



...eine starke Verbindung

DECLARAÇÃO DE DESEMPENHO

DoP N.o: **MKT-1.2-301_pt**

- ◇ **Código de identificação único do produto-tipo: Âncora de prego N**
- ◇ **Utilização(ões) prevista(s):** Cavilhas para ancoragem em concreto para sistemas redundantes sem carga, ver Anexo B / Annex B
- ◇ **Fabricante:** MKT Metall-Kunststoff-Technik GmbH & Co.KG
Auf dem Immel 2
67685 Weilerbach
- ◇ **Sistema(s) de avaliação e verificação da regularidade do desempenho (AVCP):** 2+
- ◇ **Documento de Avaliação Europeu** **EAD 330747-00-0601**
Avaliação Técnica Europeia : **ETA-11/0240, 21.12.2021**
Organismo de Avaliação Técnica: **DIBt, Berlin**
Organismo(s) notificado (s): **NB 2873 – Technische Universität Darmstadt**

◇ **Desempenho(s) declarado(s):**

Características essenciais	Desempenho
Segurança contra incêndio (BWR 2)	
Comportamento do fogo	Classe A1
Resistência ao fogo	Anexo/Annex C2
Segurança durante o uso (BWR 4)	
Resistência característica para todas as direções de carga e todos os modos de falha para o método de design simplificado	Anexo/Annex B2, C1
Durabilidade	Anexo/Annex B1

O desempenho do produto identificado acima está em conformidade com o conjunto de desempenhos declarados. A presente declaração de desempenho é emitida, em conformidade com o Regulamento (UE) n.o 305/2011, sob a exclusiva responsabilidade do fabricante identificado acima.

Assinado por e em nome do fabricante por:

Stefan Weustenhagen
(Diretor-gerente)
Weilerbach, 21.12.2021

p.p.

Dipl.-Ing./Detlef Bigalke
(Director de Desenvolvimento de Produto)



O original desta declaração de desempenho foi escrito em alemão. Em caso de desvios na tradução, a versão alemã é válida.

Specifications of intended use

Nail Anchor	N6 Thread M6	N8 Thread M6	N-K Nail head	N-M Coupling nut	N-O Loop
Static or quasi-static action	✓				
Fire exposure	R30 / R60 / R90 / R120				
Cracked or uncracked concrete	✓				
Strength classes C12/15 to C50/60 according to EN 206:2013 + A1:2016	✓				
Compacted, reinforced or unreinforced normal weight concrete, without fibres according to EN 206:2013 + A1:2016	✓				

Use conditions (environmental conditions):	Effective anchorage depth
<ul style="list-style-type: none"> Structures subject to dry internal conditions (zinc plated steel, stainless steel or high corrosion resistant steel) 	$h_{ef} \geq 30\text{mm}$ and $h_{ef,red} \geq 25\text{mm}$
<ul style="list-style-type: none"> Structures subject to permanently damp internal conditions, if no particular aggressive conditions exist (stainless steel or high corrosion resistant steel) 	$h_{ef} \geq 30\text{mm}$ and $h_{ef,red} \geq 25\text{mm}$
<ul style="list-style-type: none"> Structures subject to external atmospheric exposure including industrial and marine environment, if no particular aggressive conditions exist (stainless steel or high corrosion resistant steel) 	$h_{ef} \geq 30\text{mm}$
<ul style="list-style-type: none"> Structures subject to external atmospheric exposure and to permanently damp internal conditions, if other particular aggressive conditions exist (high corrosion resistant steel) 	$h_{ef} \geq 30\text{mm}$

Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used.)

Design:

- Fastenings are designed under the responsibility of an engineer experienced in fastenings and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be fastened. The position of the fastener is indicated on the design drawings (e.g. position of the fastener relative to reinforcement or to supports, etc.).
- Design of fastenings according to EN 1992-4:2018, simplified design method C
- Fasteners are only to be used for redundant non-structural systems.

