

## DECLARATION OF PERFORMANCE

DoP Nr.: **Sikla-1.1-300\_en**

- ✧ **Unique identification code of product-type:**      **SIKLA Drop-in Anchor AN / AN ES**
- ✧ **Intended use/es:**    Deformation-controlled expansion anchor for use in uncracked concrete, see Annex B
- ✧ **Manufacturer:**    MKT Metall-Kunststoff-Technik GmbH & Co.KG  
Auf dem Immel 2  
67685 Weilerbach
- ✧ **System/s of AVCP:**    1
- ✧ **European Assessment Document:**                              **ETAG 001-4**  
European Technical Assessment:                              **ETA-10/0257, 02.02.2016**  
Technical Assessment Body:                                      DIBt, Berlin  
Notified body/ies:    NB 2873 – Technische Universität Darmstadt

✧ **Declared performance/s:**

Essential characteristics	Performance
<b>Mechanical resistance and stability (BWR 1)</b>	
Characteristic resistance for tension load and shear load	Annex C1 – C4
Edge distances and spacing	Annex C1- C2
Displacements under tension and shear loads	Annex C5
<b>Safety in case of fire (BWR 2)</b>	
Reaction to fire	Class A1
Resistance to fire	NPD (No Performance Determined)

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:



**Günter Brugger**  
(Leitung F+E)  
**Villingen-Schwenningen 27.09.2021**



**Achim Münch**  
(Leitung QM)



The original of this declaration of performance was written in German. In the event of deviations in the translation, the German version shall be valid.

**Table C1: Characteristic values for tension loads, zinc plated steel**

Anchor size			M6x30 <sup>1)</sup>	M8x30 <sup>1)</sup>	M8x40	M10x30 <sup>1)</sup>	M10x40	M12x50	M12x80	M16x65 M16x80	M20x80
Installation safety factor	$\gamma_2 = \gamma_{inst}$	[-]	1,2								
<b>Steel failure</b>											
Characteristic resistance Steel 4.6	$N_{Rk,s}$	[kN]	8,0	14,6	23,2		33,7		62,8	98,0	
Partial safety factor	$\gamma_{Ms}$	[-]	2,0								
Characteristic resistance Steel 5.6	$N_{Rk,s}$	[kN]	10,0	18,3	18,0	20,2	42,1		78,3	122,4	
Partial safety factor	$\gamma_{Ms}$	[-]	2,0		1,5		2,0				
Characteristic resistance Steel 5.8	$N_{Rk,s}$	[kN]	10,0	17,6	18,3	18,0	20,2	40,2	42,1	67,1	106,4
Partial safety factor	$\gamma_{Ms}$	[-]	1,5					1,6			
Characteristic resistance Steel 8.8	$N_{Rk,s}$	[kN]	15,0	17,6	19,9	18,0	20,2	40,2	43,0	67,1	106,4
Partial safety factor	$\gamma_{Ms}$	[-]	1,5					1,6			
<b>Pull-out failure</b>											
Characteristic resistance in concrete C20/25	$N_{Rk,p}$	[kN]	2)	2)	9	2)	2)	2)		2)	2)
Increasing factor for $N_{Rk,p}$	$\psi_C$	[-]	$\left(\frac{f_{ck,cube}}{25}\right)^{0,3}$								
<b>Concrete cone failure and splitting</b>											
Effective anchorage depth	$h_{ef}$	[mm]	30	30	40	30	40	50		65	80
Spacing (edge distance)	$\frac{s_{cr,N}}{2 C_{cr,N}}$	[mm]	3 $h_{ef}$								
	$\frac{s_{cr,sp}}{2 C_{cr,sp}}$	[mm]	190	190	190	230	270	330		400	520
Factor acc. to CEN/TS 1992-4	$k_{ucr}$	[-]	10,1								

<sup>1)</sup> Use restricted to anchoring of structural components statically indeterminate

