EN

DECLARATION OF PERFORMANCE

DoP No. Hilti HIT-RE 100 1343-CPR-M500-20-07.14

1. Unique identification code of the product-type:

Injection System Hilti HIT-RE 100

2. Type, batch or serial number as required pursuant to Article 11(4):

See ETA-15/0882 (22.04.2016), annex A2. Batch number: see packaging of the product.

3. Intended use of the construction product, in accordance with the applicable harmonised technical specification:

Generic type	Bonded anchor, Injection system
For use in	concrete (C20/25 to C50/60): cracked and non-cracked, size 8 mm to size 32 mm
Option / Category	Option 1
Loading	static, quasi-static
Material	Galvanized steel: For dry internal use only HIT-RE 100 + HIT-V (threaded rod) : M8, M10, M12, M16, M20, M24, M27, M30 HIT-RE 100 + HAS-(E) (threaded rod) : M8, M10, M12, M16, M20, M24, M27, M30 Stainless steel: For internal and external use with no particular aggressive conditions, industrial or marine atmosphere allowed HIT-RE 100 + HIT-V-R (threaded rod) : M8, M10, M12, M16, M20, M24, M27, M30 HIT-RE 100 + HAS-(E)R (threaded rod) : M8, M10, M12, M16, M20, M24, M27, M30 HIT-RE 100 + HZA-R (tension anchor) : M12, M16, M20, M24 High corrosion resistance steel: For internal and external use with particular aggressive conditions, industrial or marine atmosphere allowed HIT-RE 100 + HIT-V-HCR (threaded rod) : M8, M10, M12, M16, M20, M24, M27, M30 HIT-RE 100 + HAS-(E)HCR (threaded rod) : M8, M10, M12, M16, M20, M24, M27, M30 rebar class B or C: HIT-RE 100 + rebar (may be used as anchor designed in accordance with EOTA TR 029 or CEN/TS 1992-4:2009) : Ø 8, Ø 10, Ø 12, Ø 14, Ø 16, Ø 20, Ø 25, Ø 26, Ø 28, Ø 30, Ø 32
Temperature range	Range I : -40° C to +40° C (short term), +24° C (long term) Range II : -40° C to +58° C (short term), +35° C (long term) Range III : -40° C to +70° C (short term), +43° C (long term)

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

Hilti Corporation, Feldkircherstrasse 100, FL-9494 Schaan, Principality of Liechtenstein

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:

Deutsches Institut für Bautechnik (DIBt) issued European Technical Assessment ETA-15/0882 (22.04.2016) on the basis of ETAG 001 Part 1, 5; the notified body 1343-CPR performed third party tasks as set out in Annex V under System 1 and issued certificate of conformity 1343-CPR-M500-20-07.14.

9. Declared performance:

Essential characteristics	Design method	Performance	Harmonized Technical Specification
Characteristic resistance for tension	EOTA TR 029, method A	ETA-15/0882: tables C1, C5, C9	ETAG 001 Part 1, 5.
	CEN/TS 1992-4		
Characteristic resistance for shear	EOTA TR 029, method A	ETA-15/0882: tables C2, C6, C10	
	CEN/TS 1992-4		
Minimum spacing and minimum edge distance	EOTA TR 029, method A	ETA-15/0882: tables B2, B3, B4	
	CEN/TS 1992-4		
Displacement for serviceability limit state	EOTA TR 029, method A	ETA-15/0882: table C3, C4, C7, C8, C11, C12	
	CEN/TS 1992-4		

10. The performance of the product identified in points 1, 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:

Raimund Zaggl
Business Unit Head
Business Unit Anchors

Seppo Perämäki
Head of Quality
Business Unit Anchors

Hilti Corporation
Schaan, 22.04.2016

Installation:

- Use category:
  - dry or wet concrete or in flooded holes
- Drilling technique:
  - hammer drilling
- Overhead installation is admissible.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

Table B2: Installation parameters of threaded rod and HIT-V-... and HAS-(E)

