

Declaration of Performance

DoP-10/0108-R-CAS

1. Unique identification code of the product-type:

R-CAS



The photo depicts an example of a product of the given type of goods

2. Intended use/es:

**general type
to be applied in**

Bonded anchors

Adhesive anchors with M8 to M30 galvanised or stainless steel anchor rods for use in non-cracked concrete

option / category

ETAG 001-05

Loading

subject to static or quasi-static

material

Bonded anchors comprising RAWL R-CAS-V injection mortar, provided in the glass capsules and the threaded anchor rods R-STUDS of the sizes M8 to M30. The threaded rods are made of A4-70 or A4-80 galvanised carbon steel or stainless steel: 1.4401, 1.4404, 1.4571 or stainless steel of increased resistance to corrosion, in strength class 70: 1.4529, 1.4565, 1.4547 with hexagon nut and washer.

3. Manufacturer:

Rawlplug S.A.

ul. Kwidzyńska 6, 51-416 Wrocław, PL

www.rawlplug.com

4. System/s of AVCP:

System 1

5. European Assessment Document:

ETAG 001-05

Utilization category: 1, 2

6. European Technical Assessment:

ETA-10/0108 edition of 2016-09-20

7. Technical Assessment Body:

Instytut Techniki Budowlanej

8. Notified body/ies:

1488 on the basis of:

- an assessment of the performance of the construction product carried out on the basis of testing (including sampling), calculation, tabulated values or descriptive documentation of the product
- initial inspection of the manufacturing plant and of factory production control
- continuing surveillance, assessment and evaluation of factory production control

issued a certificate **1488-CPR-0520/W**

9. Declared performance/s:

Essential Characteristics:

Technical Specification	Basic requirements according to CPR		Remarks:
ETA-10/0108	[1]	Mechanical resistance and stability	Declared values on the page 2
	[4]	Operational safety	Such criteria as those significant for [1]

Characteristic values for tension loads									
SIZE			M8	M10	M12	M16	M20	M24	M30
Steel failure									
Steel failure with threaded rod grade 5.8									
Characteristic resistance	$N_{Rk,s}$	[kN]	18	29	42	78	122	176	280
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,50						
Steel failure with threaded rod grade 8.8									
Characteristic resistance	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	449
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,50						
Steel failure with threaded rod grade 10.9									
Characteristic resistance	$N_{Rk,s}$	[kN]	37	58	84	157	245	353	561
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,40						
Steel failure with threaded rod grade 12.9									
Characteristic resistance	$N_{Rk,s}$	[kN]	44	70	101	188	294	424	673
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,40						
Steel failure with stainless steel threaded rod A4-70									
Characteristic resistance	$N_{Rk,s}$	[kN]	26	41	59	110	171	247	393
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,87						
Steel failure with stainless steel threaded rod A4-80									
Characteristic resistance	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	449
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,60						
Steel failure with high corrosion stainless steel threaded rod grade 70									
Characteristic resistance	$N_{Rk,s}$	[kN]	26	41	59	110	171	247	393
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,87						
Combined pull-out and concrete cone failure									
Characteristic bond resistance in non-cracked concrete C20/25	$\tau_{Rk,ucr}$	[N/mm ²]	13	12	12	11	10	9	8,5
Increasing factor for $\tau_{Rk,ucr}$ in non-cracked concrete	ψ_c	C30/37	1,04						1,0
		C40/50	1,07						1,0
		C50/60	1,09						1,0
Partial safety factor for use category 1	$\gamma_2 = \gamma_{inst}$	[-]	1,2						
Partial safety factor for use category 2	$\gamma_2 = \gamma_{inst}$	[-]	1,4						
4) Coefficient acc. to the CEN/TS 1992-4-5:2009, 6.2.2.3 ; 6.2.3.1	$k_s = k_{ucr}$	[-]	10,1						
Effective anchoring depth	h_{ef}	[mm]	80	90	110	125	170	210	270
ODistance from edges and spacing.	$C_{cr,N}$	[mm]	1,5 x h_{ef}						
	$S_{cr,N}$	[mm]	3,0 x h_{ef}						
Splitting failure									
Effective anchoring depth h_{ef}	h_{ef}	[mm]	80	90	110	125	170	210	270

Edge distance	$c_{cr,sp}$	[mm]	$c_{cr,sp} = h_{ef} * \left(\frac{I_{k,ucr}}{8}\right)^{0.4} * \left(3,1 - 0,7 \frac{h}{h_{ef}}\right)$
	$c_{cr,sp}$	[mm]	2 x $c_{cr,sp}$
Partial safety factor 1	$\gamma_2 = \gamma_{inst}$	[-]	1,2
Partial safety factor 2	$\gamma_2 = \gamma_{inst}$	[-]	1,4