<sup>2)</sup> Pull-out is not decisive

**SIKLA Drop-in Anchor AN / AN ES**

**Performance**  
Characteristic values for tension loads, zinc plated steel

**Annex C1**

**Table C2: Characteristic values for tension loads, stainless steel A4, HCR**

Anchor size		M6x30 <sup>1)</sup>	M8x30 <sup>1)</sup>	M8x40	M10x40	M12x50 M12x80	M16x65 M16x80	M20x80	
Installation safety factor	$\gamma_2 = \gamma_{inst}$	[-]		1,0					
<b>Steel failure</b>									
Characteristic resistance (property class 70)	$N_{Rk,s}$	[kN]	14,1	23,3	29,4	50,2	83,8	133,0	
Characteristic resistance (property class 80)	$N_{Rk,s}$	[kN]	17,5	23,3	29,4	50,2	83,8	133,0	
Partial safety factor	$\gamma_{Ms}$	[-]		1,87					
<b>Pull-out failure</b>									
Characteristic resistance in concrete C20/25	$N_{Rk,p}$	[kN]	2)	2)	9	2)	2)	2)	
Increasing factor for $N_{Rk,p}$	$\psi_C$	[-]		$\left(\frac{f_{ck,cube}}{25}\right)^{0,5}$					
<b>Concrete cone failure and splitting</b>									
Effective anchorage depth	$h_{ef}$	[mm]	30 <sup>3)</sup>	30	40	40	50	65	80
Spacing (edge distance)	$s_{cr,N} (= 2 c_{cr,N})$	[mm]	3 $h_{ef}$						
	$s_{cr,sp} (= 2 c_{cr,sp})$	[mm]	160	190	190	270	330	400	520
Factor acc. to CEN/TS 1992-4	$k_{ucr}$	[-]		10,1					

<sup>1)</sup> Use restricted to anchoring of structural components statically indeterminate

<sup>2)</sup> Pull-out is not decisive.

<sup>3)</sup> For proof against concrete cone failure as per ETAG 001, annex C or CEN/TS 1992-4-4,  $N_{Rk,e}$  must be multiplied by the factor  $(25/f_{ck,cube})^{0,2}$ .

**SIKLA Drop-in Anchor AN / AN ES**

**Performance**  
Characteristic values for tension loads, stainless steel A4, HCR

**Annex C2**



**Table C3: Characteristic values for shear loads, zinc plated steel**

Anchor size		M6x30 <sup>1)</sup>	M8x30 <sup>1)</sup>	M8x40	M10x30 <sup>1)</sup>	M10x40	M12x50	M12x80	M16x65 M16x80	M20x80
<b>Steel failure without lever arm</b>										
Characteristic resistance Steel 4.6	$V_{Rk,s}$ [kN]	4,0	7,3	11,6	9,6	16,8	31,3	49,0		
Partial safety factor	$\gamma_{Ms}$ [-]	1,67								
Characteristic resistance Steel 5.6	$V_{Rk,s}$ [kN]	5,0	9,1	10,1	9,6	21,1	39,2	61,2		
Partial safety factor	$\gamma_{Ms}$ [-]	1,67			1,25	1,67				
Characteristic resistance Steel 5.8	$V_{Rk,s}$ [kN]	5,0	6,9	10,1	7,2	19,4	21,1	33,5	53,2	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25					1,33			
Characteristic resistance Steel 8.8	$V_{Rk,s}$ [kN]	5,0	6,9	10,1	7,2	19,4	21,5	33,5	53,2	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25					1,33			
Factor of ductility	$k_2$ [-]	1,0								
<b>Steel failure with lever arm</b>										
Characteristic resistance Steel 4.6	$M_{Rk,s}^0$ [Nm]	6,1	15	30	30	52	133	259		
Partial safety factor	$\gamma_{Ms}$ [-]	1,67								
Characteristic resistance Steel 5.6	$M_{Rk,s}^0$ [Nm]	7,6	19	37	37	65	166	324		
Partial safety factor	$\gamma_{Ms}$ [-]	1,67								
Characteristic resistance Steel 5.8	$M_{Rk,s}^0$ [Nm]	7,6	19	37	37	65	166	324		
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Characteristic resistance Steel 8.8	$M_{Rk,s}^0$ [Nm]	12	30	59	60	105	266	519		
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Factor of ductility	$k_2$ [-]	1,0								
<b>Concrete pry-out failure</b>										
Factor k acc. to ETAG 001, Annex C or $k_3$ acc. to CEN/TS	$k_{(3)}$ [-]	1,0					1,5	2,0		
<b>Concrete edge failure</b>										
Effective length of anchor under shear loading	$l_f$ [mm]	30	30	40	30	40	50	65	80	
Outside diameter of anchor	$d_{nom}$ [mm]	8	10	10	12	12	15	20	25	