Threaded rod, HIT-V-...			M8	M10	M12	M16	M20	M24	M27	M30
Diameter of element	$d^{1)} = d_{nom}{}^{2)}$	[mm]	8	10	12	16	20	24	27	30
Nominal diameter of drill bit	d_0	[mm]	10	12	14	18	22	28	30	35
Threaded rod, HIT-V-...: Effective embedment depth and drill hole depth	$h_{ef} = h_0$	[mm]	60 to 160	60 to 200	70 to 240	80 to 320	90 to 400	96 to 480	108 to 540	120 to 600
HAS-(E)-...: Effective embedment depth and drill hole depth	$h_{ef} = h_0$	[mm]	80	90	110	125	170	210	240	270
Maximum diameter of clearance hole in the fixture [3)]	d_f	[mm]	9	12	14	18	22	26	30	33
Minimum thickness of concrete member	h_{min}	[mm]	h_{ef} + 30 ≥ 100 mm			$h_{ef} + 2 \cdot d_0$				
Maximum torque moment	T_{max}	[Nm]	10	20	40	80	150	200	270	300
Minimum spacing	s_{min}	[mm]	40	50	60	80	100	120	135	150
Minimum edge distance	c_{min}	[mm]	40	50	60	80	100	120	135	150

[1)] Parameter for design according to "EOTA Technical Report TR 029".

[2)] Parameter for design according to "CEN/TS 1992-4:2009".

[3)] For larger clearance hole see "TR 029 section 1.1".

Table B3: Installation parameters of Hilti tension anchor HZA-R

Hilti tension anchor HZA-R			M12	M16	M20	M24
Rebar diameter	φ	[mm]	12	16	20	25
Nominal embedment depth and drill hole depth	$h_{nom} = h_0$	[mm]	170 to 240	180 to 320	190 to 400	200 to 500
Effective embedment depth ($h_{ef} = h_{nom} - l_e$)	h_{ef}	[mm]	$h_{nom} - 100$			
Length of smooth shaft	l_e	[mm]	100			
Nominal diameter of drill bit	d_0	[mm]	16	20	24[2] / 25	30[2] / 32
Maximum diameter of clearance hole in the fixture [1]	d_f	[mm]	14	18	22	26
Maximum torque moment	T_{max}	[Nm]	40	80	150	200
Minimum thickness of concrete member	h_{min}	[mm]	$h_{nom} + 2 \cdot d_0$			
Minimum spacing	s_{min}	[mm]	65	80	100	130
Minimum edge distance	c_{min}	[mm]	45	50	55	60

[1] For larger clearance hole see "TR 029 section 1.1".

[2] Each of the two given values can be used.

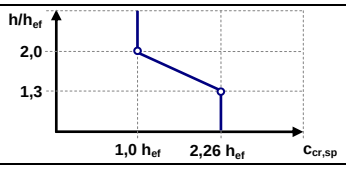
Table B4: Installation parameters of reinforcing bar (rebar)

Reinforcing bar (rebar)			φ 8	φ 10	φ 12		φ 14	φ 16	φ 20	φ 25	φ 26	φ 28	φ 30	φ 32
Diameter	φ	[mm]	8	10	12		14	16	20	25	26	28	30	32
Effective embedment depth and drill hole depth	$h_{ef} = h_0$	[mm]	60 to 160	60 to 200	70 to 240		75 to 280	80 to 320	90 to 400	100 to 500	104 to 520	112 to 560	120 to 600	128 to 640
Nominal diameter of drill bit	d_0	[mm]	10 / 12[1]	12 / 14[1]	14[1]	16[1]	18	20	25 / 24[1]	32 / 30[1]	32	35	37	40
Minimum thickness of concrete member	h_{min}	[mm]	$h_{ef} + 30$ ≥ 100 mm				$h_{ef} + 2 \cdot d_0$							
Minimum spacing	s_{min}	[mm]	40	50	60		70	80	100	125	130	140	150	160
Minimum edge distance	c_{min}	[mm]	40	50	60		70	80	100	125	130	140	150	160

[1] Each of the two given values can be used.

Table C1: Characteristic resistance for threaded rods under tension load in concrete

