



# Leistungserklärung Declaration of Performance



Chemische Injektionsdübel für die Anwendung im gerissenen und ungerissenen Beton nach ETA-17/0182  
Bonded injection type anchor for use in cracked and non-cracked concrete according to ETA-17/0182

Leistungserklärung (DoP) gemäß der Verordnung (EU) Nr. 305/2011 (Bauproduktenverordnung - BauPVo) des Europäischen Parlaments und des Rates vom 9. März 2011 zur Festlegung harmonisierter Bedingungen für die Vermarktung von Bauprodukten und zur Aufhebung der Richtlinie 89/106/EWG (Bauproduktenrichtlinie - BPR) des Rates.  
Declaration of performance (DoP) according to the regulation (EU) No 305/2011 (Construction Products Regulation - CPR) of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC (Construction Products Directive - CPD).

DoP Nr. / DoP No	<b>DOP – 10</b>
Gültig ab / valid from	01. März 2018 / 01. March 2018
Name des Bauproduktes / name of the construction product	SIHGA BeziFee
Hersteller / manufacturer	SIHGA GmbH, Gewerbepark Kleinreith 4, 4694 Ohlsdorf, Austria
Name der technischen Bewertungsstelle Name of the Technical Assessment Body	Technical and Test Institute for Construction Prague Prosecká 811/76a, 190 00 Prague, Czech Republic
System zur Bewertung und Überprüfung der Leistungsbeständigkeit des Bauproduktes. System of assessment and verification of constancy of performance of the construction Product	1
Kennnummer und Name der notifizierten Stelle Identification number and name of the notified body	1020 – Technical and Test Institute for Construction Prague Prosecká 811/76a, 190 00 Prague, Czech Republic
Nummer der Konformitätsbescheinigung für die werkseigene Produktionskontrolle Number of the certificate of conformity of the factory production control	1020 – CPR – 090-037419

Erklärte Leistung nach ETA-17/0182/ declared performance according to ETA -17/0182

### Mechanische Festigkeit und Standsicherheit / Mechanical resistance and stability (BWR 1)

Wesentliches Merkmal Essential characteristic	Leistung Performance
Charakteristische Werte für Bemessung nach ETAG 001 Characteristic values for calculation according to ETAG 001	Siehe Anhang, insbesondere Anhang A See appendix, in particular appendix A
Verschiebungen unter Zug- und Querbeanspruchung Displacement under tension and shear load	Siehe Anhang, insbesondere Anhang B See appendix, in particular appendix B

### Brandschutz / Safety in case of fire (BWR 2)

Wesentliches Merkmal Essential characteristic	Leistung Performance
Brandverhalten / Reaction to fire	Die Dübel erfüllen die Anforderungen für die Klasse A1 Anchorage satisfy requirements for Class A1
Feuerwiderstand / Resistance to fire	Keine Leistung festgestellt / No performance assessed

Die Leistung der genannten Produkte entspricht der erklärten Leistung. Verantwortlich für die Erstellung der Leistungserklärung ist allein der Hersteller.

*The performance of the mentioned products is in conformity with the declared performance. This declaration of performance is issued under the sole responsibility of the manufacturer.*

Unterzeichnet für den Hersteller und im Namen des Herstellers  
von:

Signed for and on behalf of the manufacturer by:

Jane-Beryl Simmer, MBA  
Geschäftsführende Gesellschafterin / Managing Director and  
shareholder  
Ohlsdorf den 10.04.2018 / Ohlsdorf 10.04.2018

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## Anhang A: Charakteristische Werte für Bemessung nach ETAG 001

### Appendix A: Characteristic values for calculation according to ETAG 001

Charakteristische Werte der Tragfähigkeit bei Zugbeanspruchung im ungerissenen Beton für Gewindestangen

Characteristic values of resistance for threaded rods under tension loads in non-cracked concrete