<sup>1)</sup> Use restricted to anchoring of structural components statically indeterminate

**SIKLA Drop-in Anchor AN / AN ES**

**Performance**  
Characteristic values for shear loads, zinc plated steel

**Annex C3**

**Table C4: Characteristic values for shear loads, stainless steel A4, HCR**

Anchor size		M6x30 <sup>1)</sup>	M8x30 <sup>1)</sup>	M8x40	M10x40	M12x50 M12x80	M16x65 M16x80	M20x80
<b>Steel failure without lever arm</b>								
Characteristic resistance (property class 70)	$V_{Rk,s}$ [kN]	7,0	10,6	13,4	25,1	41,9	66,5	
Characteristic resistance (property class 80)	$V_{Rk,s}$ [kN]	8,7	10,6	13,4	25,1	41,9	66,5	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56						
Factor of ductility	$k_2$ [-]	1,0						
<b>Steel failure with lever arm</b>								
Characteristic resistance (property class 70)	$M^0_{Rk,s}$ [Nm]	11	26	52	92	233	454	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56						
Characteristic resistance (property class 80)	$M^0_{Rk,s}$ [Nm]	12	30	60	105	266	519	
Partial safety factor	$\gamma_{Ms}$ [-]	1,33						
Factor of ductility	$k_2$ [-]	1,0						
<b>Concrete pry-out failure</b>								
Factor $k$ acc. to ETAG 001, Annex C or $k_3$ acc. to CEN/TS	$k_{(3)}$ [-]	1,0	1,7	1,7	2,0			
<b>Concrete edge failure</b>								
Effective length of anchor under shear loading	$l_r$ [mm]	30	30	40	40	50	65	80
Outside diameter of anchor	$d_{nom}$ [mm]	8	10	10	12	15	20	25

<sup>1)</sup> Use restricted to anchoring of structural components statically indeterminate

**SIKLA Drop-in Anchor AN / AN ES**

**Performance**  
Characteristic values for shear loads, stainless steel A4, HCR

**Annex C4**



**Table C5: Displacements under tension loads**

Anchor size			M6x30	M8x30	M8x40	M10x30	M10x40	M12x50 M12x80	M16x65 M16x80	M20x80
<b>Steel zinc plated</b>										
Tension load in non-cracked concrete	N	[kN]	3	3	3,6	3,3	4,8	6,4	10	14,8
Displacement	$\delta_{N0}$	[mm]	0,24							
	$\delta_{N\infty}$	[mm]	0,36							
<b>Stainless steel A4 / HCR</b>										
Tension load in non-cracked concrete	N	[kN]	4	4	4,3	-	6,1	8,5	12,6	17,2
Displacement	$\delta_{N0}$	[mm]	0,12							
	$\delta_{N\infty}$	[mm]	0,24							

**Table C6: Displacements under shear loads**

Anchor size			M6x30	M8x30	M8x40	M10x30	M10x40	M12x50 M12x80	M16x65 M16x80	M20x80
<b>Steel zinc plated</b>										
Shear load in non-cracked concrete	V	[kN]	2	4	4	5,7	4,0	11,3	18,8	32,2
Displacement	$\delta_{V0}$	[mm]	0,9	0,9	1,0	1,5	0,6	1,2	1,2	1,6
	$\delta_{V\infty}$	[mm]	1,3	1,3	1,5	2,3	0,9	1,9	1,9	2,4
<b>Stainless steel A4 / HCR</b>										
Shear load in non-cracked concrete	V	[kN]	3,5	5,2	5,2	-	6,5	11,5	19,2	30,4
Displacement	$\delta_{V0}$	[mm]	1,9	1,1	0,7	-	1,0	1,7	2,4	2,6
	$\delta_{V\infty}$	[mm]	2,8	1,6	1,0	-	1,5	2,6	3,6	3,8

**SIKLA Drop-in Anchor AN / AN ES**

Performance  
Displacements

**Annex C5**