Threaded rod, HIT-V-... and HAS-(E)				M8	M10	M12	M16	M20	M24	M27	M30
Installation safety factor		γ_2[1] = γ_{inst}[2]	[-]	1,4							
Steel failure threaded rods											
Characteristic resistance		$N_{Rk,s}$	[kN]	$A_s \cdot f_{uk}$							
Combined pullout and concrete cone failure											
Characteristic bond resistance in non-cracked concrete C20/25											
Temperature range I:	40°C / 24°C	$\tau_{Rk,ucr}$	[N/mm²]	15			14		12		
Temperature range II:	58°C / 35°C	$\tau_{Rk,ucr}$	[N/mm²]	10			9		8,5		
Temperature range III:	70°C / 43°C	$\tau_{Rk,ucr}$	[N/mm²]	6			5,5		5		
Factor acc. to section 6.2.2.3 of CEN/TS 1992-4:2009 part 5		k_8 = k_{ucr}[2]	[-]	10,1							
Characteristic bond resistance in cracked concrete C20/25											
Temperature range I:	40°C / 24°C	$\tau_{Rk,cr}$	[N/mm²]	-	7		6,5	6		5,5	
Temperature range II:	58°C / 35°C	$\tau_{Rk,cr}$	[N/mm²]	-	4,5			4		3,5	
Temperature range III:	70°C / 43°C	$\tau_{Rk,cr}$	[N/mm²]	-	2,5			2			
Factor acc. to section 6.2.2.3 of CEN/TS 1992-4:2009 part 5		k_8 = k_{ucr}[2]	[-]	7,2							
Increasing factors for τ_{Rk} in concrete		ψ_c	C30/37	1,00							
			C40/50	1,00							
			C50/60	1,00							
Splitting failure											
Edge distance $c_{cr,sp}$ [mm] for		h / h_{ef} ≥ 2,0		1,0 · h_{ef}							
		2,0 > h / h_{ef} > 1,3		4,6 · h_{ef} - 1,8 · h							
		h / h_{ef} ≤ 1,3		2,26 · h_{ef}							
Spacing		$s_{cr,sp}$	[mm]	2 · $c_{cr,sp}$							



[1] Parameter for design according to EOTA Technical Report TR 029.

[2] Parameter for design according to CEN/TS 1992-4:2009.

Table C2: Characteristic resistance for threaded rods under shear load in concrete

Threaded rod, HIT-V-... and HAS-(E)			M8	M10	M12	M16	M20	M24	M27	M30
Steel failure without lever arm										
Factor according to section 6.3.2.1 of CEN/TS 1992-4 :2009 part 5	k_2 [2]	[-]	1,0							
Characteristic resistance	$V_{Rk,s}$	[kN]	$0,5 \cdot A_s \cdot f_{uk}$							
Steel failure with lever arm										
Characteristic resistance	$M^0_{Rk,s}$	[Nm]	$1,2 \cdot W_{el} \cdot f_{uk}$							
Concrete pry-out failure										
Factor in equation (5.7) of TR 029 or acc. to equation (27) of CEN/TS 1992-4 :2009 part 5	$k^{1)} = k_3$ [2]	[-]	2,0							
Concrete edge failure										
See section 5.2.3.4 of TR 029 « Design of bonded anchors »										

[1] Parameter for design according to "EOTA Technical Report TR 029".

[2] Parameter for design according to CEN/TS 1992-4:2009.

Table C3: Displacements for threaded rod under tension load

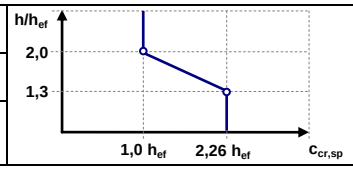
Threaded rod, HIT-V-... and HAS-(E)			M8	M10	M12	M16	M20	M24	M27	M30
Non-cracked concrete										
Temperature range I: 40°C / 24°C										
Displacement	δ_{N0}	[mm/(N/mm²)]	0,02		0,03	0,04	0,05	0,06		0,07
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,04	0,05	0,06	0,08	0,11	0,13	0,15	0,17
Temperature range II: 58°C / 35°C										
Displacement	δ_{N0}	[mm/(N/mm²)]	0,03	0,04	0,05	0,07	0,09	0,11	0,13	0,14
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,07	0,09	0,10	0,14	0,18	0,22	0,25	0,28
Temperature range III: 70°C / 43°C										
Displacement	δ_{N0}	[mm/(N/mm²)]	0,07	0,09	0,10	0,14	0,18	0,22	0,25	0,28
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,09	0,12	0,15	0,20	0,26	0,31	0,35	0,40
Cracked concrete										
Temperature range I: 40°C / 24°C										
Displacement	δ_{N0}	[mm/(N/mm²)]	-	0,04	0,05		0,06	0,07	0,08	
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	-	0,23						
Temperature range II: 58°C / 35°C										
Displacement	δ_{N0}	[mm/(N/mm²)]	-	0,08	0,09	0,11	0,13	0,14	0,15	0,17
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	-	0,38						
Temperature range III: 70°C / 43°C										
Displacement	δ_{N0}	[mm/(N/mm²)]	-	0,16	0,18	0,22	0,25	0,28	0,31	0,33
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	-	0,54						