Installation:

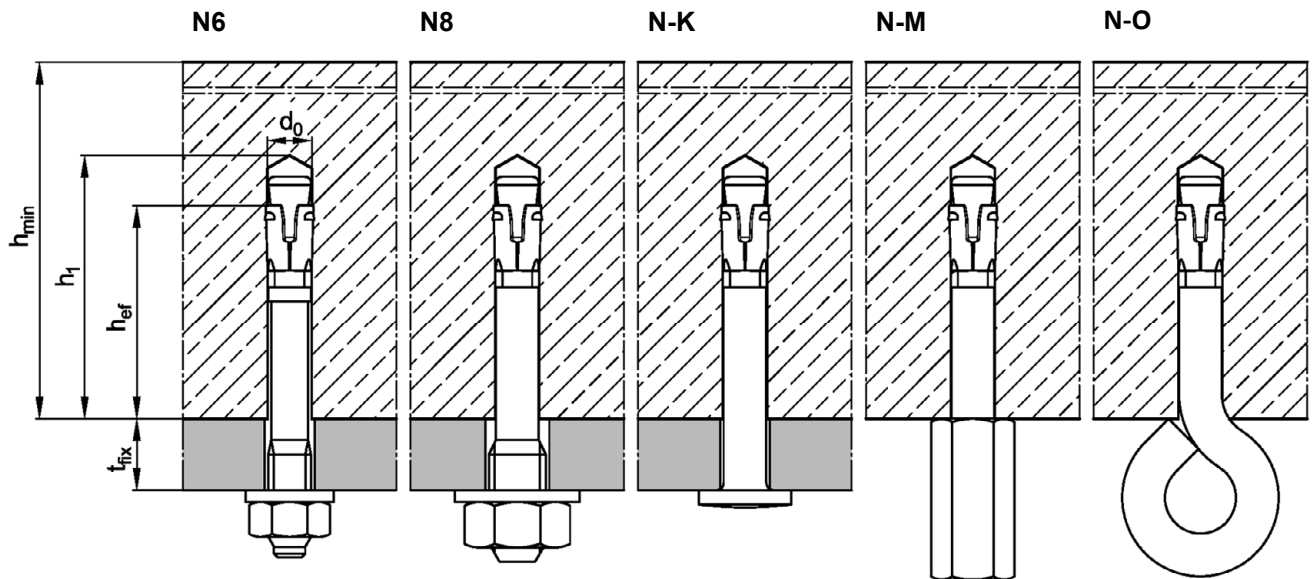
- Drill hole by hammer drilling or vacuum drilling.
- Installation only as supplied by the manufacturer, without replacement of individual parts.
- Fastener installation such that the effective setting depth is complied with. This compliance is ensured, if the admissible thickness of fixture is kept or the loop of Nail Anchor N-O rests on the concrete surface.

Nail Anchor N	Annex B1
Intended Use Specifications	

Table B1: Installation parameters

Fastener type		N6 N-K N-O	N8 N-M	N6 N-K N-O	N8 N-M	
Effective anchorage depth	$h_{ef} \geq$	[mm]	25 ¹⁾		30	
Nominal drill hole diameter	d_0	[mm]	6		6	
Cutting diameter to drill bit	$d_{cut} \leq$	[mm]	6,40		6,40	
Depth of drill hole	$h_1 \geq$	[mm]	35		40	
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	7	9	7	9
Maximum tightening torque (N 6 and N 8)	$T_{inst} \leq$	[Nm]	4		4	
Minimum member thickness	h_{min}	[mm]	80		80	

¹⁾ Internal use only



Nail Anchor N

Intended Use
Installation parameters

Annex B2

Installation instructions

All fastener types				
1		Drill hole perpendicular to the concrete surface by hammer drilling or vacuum drilling.		
2		Blow out dust. Alternatively, vacuum clean down to the bottom of the hole.		
	N6 / N8 Thread M6 / M8	N-K Nail head	N-M Coupling nut	N-O Loop
3		-		-
Check position of nut.				
4				
Drive in fastener.				
5				
Apply installation torque $T_{inst} \leq 4 \text{ Nm}$.		Installation condition		

Nail Anchor N

Intended Use
Installation instructions

Annex B3

Table C1: Characteristic resistance for a fixing point ¹⁾, all directions, design method C