Shear loads for steel failure without lever arm										
SIZE			M8	M10	M12	M16	M20	M24	M30	
Steel failure with threaded rod grade 5.8										
Characteristic resistance	$V_{Rk,s}$	[kN]	9	14	21	39	61	88	140	
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel failure with threaded rod grade 8.8										
Characteristic resistance	$V_{Rk,s}$	[kN]	15	23	34	63	98	141	224	
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel failure with threaded rod grade 10.9										
Characteristic resistance	$V_{Rk,s}$	[kN]	18	29	42	78	122	176	280	
Partial safety factor	γ_{Ms}	[-]	1,50							
Steel failure with threaded rod grade 12.9										
Characteristic resistance	$V_{Rk,s}$	[kN]	22	35	51	94	147	212	337	
Partial safety factor	γ_{Ms}	[-]	1,50							
Steel failure with stainless steel threaded rod A4-70										
Characteristic resistance	$V_{Rk,s}$	[kN]	13	20	29	55	86	124	196	
Partial safety factor	γ_{Ms}	[-]	1,56							
Steel failure with stainless steel threaded rod A4-80										
Characteristic resistance	$V_{Rk,s}$	[kN]	15	23	34	63	98	141	224	
Partial safety factor	γ_{Ms}	[-]	1,33							
Steel failure with high corrosion stainless steel threaded rod grade 70										
Characteristic resistance	$V_{Rk,s}$	[kN]	13	20	29	55	86	124	196	
Partial safety factor	γ_{Ms}	[-]	1,56							

Shear loads for steel failure with lever arm										
SIZE			M8	M10	M12	M16	M20	M24	M30	
Steel failure with threaded rod grade 5.8										
Characteristic resistance	$M^0_{Rk,s}$	[Nm]	19	37	65	166	324	561	1124	
Partial safety factor	γ_{Ms}	[-]	1,25							

Steel failure with threaded rod grade 8.8									
Characteristic resistance	$M_{Rk,s}^0$	[Nm]	30	60	105	266	519	898	1799
Partial safety factor	γ_{Ms}	[-]	1,25						
Steel failure with threaded rod grade 10.9									
Characteristic resistance	$M_{Rk,s}^0$	[Nm]	37	75	131	333	649	1123	2249
Partial safety factor	γ_{Ms}	[-]	1,50						
Steel failure with threaded rod grade 12.9									
Characteristic resistance	$M_{Rk,s}^0$	[Nm]	45	90	157	400	779	1347	2699
Partial safety factor	γ_{Ms}	[-]	1,50						
Steel failure with stainless steel threaded rod A4-70									
Characteristic resistance	$M_{Rk,s}^0$	[Nm]	26	52	92	233	454	786	1574
Partial safety factor	γ_{Ms}	[-]	1,56						
Steel failure with stainless steel threaded rod A4-80									
Characteristic resistance	$M_{Rk,s}^0$	[Nm]	30	60	105	266	519	898	1799
Partial safety factor	γ_{Ms}	[-]	1,33						
Steel failure with high corrosion stainless steel threaded rod grade 70									
Characteristic resistance	$M_{Rk,s}^0$	[Nm]	26	52	92	233	454	786	1574
Partial safety factor	γ_{Ms}	[-]	1,56						

Characteristic values for shear loads - pry out and concrete edge failure									
SIZE			M8	M10	M12	M16	M20	M24	M30
Effective anchorage depth h_{ef}	h_{ef}	[mm]	80	90	110	125	170	210	270
Pry out failure									
4) Coefficient acc. to the formula (5.7) TR029 or acc. to the formula (27) CEN/TS 1992-4-5: 2009	$k = k_3$	[-]	-						
Concrete edge failure: see clause 5.2.3.4 of Technical Report TR 029									
Effective anchorage depth	l_f	[mm]	80	90	110	125	170	210	270
Anchor diameter.	$d^{(1)} = d_{nom}^{(2)}$	[mm]	8	10	12	16	20	24	30

1) Coefficient for designing acc. to the Technical Report TR029

2) Coefficient for designing acc. to the CEN/TS 1992-4-5: 2009

Displacement under tension loads - non-cracked concrete									
SIZE			M8	M10	M12	M16	M20	M24	M30
Characteristic displacement in non-cracked concrete C20/25 to C50/60 under tension loads									
Admissible service load ¹⁾	F	[kN]	11,5	14,2	22,1	30,0	47,3	62,9	95,1
Displacement	δ_{NO}	[mm]	0,30	0,30	0,35	0,35	0,40	0,45	0,50
	δ_{Ne}	[mm]	0,65	0,65	0,65	0,65	0,65	0,65	0,65

These values are suitable for each temperature range and categories specified in Annex B1 (ETA-10/0108)

Displacement under shear loads									
SIZE			M8	M10	M12	M16	M20	M24	M30
Characteristic displacement under shear loads									

Admissible service load ¹⁾	F	[kN]	3,7	5,8	8,4	15,7	24,5	35,3	55,6
Displacement	δ_{VO}	[mm]	2,5	2,5	2,5	2,5	2,5	2,5	2,5
	$\delta_{V\infty}$	[mm]	3,7	3,7	3,7	3,7	3,7	3,7	3,7

These values are suitable for each temperature range and categories specified in Annex B1 (ETA-10/0108)

The performance of the product identified above is in conformity with the set of declared performance/s.
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 manufacturer:

Sławomir Jagła
Proxy of the Quality Management System
Wrocław, 28.03.2017.

PEŁNOMOCNIK SYSTEMU
ZARZĄDZANIA JAKOŚCIĄ

Jagła
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