Table C4: Displacements for threaded rod under shear load

Threaded rod, HIT-V-... and HAS-(E)			M8	M10	M12	M16	M20	M24	M27	M30
Displacement	δ_{V0}	[mm/kN]	0,06		0,05	0,04		0,03		
Displacement	$\delta_{V\infty}$	[mm/kN]	0,09	0,08		0,06		0,05		

Table C5: Characteristic resistance for Hilti tension anchor HZA-R under tension load in concrete

HZA-R				M12	M16	M20	M24
Rebar diameter		ϕ	[mm]	12	16	20	25
Installatioin safety factor		γ_2[2] = γ_{inst}[3]	[-]	1,4			
Steel failure							
Characteristic resistance HZA-R		$N_{Rk,s}$	[kN]	62	111	173	248
Partial safety factor		γ_{Ms}[1]	[-]	1,4			
Combined pullout and concrete cone failure							
Characteristic bond resistance in non-cracked concrete C20/25							
Temperature range I:	40°C / 24°C	$\tau_{Rk,ucr}$	[N/mm²]	14	12		11
Temperature range II:	58°C / 35°C	$\tau_{Rk,ucr}$	[N/mm²]	9	8		7
Temperature range III:	70°C / 43°C	$\tau_{Rk,ucr}$	[N/mm²]	5,5		5	
Factor acc. to section 6.2.2.3 of CEN/TS 1992-4:2009 part 5		k_8 = k_{ucr}[3]	[-]	10,1			
Characteristic bond resistance in cracked concrete C20/25							
Temperature range I:	40°C / 24°C	$\tau_{Rk,cr}$	[N/mm²]	7	6,5	6	
Temperature range II:	58°C / 35°C	$\tau_{Rk,ucr}$	[N/mm²]	4,5	4		
Temperature range III:	70°C / 43°C	$\tau_{Rk,cr}$	[N/mm²]	2,5		2	
Factor acc. to section 6.2.2.3 of CEN/TS 1992-4:2009 part 5		k_8 = k_{cr}[3]	[-]	7,2			
Increasing factors for τ_{Rk} in concrete		ψ_c	C30/37	1,00			
			C40/50	1,00			
			C50/60	1,00			
Embedment depth for calculation of $N^0_{Rk,p}$ acc. eq. 5.2a (TR 029 §5.2.2.3)	HZA-R	h_{ef}	[mm]	h_{nom} -100			
Concrete cone failure							
Embedment depth for calculation of $N^0_{Rk,c}$ acc. eq. 5.3a (TR 029 §5.2.2.4)	HZA-R	h_{ef}	[mm]	h_{nom}			
Splitting failure relevant for non-cracked concrete							
Edge distance $c_{cr,sp}$ [mm] for		$h / h_{ef} \geq 2,0$		$1,0 \cdot h_{ef}$			
		$2,0 > h / h_{ef} > 1,3$		$4,6 \cdot h_{ef} - 1,8 \cdot h$			
		$h / h_{ef} \leq 1,3$		$2,26 \cdot h_{ef}$			
Spacing		$s_{cr,sp}$	[mm]	$2 \cdot c_{cr,sp}$			



[1] In absence of national regulations

[2] Parameter for design according to EOTA Technical Report TR 029.

[3] Parameter for design according to CEN/TS 1992-4:2009.

Table C6: Characteristic resistance for Hilti tension anchor HZA-R under shear load in concrete

HZA-R			M12	M16	M20	M24
Rebar diameter	φ	[mm]	12	16	20	25
Steel failure without lever arm						
Factor according to section 6.3.2.1 of CEN/TS 1992-4 :2009 part 5	k_2 [3]	[-]	1,0			
Characteristic resistance HZA-R	$V_{Rk,s}$	[kN]	31	55	86	124
Partial safety factor	γ_{Ms} [1]	[-]	1,5			
Steel failure with lever arm						
Characteristic resistance HZA-R	$M^0_{Rk,s}$	[Nm]	97	234	457	790
Partial safety factor	γ_{Ms} [1]	[-]	1,5			
Concrete pryout failure						
Factor in equation (5.7) of TR 029 or acc. to equation (27) of CEN/TS 1992-4 :2009 part 5	k [2] = k_3 [3]	[-]	2.0			

[1] In absence of national regulations.