Fastener type			N6	N8 N-K N-M	N-O	N6	N8 N-K N-M	N-O
Effective anchorage depth		h_{ef} [mm]	25			30		
Optimized for maximum load								
Characteristic resistance	C12/15	F_{Rk} [kN]	3,0	3,0	1,5	4,0	4,0	1,5
	C20/25 to C50/60		4,5	4,5	1,5	5,9	5,9	1,5
Respective spacing between fixing points ^{1) 2)}		s_{cr} [mm]	100					
		for $c_{cr} \geq$ [mm]	200					
Respective edge distance ²⁾		c_{cr} [mm]	100					
		for $s_{cr} \geq$ [mm]	200					
Partial factor		γ_M	1,5					
Optimized for minimum edge distance								
Characteristic resistance	C12/15	F_{Rk} [kN]	1,5	1,5	1,5	2,0	2,0	1,5
	C20/25 to C50/60		2,0	2,0	1,5	2,5	2,5	1,5
Respective spacing between fixing points ^{1) 2)}		c_{cr} [mm]	50					
		for $s_{cr} \geq$ [mm]	100					
Partial factor		γ_M	1,5					
Shear load with lever arm								
Characteristic bending resistance, steel, zinc plated		$M^0_{Rk,s}$ [Nm]	9,2	12,7	³⁾	9,2	12,7	³⁾
Characteristic bending resistance, stainless steel A4 / HCR		$M^0_{Rk,s}$ [Nm]	9,2	13,5	³⁾	9,2	13,5	³⁾
Partial factor		γ_{Ms}	1,25					

¹⁾ A fixing point is defined as:

- Single fastener
- Fastener group with a minimum spacing s of $50 \text{ mm} \leq s < s_{cr}$

If the spacing in a fixing point is greater than or equal to the respective spacing in this table, the characteristic resistances apply to every single fastener.

²⁾ Intermediate values can be linearly interpolated

³⁾ No performance assessed.

Nail Anchor N

Performances
Characteristic resistance

Annex C1

Table C2: Characteristic resistance for a fixing point ¹⁾ under fire exposure in concrete C20/25 to C50/60, design method C

Fire resistance class			Fastener type								
			N6 N8	N-K	N-M ³⁾	N-O	N6 N8	N-K	N-M ³⁾	N-O	
Effective anchorage depth		h_{ef}	[mm]		25				30		
Load in any direction											
R 30	Characteristic resistance, steel zinc plated	$F_{Rk,fi}$	[kN]	0,6	0,6	0,6	0,2	0,9	0,9	0,8	-
R 60				0,6	0,6	0,6	0,2	0,7	0,8	0,7	-
R 90				0,5	0,6	0,6	0,1	0,5	0,6	0,6	-
R 120				0,4	0,5	0,5	0,1	0,4	0,5	0,6	-
R 30	Characteristic resistance, stainless steel A4 / HCR	$F_{Rk,fi}$	[kN]	0,6	0,6	0,6	0,2	0,9	0,9	0,8	0,2
R 60				0,6	0,6	0,6	0,2	0,9	0,9	0,7	0,2
R 90				0,5	0,6	0,6	0,1	0,9	0,9	0,6	0,1
R 120				0,4	0,5	0,5	0,1	0,7	0,7	0,6	0,1
R 30 - R 120	Edge distance	$C_{cr,fi}$	[mm]	50				50			
	Spacing	$S_{cr,fi}$	[mm]	100				100			
Shear load with lever arm											
R 30	Characteristic resistance, steel zinc plated	$M^0_{Rk,fi}$	[Nm]	0,7	1,0	0,7	²⁾	0,7	1,0	0,7	²⁾
R 60				0,5	0,8	0,7	²⁾	0,5	0,8	0,7	²⁾
R 90				0,4	0,5	0,6	²⁾	0,4	0,5	0,6	²⁾
R 120				0,3	0,4	0,5	²⁾	0,3	0,4	0,5	²⁾
R 30	Characteristic resistance, stainless steel A4 / HCR	$M^0_{Rk,fi}$	[Nm]	1,4	2,1	0,7	²⁾	1,4	2,1	0,7	²⁾
R 60				1,1	1,5	0,7	²⁾	1,1	1,5	0,7	²⁾
R 90				0,7	1,0	0,6	²⁾	0,7	1,0	0,6	²⁾
R 120				0,5	0,7	0,5	²⁾	0,5	0,7	0,5	²⁾
If the fire attack is from more than one side, the edge distance shall be ≥ 300 mm											

¹⁾ A fixing point is defined as:

- Single fastener,
- Fastener group with a minimum spacing s of $50 \text{ mm} \leq s < s_{cr}$

If the spacing in a fixing point is greater than or equal to the respective spacing in this table, the characteristic resistances apply to every single fastener

²⁾ No performance assessed

³⁾ Only in connection with threaded rods M8, M10 or M12 minimum strength class 5.8.

Nail Anchor N

Performances
Characteristic resistance under fire exposure

Annex C2