Anchor size threaded rod				M8	M10	M12	M16	M20	M24	M27	M30
<b>Steel failure</b>											
Characteristic tension resistance		$N_{Rk,s}$	[kN]	$A_s \times f_{tk}$							
<b>Combined pull-out and concrete failure</b>											
Characteristic bond resistance in non-cracked concrete C20/25											
Temperature range I: 40°C / 24°C	dry and wet concrete	$T_{Rk,ucr}$	[N/mm <sup>2</sup> ]	8,5	10,0	9,5	9,0	8,5	8,0	6,5	5,5
	flooded bore hole	$T_{Rk,ucr}$	[N/mm <sup>2</sup> ]	6,0	7,5	7,5	7,0	No Performance Determined			
Temperature range II: 80°C / 50°C	dry and wet concrete	$T_{Rk,ucr}$	[N/mm <sup>2</sup> ]	6,5	7,5	7,5	7,5	7,5	7,0	6,5	5,5
	flooded bore hole	$T_{Rk,ucr}$	[N/mm <sup>2</sup> ]	4,5	5,5	5,5	5,5	No Performance Determined			
Increasing factors for concrete $\psi_c$		C30/37		1,04							
		C40/50		1,08							
		C50/60		1,10							
Factor according to CEN/TS 1992-4-5 Section 6.2.2.3		$k_b$	[-]	10,1							
<b>Concrete cone failure</b>											
Factor according to CEN/TS 1992-4-5 Section 6.2.3.1		$k_{ucr}$	[-]	10,1							
Edge distance		$c_{cr,N}$	[mm]	1,5 $h_{ef}$							
Axial distance		$s_{cr,N}$	[mm]	3,0 $h_{ef}$							
<b>Splitting failure</b>											
Edge distance $c_{cr,sp}$ [mm] for		$h / h_{ef} \geq 2,0$		1,0 $h_{ef}$							
		$2,0 > h / h_{ef} > 1,3$		4,6 $h_{ef} - 1,8 h$							
		$h / h_{ef} \leq 1,3$		2,26 $h_{ef}$							
Axial distance		$s_{cr,sp}$	[mm]	2 $c_{cr,sp}$							
Installation safety factor (dry and wet concrete)		$\gamma_2 = \gamma_{inst}$		1,2						1,4	
Installation safety factor (flooded bore hole)		$\gamma_2 = \gamma_{inst}$		1,4				No Performance Determined			

Charakteristische Werte der Tragfähigkeit bei Zugbeanspruchung im gerissenen Beton für Gewindestangen

Characteristic values of resistance for threaded rods under tension loads in cracked concrete

Anchor size threaded rod				M12	M16	M20	M24	M27	
<b>Steel failure</b>									
Characteristic tension resistance		$N_{Rk,s} = N_{Rk,s,crack,C1}$	[kN]	$A_s \times f_{tk}$					
<b>Combined pull-out and concrete failure</b>									
Characteristic bond resistance in cracked concrete C20/25									
Temperature range I: 40°C/24°C	dry and wet concrete	$T_{Rk,cr}$	[N/mm <sup>2</sup> ]	4,5	4,5	4,5	4,5	NPD	
		$T_{Rk,cr,seis,C1}$	[N/mm <sup>2</sup> ]	3,1	3,1	3,1	3,1		
	flooded bore hole	$T_{Rk,cr}$	[N/mm <sup>2</sup> ]	4,5	4,5	No Performance Determined			
Temperature range II: 80°C/50°C	dry and wet concrete	$T_{Rk,cr}$	[N/mm <sup>2</sup> ]	3,0	3,0	3,0	3,0	NPD	
		$T_{Rk,cr,seis,C1}$	[N/mm <sup>2</sup> ]	2,0	2,0	2,0	2,1		
	flooded bore hole	$T_{Rk,cr}$	[N/mm <sup>2</sup> ]	3,0	3,0	No Performance Determined			
Increasing factors for concrete $\psi_c$	C30/37		1,04						
	C40/50		1,08						
	C50/60		1,10						
Factor according to CEN/TS 1992-4-5 Section 6.2.2.3		$k_b$	[-]	7,2					
<b>Concrete cone failure</b>									
Factor according to CEN/TS 1992-4-5 Section 6.2.3.1		$k_{cr}$	[-]	7,2					
Edge distance		$c_{cr,N}$	[mm]	1,5 $h_{ef}$					
Axial distance		$s_{cr,N}$	[mm]	3,0 $h_{ef}$					
Installation safety factor (dry and wet concrete)		$\gamma_2 = \gamma_{inst}$		1,2					
Installation safety factor (flooded bore hole)		$\gamma_2 = \gamma_{inst}$		1,4			No Performance Determined		