[2] Parameter for design according to "EOTA Technical Report TR 029".

[3] Parameter for design according to CEN/TS 1992-4:2009.

Table C7: Displacements for Hilti tension anchor HZA-R under tension load

HZA-R			M12	M16	M20	M24
Non-cracked concrete						
Temperature range I: 40°C / 24°C						
Displacement	δ_{N0}	[mm/(N/mm²)]	0,03	0,04	0,05	0,06
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,06	0,08	0,11	0,14
Temperature range II: 58°C / 35°C						
Displacement	δ_{N0}	[mm/(N/mm²)]	0,05	0,07	0,09	0,12
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,10	0,14	0,18	0,23
Temperature range III: 70°C / 43°C						
Displacement	δ_{N0}	[mm/(N/mm²)]	0,10	0,14	0,18	0,23
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,15	0,20	0,26	0,33
Cracked concrete						
Temperature range I: 40°C / 24°C						
Displacement	δ_{N0}	[mm/(N/mm²)]	0,05		0,06	0,07
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,23			
Temperature range II: 58°C / 35°C						
Displacement	δ_{N0}	[mm/(N/mm²)]	0,09	0,11	0,13	0,15
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,38			
Temperature range III: 70°C / 43°C						
Displacement	δ_{N0}	[mm/(N/mm²)]	0,18	0,22	0,25	0,29
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,54			

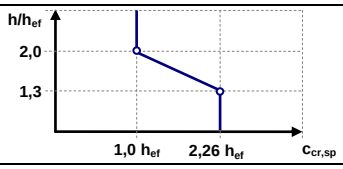
Table C8: Displacements for Hilti tension anchor under shear load

HZA-R under shear load

HZA-R			M12	M16	M20	M24
Displacement	δ_{V0}	[mm/kN]	0,05	0,04		0,03
Displacement	$\delta_{V\infty}$	[mm/kN]	0,08	0,06		0,05

Table C9: Characteristic resistance for reinforcing bars (rebars) under tension load in concrete

Reinforcing bar (rebar)			φ 8	φ 10	φ 12	φ 14	φ 16	φ 20	φ 25	φ 26	φ 28	φ 30	φ 32
Rebar diameter	ϕ	[mm]	8	10	12	14	16	20	25	26	28	30	32
Installation safety factor	γ_2[2] = γ_{inst}[3]	[-]	1,4										
Steel failure rebars													
Characteristic resistance	$N_{Rk,s}$	[kN]	28	43	62	85	111	173	270	292	339	388	442
Combined pullout and concrete cone failure													
Characteristic bond resistance in non-cracked concrete C20/25													
Temperature range I: 40°C / 24°C	$\tau_{Rk,ucr}$	[N/mm²]	14			12			11				
Temperature range II: 58°C / 35°C	$\tau_{Rk,ucr}$	[N/mm²]	9			8			7				
Temperature range III: 70°C / 43°C	$\tau_{Rk,ucr}$	[N/mm²]	5,5					5			4,5		
Factor acc. to section 6.2.2.3 of CEN/TS 1992-4:2009 part 5	k_8 = k_{ucr}[3]	[-]	10,1										
Characteristic bond resistance in cracked concrete C20/25													
Temperature range I: 40°C / 24°C	$\tau_{Rk,cr}$	[N/mm²]	-	7		6,5		6			5,5		
Temperature range II: 58°C / 35°C	$\tau_{Rk,ucr}$	[N/mm²]	-	4,5			4			3,5			
Temperature range III: 70°C / 43°C	$\tau_{Rk,cr}$	[N/mm²]	-	2,5				2,0					
Factor acc. to section 6.2.2.3 of CEN/TS 1992-4:2009 part 5	k_8 = k_{cr}[3]	[-]	7,2										
Increasing factors for τ_{Rk} in concrete	ψ_c	C30/37	1,00										
		C40/50	1,00										
		C50/60	1,00										
Splitting failure relevant for non-cracked concrete													
Edge distance $c_{cr,sp}$ [mm] for	h / h_{ef} ≥ 2,0		1,0 · h_{ef}										
	2,0 > h / h_{ef} > 1,3		4,6 · h_{ef} - 1,8 · h										
	h / h_{ef} ≤ 1,3		2,26 · h_{ef}										
Spacing	$s_{cr,sp}$	[mm]	2 · $c_{cr,sp}$										



[1] The characteristic tension resistance $N_{Rk,s}$ for rebars that do not fulfil the the requirements acc. DIN 488 shall be calculated acc. Technical Report TR 029, Equation (5.1)

[2] Parameter for design according to EOTA Technical Report TR 029.

