

[5] Spacing $S_{cr,N}$ = 4xhef and S_{min} = see table. Edge distance $C_{cr,N}$ = 2xh$_{ef}$. If fire attack from one side= C_{min}=2xh$_{ef}$. If fire attack from more than one side C_{min} ≥ 300 mm

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Characteristic shear resistance in non-cracked C20/25 to C50/60 under fire exposure							
R30 min	$V_{rk,s,fi,30}$	Shear load without lever arm- fire duration = 30 min	[kN]	0,2	0,4	0,9	1,7
	$M^0_{rk,s,fi,30}$	Shear load with lever arm- fire duration = 30 min	[kN]	0,2	0,4	1,1	2,6
R60 min	$V_{rk,s,fi,60}$	Shear load without lever arm -fire duration = 60 min	[kN]	0,2	0,3	0,8	1,3
	$M^0_{rk,s,fi,60}$	Shear load with lever arm - fire duration = 60 min	[kN]	0,1	0,3	1,0	2,0
R90 min	$V_{rk,s,fi,90}$	Shear load without lever arm- fire duration = 90 min	[kN]	0,1	0,3	0,6	1,1
	$M^0_{rk,s,fi,90}$	Shear load with lever arm -fire duration = 90 min	[kN]	0,1	0,3	0,7	1,7
R120 min	$V_{rk,s,fi,120}$	Shear load without lever arm- fire duration = 120 min	[kN]	0,1	0,2	0,5	0,8
	$M^0_{rk,s,fi,120}$	Shear load with lever arm -fire duration = 120 min	[kN]	0,1	0,2	0,6	1,3
Concrete pryout failure							
	k	Factor in equation (5.6) of ETAG 001 Annex C, 5.2.3.3	[-]	1,0	2,0	2,0	2,0
R30 min				1,8	6,4	10,0	20,6
R60 min	$V^0_{Rk,cp,fi}$	Characteristic resistance	[kN]	1,8	6,4	10,0	20,6
R90 min				1,8	6,4	10,0	20,6
R120 min				1,5	5,1	8,0	16,5
Concrete edge failure							
The initial value $V^0_{Rk,c,fi}$ of the characteristic resistance in concrete C20/25 to C50/60 under fire exposure may be determined by: $V^0_{Rk,c,fi}$ = 0,25 x $V^0_{Rk,c}$ (≤ R90) $V^0_{Rk,c,fi}$ = 0,20 x $V^0_{Rk,c}$ (R120) with $V^0_{Rk,c}$ initial value of the characteristic resistance in cracked concrete C20/25 under normal temperature.							
In absence of other national regulations the partial safety factor for resistance under fire exposure $\gamma_{M,fi}$ = 1,0 is recommended.							

Les performances du produit identifié aux points 1 et 2 sont conformes aux performances déclarées. Cette déclaration des performances est émise sous la seule responsabilité de pgb-Europe nv. Signé pour et au nom du fabricant par:

Date et lieu de délivrance	Signature	
Melle, 18/08/2014	nv pgb-Europe sa Gontrode Heirweg 170 9090 MELLE BE 0425 888 396	Johannes Heye, product manager

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Annex 1 : Product overview

4 shield expansion anchor "PFG"

4 shield expansion anchor "PFG"

CARTON BOX PACKING

size	pgb code	EAN13	📦
M 6x62	SM00K306060 Z	5902134717555	50
M 6x77	SM00K306075 Z	5902134717562	50
M 8x78	SM00K308075 Z	5902134717579	50
M 8x88	SM00K308085 Z	5902134717586	50
M 8x103	SM00K308100 Z	5902134717593	50
M 8x143	SM00K308140 Z	5902134717609	25
M 10x84	SM00K310080 Z	5902134717616	25
M 10x94	SM00K310090 Z	5902134717623	25
M 10x104	SM00K310100 Z	5902134717630	25
M 10x114	SM00K310110 Z	5902134717647	25
M 10x124	SM00K310120 Z	5902134717654	25
M 10x144	SM00K310140 Z	5902134717661	25
M 12x115	SM00K312110 Z	5902134717678	10
M 12x125	SM00K312120 Z	5902134717685	10
M 12x145	SM00K312140 Z	5902134717692	10
M 12x160	SM00K312155 Z	5902134717708	10

WINDOW BOX PACKING

size	pgb code	EAN13	📦
M 6x62	SM00KE06060 Z	5902134719122	25
M 6x77	SM00KE06075 Z	5902134719139	25
M 8x78	SM00KE08075 Z	5902134719146	25
M 8x88	SM00KE08085 Z	5902134719153	25
M 8x103	SM00KE08100 Z	5902134719160	25
M 8x143	SM00KE08140 Z	5902134719177	15
M 10x84	SM00KE10080 Z	5902134719184	15
M 10x94	SM00KE10090 Z	5902134719191	15
M 10x104	SM00KE10100 Z	5902134719207	15
M 10x114	SM00KE10110 Z	5902134719214	15
M 10x124	SM00KE10120 Z	5902134719221	15
M 10x144	SM00KE10140 Z	5902134719238	15
M 12x115	SM00KE12110 Z	5902134719245	5
M 12x125	SM00KE12120 Z	5902134719252	5
M 12x145	SM00KE12140 Z	5902134719269	5
M 12x160	SM00KE12155 Z	5902134719276	5