

**DECLARATION OF PERFORMANCE**  
**DoP No. Sikla -232 - en**

1. Unique identification code of the product-type: **Sikla Drop-in Anchor E / ES**
2. Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4):

**ETA-10/0257, Annex A3**  
**Batch number: see packaging of the product**

3. Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer:

<b>generic type</b>	deformation-controlled expansion anchor
<b>for use in</b>	non-cracked concrete C20/25 - C50/60 (EN 206)
<b>option</b>	7
<b>loading</b>	static or quasi-static
<b>material</b>	<u>zinc-plated steel:</u> dry internal conditions only covered sizes: E/ES M6x30, E/ES M8x30, E/ES M8x40, ES M10x30, E/ES M10x40, E/ES M12x50, E/ES M12x80, E/ES M16x65, E/ES M16x80, E M20x80  <u>stainless steel (marking A4):</u> internal and external use without particular aggressive conditions covered sizes: E/ES M6x30, E/ES M8x30, E/ES M8x40, E/ES M10x40, E/ES M12x50, E/ES M12x80, E/ES M16x65, E/ES M16x80, E M20x80  <u>high corrosion resistant steel (marking HCR):</u> internal and external use with particular aggressive conditions covered sizes: E/ES M6x30, E/ES M8x30, E/ES M8x40, E/ES M10x40, E/ES M12x50, E/ES M12x80, E/ES M16x65, E/ES M16x80, E M20x80
<b>temperature range</b> (if applicable)	--

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5):

**Sikla Holding Ges.m.b.H**  
**Kornstraße 14**  
**4614 Marchtrenk**  
**Austria**

5. Where applicable, name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2): --
6. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V: **System 1**
7. In case of the declaration of performance concerning a construction product covered by a harmonised standard: --

8. In case of the declaration of performance concerning a construction product for which a European Technical Assessment has been issued:

issued **Deutsches Institut für Bautechnik, Berlin**  
 on the basis of **ETA-10/0257**  
**ETAG 001-4**

The notified body 1343-CPR performed under system 1:

- (i) determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product;
- (ii) initial inspection of the manufacturing plant and of factory production control;
- (iii) continuous surveillance, assessment and evaluation of factory production control.

and issued: Certificate of constancy of performance 1343-CPR-M 557-3/11.14

9. Declared performance:

Essential Characteristics	Design Method	Performance	Harmonized Technical Specification
characteristic resistance for tension	ETAG 001, Annex C	Annex C1-C2	ETA 001
	CEN/TS 1992-4		
characteristic resistance for shear	ETAG 001, Annex C	Annex C3-C4	
	CEN/TS 1992-4		
displacement for serviceability limit state	ETAG 001, Annex C	Annex C5	
	CEN/TS 1992-4		

Where pursuant to Article 37 or 38 in the Specific Technical Documentation has been used, the requirements with which the product complies: --

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:

*Silva Holding GmbH*  
 Kornstrasse 4  
 A-4614 Marchtrenk  
 Dieter Klauß  
 (Geschäftsführer)  
 VS – Schweningen, 02.02.16



**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					1,33			
Characteristic resistance Steel 8.8	$M_{Rk,s}^0$ [Nm]	12	30		59	60		105	266	519
Partial safety factor	$\gamma_{Ms}$ [-]	1,25					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					1,5		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**