DECLARATION OF PERFORMANCE No LE-ZN/21

1. Unique identification code of the product-type: **LE-ZN**
2. Intended use/es: **Torque controlled expansion anchor for use in uncracked concrete**
3. Manufacturer: **Klimas Wkręt-Met Sp. z o.o.**
   ul. Wincentego Witosa 170/176
   42-233 Kuźnica Kiedrzyńska, Mykanów, Poland
4. Authorised representative: **not applicable**
5. System/s of AVCP: **system 1**
6. **European Assessment Document:** **EAD 330232-01-0601**
   European Technical Assessment: **ETA-20/0640 30/10/2025**
   Technical Assessment Body: **Instytut Techniki Budowlanej**
   Notified body/ies: **1488**
7. Declared performance/s:

Characteristic resistance (static and quasi-static loading)

Table C1 – Characteristic resistance under tension load

Size			M6	M8	M10	M12	M16	M20
STEEL FAILURE								
Characteristic resistance – reduced part	$N_{Rk,s}$	[kN]	9,9	16,2	27,7	38,6	71,9	126,7
Partial safety factor class:	$\gamma_{M,s}$	[-]	1,81					
PULL OUT FAILURE								
Characteristic resistance in C20/25 uncracked concrete:	$N_{Rk,p}$	[kN]	1)	1)	1)	1)	1)	1)
Installation safety factor:	γ_{ins}	[-]	1,0	1,0	1,0	1,0	1,0	1,0
Increasing factors for $N^0_{Rk,c}$:	Ψ_c	C30/37	1,00	1,06				
		C40/50	1,00	1,11				
		C50/60	1,00	1,16				
CONCRETE CONE FAILURE AND SPLITTING FAILURE								
Factor for uncracked concrete:	$k_{ucr,N}$	[-]	11,0					
Installation safety factor:	γ_{ins}	[-]	1,0					
Concrete cone failure:	$s_{cr,N}$	[mm]	$3 \times h_{ef}$					
	$c_{cr,N}$	[mm]	$1.5 \times h_{ef}$					
Standard embedment								
Effective anchorage depth:	h_{ef}	[mm]	35	40	60	70	85	115
Splitting failure:	$s_{cr,sp}$	[mm]	175	200	300	400	425	575
	$c_{cr,sp}$	[mm]	90	100	150	200	215	290
Reduced embedment								
Effective anchorage depth:	h_{ef}	[mm]	-	-	40	50	65	95
Splitting failure:	$s_{cr,sp}$	[mm]	-	-	200	250	325	475
	$c_{cr,sp}$	[mm]	-	-	100	125	165	240

1) The pull-out failure mode is not decisive

Table C3 – Characteristic resistance under shear load

Size			M6	M8	M10	M12	M16	M20
STEEL FAILURE WITHOUT LEVER ARM								
Characteristic resistance	$V_{Rk,s}$	[kN]	6,8	12,4	19,7	28,7	53,4	83,3
Partial safety factor class:	$\gamma_{M,s}$	[-]	1,51					
STEEL FAILURE WITHOUT LEVER ARM								
Characteristic bending moment	$M_{Rk,s}$	[Nm]	15,6	38,0	75,4	131,6	316,0	621,8
Partial safety factor:	$\gamma_{M,s}$	[-]	1,51					
CONCRETE PRYOUT FAILURE								
Pryout factor:	k_8	[-]	1,0	1,0	1,0	1,0	2,0	2,0
Installation safety factor:	γ_{ins}	[-]	1,0					
CONCRETE EDGE FAILURE								
Effective length of anchor:	l_f	[mm]	35	40	40 / 60	50 / 70	65 / 85	95 / 115
Outside diameter of anchor:	d_{nom}	[mm]	6	8	10	12	16	20
Installation safety factor:	γ_{ins}	[-]	1,0					

Displacement

Table C2 – Displacement under tension load

Size			M6	M8	M10	M12	M16	M20
Tension service load in uncracked concrete:	N	[kN]	5,0	6,0	6,3	8,8	14,0	25,7
Displacement:	δ_{N0}	[mm]	1,5	1,5	1,5	1,6	1,7	1,8
	$\delta_{N\infty}$	[mm]	2,4					