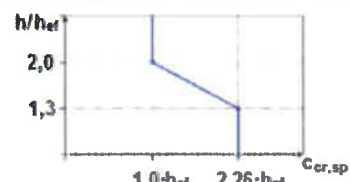
Charakteristische Werte der Tragfähigkeit bei Querbeanspruchung im gerissenen und ungerissenen Beton für Gewindestangen

Characteristic values of resistance for threaded rods under shear loads in cracked and non-cracked concrete

Anchor size threaded rod			M8	M10	M12	M16	M20	M24	M27	M30
<b>Steel failure without lever arm</b>										
Characteristic shear resistance	$V_{Rk,s}$	[kN]	0.5 x $A_s$ x $f_{tk}$							
	$V_{Rk,s,cr,C1}$	[kN]	No Performance Determined				0.35 x $A_s$ x $f_{tk}$			No Performance Determined
Ductility factor according to CEN/TS 1992-4-5 Section 6.3.2.1	$k_2$		0.8							
<b>Steel failure with lever arm</b>										
Characteristic bending moment	$M_{Rk,s}^0$	[Nm]	1.2 * $W_{ef}$ * $f_{tk}$							
	$M_{Rk,s,cr,C1}^0$	[Nm]	No Performance Determined							
<b>Concrete pry-out failure</b>										
Factor in equation (5.7) of Technical Report TR029 Factor in equation (27) of CEN/TS 1992-4-5 Section 6.3.3	$k_{(3)}$		2.0							
Installation safety factor	$\gamma_2 = \gamma_{inst}$		1.0							
<b>Concrete edge failure</b>										
Effective length of anchor	$l_f$	[mm]	$l_f = \min(h_{ef}; 8 d_{nom})$							
Outside diameter of anchor	$d_{nom}$	[mm]	8	10	12	16	20	24	27	30
Installation safety factor	$\gamma_2 = \gamma_{inst}$		1.0							

Charakteristische Werte der Tragfähigkeit bei Zugbeanspruchung im ungerissenen Beton für Betonstahl

Characteristic values of resistance for rebar under tension loads in non-cracked concrete

Anchor size reinforcing bar				ø8	ø10	ø12	ø16	ø20	ø25	ø32
<b>Steel failure</b>										
Characteristic tension resistance	$N_{Rk,s}$	[kN]	$A_s$ x $f_{tk}$							
<b>Combined pull-out and concrete failure</b>										
Characteristic bond resistance in non-cracked concrete C20/25										
Temperature range I: 40°C/24°C	Dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm <sup>2</sup> ]	8.5	10.0	10.0	9.0	9.0	9.0	5.5
	Flooded bore hole	$\tau_{Rk,ucr}$	[N/mm <sup>2</sup> ]	6.0	7.5	7.5	7.5	No Performance Determined		
Temperature range II: 80°C/50°C	Dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm <sup>2</sup> ]	6.5	7.5	7.5	7.5	7.0	7.0	5.0
	Flooded bore hole	$\tau_{Rk,ucr}$	[N/mm <sup>2</sup> ]	4.5	5.5	5.5	5.5	No Performance Determined		
Increasing factors for concrete $\psi_c$	C30/37			1.04						
	C40/50			1.08						
	C50/60			1.10						
Factor according to CEN/TS 1992-4-5 Section 6.2.2.3	$k_s$	[-]		10.1						
<b>Concrete cone failure</b>										
Factor according to CEN/TS 1992-4-5 Section 6.2.2.3	$k_{ucr}$	[-]		10.1						
Edge distance	$c_{cr,N}$	[mm]		1.5 $h_{ef}$						
Axial distance	$s_{cr,N}$	[mm]		3.0 $h_{ef}$						
<b>Splitting failure</b>										
Edge distance $c_{cr,sp}$ [mm] for	$h / h_{ef} \geq 2.0$			1.0 $h_{ef}$						
	$2.0 > h / h_{ef} > 1.3$			4.6 $h_{ef} - 1.8 h$						
	$h / h_{ef} \leq 1.3$			2.26 $h_{ef}$						
										