[3] Parameter for design according to CEN/TS 1992-4:2009.

Table C10: Characteristic resistance for reinforcing bars (rebars) under shear load in concrete

Reinforcing bar (rebar)			ϕ 8	ϕ 10	ϕ 12	ϕ 14	ϕ 16	ϕ 20	ϕ 25	ϕ 26	ϕ 28	ϕ 30	ϕ 32
Steel failure without lever arm													
Factor according to section 6.3.2.1 of CEN/TS 1992-4 :2009 part 5	k_2 [4]	[-]	1,0										
Characteristic resistance	$V_{Rk,s}$	[kN]	14	22	31	42	55	86	135	146	169	194	221
Steel failure with lever arm													
Characteristic resistance	$M^0_{Rk,s}$	[Nm]	33	65	112	178	265	518	1012	1139	1422	1749	2123
Concrete pryout failure													
Factor in equation (5.7) of TR 029 or acc. to equation (27) of CEN/TS 1992-4 :2009 part 5	k [3] = k_3 [4]	[-]	2,0										

[1] The characteristic shear resistance $V_{Rk,s}$ for rebars that do not fulfil the requirements acc. DIN 488 shall be calculated acc. Technical Report TR 29, Equation (5.5)

[2] The characteristic bending resistance $M^0_{Rk,s}$ for rebars that do not fulfil the requirements acc. DIN 488 shall be calculated acc. Technical Report TR 29, Equation (5.6b)

[3] Parameter for design according to "EOTA Technical Report TR 029".

[4] Parameter for design according to CEN/TS 1992-4:2009.

Table C11: Displacements for rebar under tension load

Reinforcing bar (rebar)			ϕ 8	ϕ 10	ϕ 12	ϕ 14	ϕ 16	ϕ 20	ϕ 25	ϕ 26	ϕ 28	ϕ 30	ϕ 32
Non-cracked concrete													
Temperature range I: 40°C / 24°C													
Displacement	δ_{N0}	[mm/(N/mm²)]	0,02		0,03		0,04	0,05	0,06	0,07		0,08	
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,04	0,05	0,06	0,07	0,08	0,11	0,14		0,15	0,17	0,18
Temperature range II: 58°C / 35°C													
Displacement	δ_{N0}	[mm/(N/mm²)]	0,03	0,04	0,05	0,06	0,07	0,09	0,12		0,13	0,14	0,15
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,07	0,09	0,10	0,12	0,14	0,18	0,23	0,24	0,26	0,28	0,30
Temperature range III: 70°C / 43°C													
Displacement	δ_{N0}	[mm/(N/mm²)]	0,07	0,09	0,10	0,12	0,14	0,18	0,23	0,24	0,26	0,28	0,30
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	0,09	0,12	0,15	0,17	0,20	0,26	0,33	0,34	0,37	0,40	0,43
Cracked concrete													
Temperature range I: 40°C / 24°C													
Displacement	δ_{N0}	[mm/(N/mm²)]	-	0,04	0,05			0,06	0,07		0,08	0,09	
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	-	0,23									
Temperature range II: 58°C / 35°C													
Displacement	δ_{N0}	[mm/(N/mm²)]	-	0,08	0,09	0,10	0,11	0,13	0,15		0,16	0,17	
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	-	0,38									
Temperature range III: 70°C / 43°C													
Displacement	δ_{N0}	[mm/(N/mm²)]	-	0,16	0,18	0,20	0,22	0,25	0,29	0,30	0,32	0,34	0,35
Displacement	$\delta_{N\infty}$	[mm/(N/mm²)]	-	0,54									

Table C12: Displacements for rebar under shear load

Reinforcing bar (rebar)			ϕ 8	ϕ 10	ϕ 12	ϕ 14	ϕ 16	ϕ 20	ϕ 25	ϕ 26	ϕ 28	ϕ 30	ϕ 32
Displacement	δ_{V0}	[mm/kN]	0,06	0,05		0,04			0,03				
Displacement	$\delta_{V\infty}$	[mm/kN]	0,09	0,08	0,07	0,06		0,05			0,04		