Table C4 – Displacement under shear load

Size			M6	M8	M10	M12	M16	M20
Tension service load in uncracked concrete:	V	[kN]	6,1	6,0	9,6	12,7	23,6	34,6
Displacement:	δ_{V0}	[mm]	1,2	1,3	1,6	1,8	1,8	3,0
	$\delta_{V\infty}$	[mm]	1,8	2,0	2,4	2,7	2,7	4,5

Reaction to fire - Class A1 according to EN 13501-1

Resistance to fire

Table C5 – Characteristic values of resistance to tension load under fire exposure

Size			M6	M8	M10	M12	M16	M20
Min. Effective anchorage depth:	h_{ef}	[mm]	35	40	40	50	65	95
Characteristic fire resistance duration at 30 minutes								
Steel failure	$N_{Rk,s,fi}$	[kN]	0,2	0,4	0,9	1,7	3,1	4,9
Pull-Out Failure	$N_{Rk,p,fi}$	[kN]	2,5	3,0	3,3	4,5	7,0	12,5
Concrete Cone Failure	$N_{Rk,c,fi}$	[kN]	1,8	2,6	2,6	4,5	8,6	22,2
Characteristic fire resistance duration at 60 minutes								
Steel failure	$N_{Rk,s,fi}$	[kN]	0,2	0,3	0,8	1,3	2,4	3,7
Pull-Out Failure	$N_{Rk,p,fi}$	[kN]	2,5	3,0	3,3	4,5	7,0	12,5
Concrete Cone Failure	$N_{Rk,c,fi}$	[kN]	1,8	2,6	2,6	4,5	8,6	22,2
Characteristic fire resistance duration at 90 minutes								
Steel failure	$N_{Rk,s,fi}$	[kN]	0,1	0,3	0,6	1,1	2,0	3,2
Pull-Out Failure	$N_{Rk,p,fi}$	[kN]	2,5	3,0	3,3	4,5	7,0	12,5
Concrete Cone Failure	$N_{Rk,c,fi}$	[kN]	1,8	2,6	2,6	4,5	8,6	22,2
Characteristic fire resistance duration at 120 minutes								
Steel failure	$N_{Rk,s,fi}$	[kN]	0,1	0,2	0,5	0,8	1,6	2,5
Pull-Out Failure	$N_{Rk,p,fi}$	[kN]	2,0	2,4	2,6	3,6	5,6	10,0
Concrete Cone Failure	$N_{Rk,c,fi}$	[kN]	1,5	2,0	2,0	3,6	6,9	17,8
Spacing								
Spacing	$s_{cr,N}$	[mm]	$4 \times h_{ef}$					
	s_{min}	[mm]	47	54	54	68	88	128
Edge distance	$c_{cr,N}$	[mm]	$2 \times h_{ef}$					
	c_{min}	[mm]	$2 \times h_{ef}$, however if the fire attack is from more than one side, the edge distance of the anchor has to be ≥ 300 mm and ≥ $2 \times h_{ef}$					

$\gamma_{M,fi}$ - partial safety factor for resistance under fire exposure (usually $\gamma_{M,fi}$ =1.0)

Table C6 – Characteristic values of resistance to shear load under fire exposure

Size			M6	M8	M10	M12	M16	M20
Characteristic fire resistance duration at 30 minutes								
Steel Failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,2	0,4	0,9	1,7	3,1	4,9
Steel Failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,1	0,4	1,7	3,9	9,3	18,3
Characteristic fire resistance duration at 60 minutes								
Steel Failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,2	0,3	0,8	1,3	2,4	3,7
Steel Failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,1	0,3	1,4	2,9	7,0	13,7
Characteristic fire resistance duration at 90 minutes								
Steel Failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,1	0,3	0,6	1,1	2,0	3,2
Steel Failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,1	0,3	1,1	2,5	6,0	11,9
Characteristic fire resistance duration at 120 minutes								
Steel Failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,1	0,2	0,5	0,8	1,6	2,5
Steel Failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,1	0,2	0,9	1,9	4,6	9,1

8. Appropriate Technical Documentation and/or Specific Technical Documentation: not applicable

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 the manufacturer by:

Kuźnica Kiedrzyńska
26-08-2026

[place]
[date of issue]

Signature Not Verified
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