Axial distance	$s_{cr,sp}$	[mm]		2 $c_{cr,sp}$						
Partial safety factor (dry and wet concrete)	$\gamma_2 = \gamma_{inst}$			1.2						
Partial safety factor (flooded bore hole)	$\gamma_2 = \gamma_{inst}$			1.4				NPD		

Charakteristische Werte der Tragfähigkeit bei Querbeanspruchung im ungerissenen Beton für Betonstahl

Characteristic values of resistance for rebar under shear loads in non-cracked concrete

Anchor size reinforcing bar		ø8	ø10	ø12	ø16	ø20	ø25	ø32	
<b>Steel failure without lever arm</b>									
Characteristic shear resistance	$V_{FR,s}$	[kN]	$0.50 \times A_s \times f_{tk}$						
Ductility factor according to CEN/TS 1992-4-5 Section 6.3.2.1	$k_2$		0.8						
<b>Steel failure with lever arm</b>									
Characteristic bending moment	$M_{FR,s}^0$	[Nm]	$1.2 \times W_{el} \times f_{tk}$						
<b>Concrete pry-out failure</b>									
Factor in equation (5.7) of Technical Report TR029 Factor in equation (27) of CEN/TS 1992-4-5 Section 6.3.3	$k_{(3)}$		2.0						
Installation safety factor	$\gamma_2 = \gamma_{inst}$		1.0						
<b>Concrete edge failure</b>									
Effective length of anchor	$l_f$	[mm]	$l_f = \min(h_{ef}; 8 d_{nom})$						
Outside diameter of anchor	$d_{nom}$	[mm]	8	10	12	16	20	25	32
Installation safety factor	$\gamma_2 = \gamma_{inst}$		1.0						

## Anhang B: Verschiebungen unter Zug- und Querbeanspruchung

### Appendix B: Displacement under tension and shear load

Verschiebung unter Zugbeanspruchung und Querbeanspruchung für Gewindestange

Displacement of threaded rod under tension and shear load

Anchor size			M8	M10	M12	M16	M20	M24	M27	M30
Non-cracked concrete										
Tension load	F	[kN]	6,3	7,9	11,9	15,9	23,6	29,8	37,7	45,6
Displacement	$\delta_{N0}$	[mm]	0,3	0,3	0,3	0,3	0,4	0,5	0,5	0,5
	$\delta_{N\infty}$	[mm]	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Shear load	F	[kN]	3,1	5,0	7,2	13,5	21,0	30,3	39,4	48,0
Displacement	$\delta_{V0}$	[mm]	1,5	1,5	1,5	1,5	2,0	2,5	2,5	2,5
	$\delta_{V\infty}$	[mm]	2,3	2,3	2,3	2,3	3,0	3,8	3,8	3,8
Cracked concrete										
Tension load	F	[kN]			7,4	13,1	20,5	24,6		
Displacement	$\delta_{N0}$	[mm]			0,7	0,7	0,7	0,6		

Verschiebung unter Zugbeanspruchung und Querbeanspruchung für Gewindestange

Displacement of rebar under tension and shear load

Rebar size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32	
Non-cracked concrete										
Tension load	F	[kN]	7,9	9,9	13,9	23,8	29,8	55,6	55,6	
Displacement	$\delta_{N0}$	[mm]	0,3	0,3	0,3	0,4	0,4	0,5	0,5	
	$\delta_{N\infty}$	[mm]	0,5	0,5	0,5	0,5	0,5	0,5	0,5	
Shear load	F	[kN]	5,9	9,3	13,3	23,7	37,0	57,9	94,8	
Displacement	$\delta_{V0}$	[mm]	0,3	0,4	0,4	0,4	0,4	0,5	0,9	
	$\delta_{V\infty}$	[mm]	0,5	0,6	0,6	0,6	0,6	0,8	1,4	