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## PRESTANDEDEKLARATION

DoP Nr: **MKT-1.2-301\_sv**

- ✧ **Produkttypens unika identifikationskod:** **Nagel ankare N**
- ✧ **Avsedd användning/avsedda användningar:** Fästelement för användning i betong för överflödiga icke-strukturella system, se bilaga / Annex B
- ✧ **Tillverkare:** MKT Metall-Kunststoff-Technik GmbH & Co.KG  
Auf dem Immel 2  
67685 Weilerbach
- ✧ **System för bedömning och fortlöpande kontroll av prestanda:** 2+
- ✧ **Europeiskt bedömningsdokument:** **EAD 330747-00-0601**  
Europeisk teknisk bedömning: **ETA-11/0240, 21.12.2021**  
Tekniskt bedömningsorgan: DIBt, Berlin  
Anmält/anmälda organ: NB 2873 – Technische Universität Darmstadt

✧ **Angiven prestanda:**

Väsentliga egenskaper	Prestanda
<b>Säkerhet vid brand (BWR 2)</b>	
Brandegenskaper	Klass A1
Brandmotstånd	Bilaga/Annex C2
<b>Säkerhet vid användning (BWR 4)</b>	
Karaktäristiskt motstånd för alla lastriktningar och felfunktioner för förenklad design	Bilaga/Annex B2, C1
Hållbarhet	Bilaga/Annex B1

Prestandan för ovanstående produkt överensstämmer med den angivna prestandan. Denna prestandadeklaration har utfärdats i enlighet med förordning (EU) nr 305/2011 på eget ansvar av den tillverkare som anges ovan.

Undertecknad på tillverkarens vägnar av:

**Stefan Weustenhagen**  
(Verkställande direktör)  
**Weilerbach, 21.12.2021**

p.p.

**Dipl.-Ing. Detlef Bigalke**  
(Produktutveckling direktör)



Originalen av denna deklarationsförklaring skrevs på tyska. Vid avvikelser i översättningen gäller den tyska versionen.

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

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:

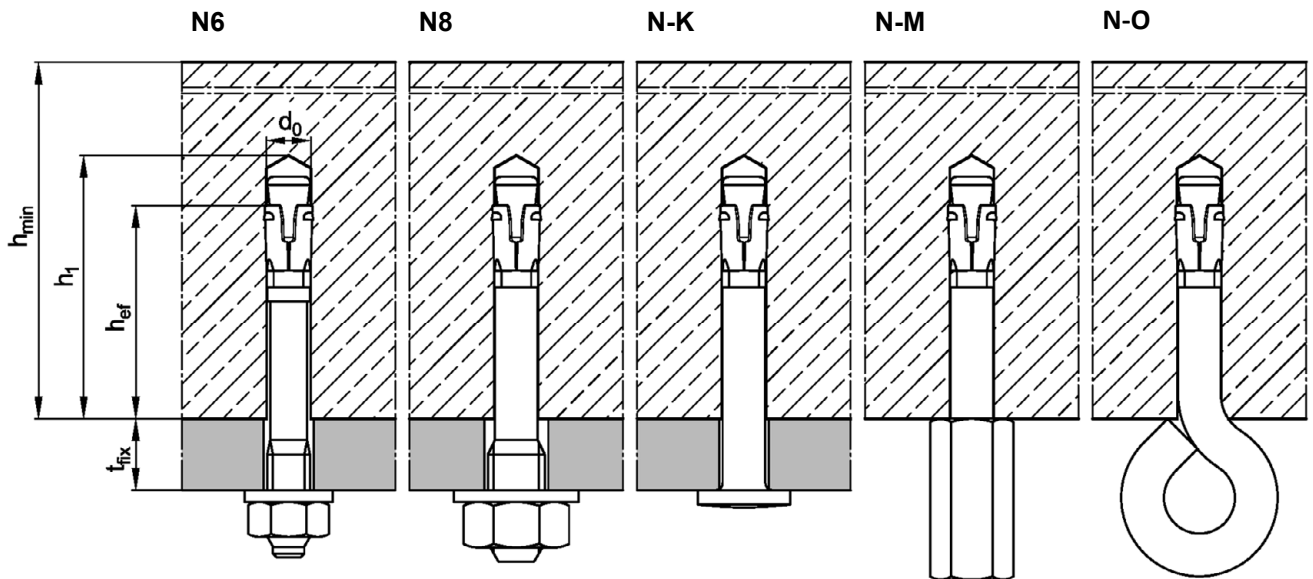
- Drill hole by hammer drilling or vacuum drilling.
- Installation only as supplied by the manufacturer, without replacement of individual parts.
- Fastener installation such that the effective setting depth is complied with. This compliance is ensured, if the admissible thickness of fixture is kept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

Nail Anchor N	<b>Annex B1</b>
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 <sup>1)</sup>		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	

<sup>1)</sup> 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.		
	<b>N6 / N8</b> Thread M6 / M8	<b>N-K</b> Nail head	<b>N-M</b> Coupling nut	<b>N-O</b> 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 <sup>1)</sup>, 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		
<b>Optimized for maximum load</b>								
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 <sup>1) 2)</sup>		$s_{cr}$ [mm]	100					
		for $c_{cr} \geq$ [mm]	200					
Respective edge distance <sup>2)</sup>		$c_{cr}$ [mm]	100					
		for $s_{cr} \geq$ [mm]	200					
Partial factor		$\gamma_M$	1,5					
<b>Optimized for minimum edge distance</b>								
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 <sup>1) 2)</sup>		$c_{cr}$ [mm]	50					
		for $s_{cr} \geq$ [mm]	100					
Partial factor		$\gamma_M$	1,5					
<b>Shear load with lever arm</b>								
Characteristic bending resistance, <b>steel, zinc plated</b>		$M^0_{Rk,s}$ [Nm]	9,2	12,7	<sup>3)</sup>	9,2	12,7	<sup>3)</sup>
Characteristic bending resistance, <b>stainless steel A4 / HCR</b>		$M^0_{Rk,s}$ [Nm]	9,2	13,5	<sup>3)</sup>	9,2	13,5	<sup>3)</sup>
Partial factor		$\gamma_{Ms}$	1,25					

<sup>1)</sup> 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.

<sup>2)</sup> Intermediate values can be linearly interpolated

<sup>3)</sup> No performance assessed.

**Nail Anchor N**

**Performances**  
Characteristic resistance

**Annex C1**

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

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

<sup>1)</sup> 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

<sup>2)</sup> No performance assessed

<sup>3)</sup> 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**