

IT

DICHIARAZIONE DI PRESTAZIONE

N. HVU_1343-CPR-M 500-19_07.14

1. Codice di identificazione unico del prodotto-tipo:

Hilti HVU con elementi HAS e HIS

2. Uso/i previsto/i:

Prodotto	Uso previsto
Tasselli metallici da utilizzare nel calcestruzzo	Per fissare e/o sostenere nel calcestruzzo degli elementi strutturali (che contribuiscono alla stabilità delle opere) o elementi molto pesanti.

3. Produttore:

Hilti Corporation, Business Unit Anchors, 9494 Schaan, Principato del Liechtenstein

4. Sistema/i di AVCP: Sistema 1**5. Documento per la valutazione europea:** ETAG 001 Parte 5 (edizione del 04-2013) utilizzato come EAD

Valutazione tecnica europea: ETA-05/0255 (19.01.2016)

Organismo di valutazione tecnica: DIBt - Deutsches Institut für Bautechnik

Ente/i notificato/i: NB 1343 - MPA Darmstadt

6. Prestazione/i dichiarata/e:**Stabilità e resistenza meccanica (BWR 1)**

Caratteristiche essenziali	Prestazioni
Resistenza caratteristica per carichi statici e quasi statici, spostamenti	Vedere Allegato da C1 a C6

Sicurezza in caso d'incendio (BWR 2)

Caratteristiche essenziali	Prestazioni
Reazione al fuoco	Gli ancoraggi soddisfano i requisiti della Classe A1

La prestazione del prodotto sopra identificato è conforme all'insieme delle prestazioni dichiarate. La presente dichiarazione di responsabilità viene emessa, in conformità al regolamento (UE) n. 305/2011, sotto la sola responsabilità del fabbricante sopra identificato.

Firmato a nome e per conto del fabbricante da:



Raimund Zaggi
Direttore Business Unit
Business Unit Anchor



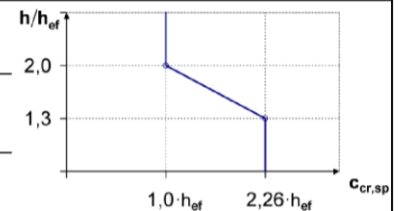
Seppo Perämäki
Direttore Qualità
Business Unit Anchor

Hilti Corporation
Schaan, 3.04.2017



Table C1: Characteristic resistance for threaded rod HAS-(E)... under tension load in case of static and quasi static loading

HAS-(E)...		M8	M10	M12	M16	M20	M24	M27	M30
Effective anchorage depth	h_{ef} [mm]	80	90	110	125	170	210	240	270
Installation safety factor	$\gamma_2^1 = \gamma_{inst}^2$ [-]	1,0							
Steel failure									
Characteristic resistance HAS-5.8	$N_{Rk,s}$ [kN]	16,6	26,4	38,1	72,1	112	160	-	-
Characteristic resistance HAS-8.8	$N_{Rk,s}$ [kN]	26,5	42,2	61,0	115	179	256	347	421
Characteristic resistance HAS-R	$N_{Rk,s}$ [kN]	23,2	37,0	53,3	101	157	224	217	263
Characteristic resistance HAS-HCR	$N_{Rk,s}$ [kN]	26,5	42,0	61,0	115	179	224	-	-
Combined pullout and concrete cone failure									
Characteristic resistance in non-cracked concrete C20/25									
Temperature range I: 40 °C/24 °C	$N_{Rk,p,ucr}$ [kN]	25	35	50	60	115	140	200	250
Temperature range II: 80 °C/50 °C	$N_{Rk,p,ucr}$ [kN]	20	25	40	50	75	115	140	170
Temperature range III: 120 °C/72 °C	$N_{Rk,p,ucr}$ [kN]	9	12	16	25	40	60	75	75
Factor acc. to section 6.2.2.3 of CEN/TS 1992-4:2009 part 5	$k_B = k_{ucr}^2$ [-]	10,1							
Increasing factors for τ_{Rk} in concrete	ψ_c	C30/37							
		C40/50							
		C50/60							
Splitting failure									
Edge distance $c_{cr,sp}$ [mm] for	$h / h_{ef} \geq 2,0$	$1,0 \cdot h_{ef}$							
	$2,0 > h / h_{ef} > 1,3$	$4,6 h_{ef} - 1,8 h$							
	$h / h_{ef} \leq 1,3$	$2,26 h_{ef}$							
Spacing	$s_{cr,sp}$ [mm]	$2 \cdot c_{cr,sp}$							



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

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

Hilti bonded anchor HVA, HVA R and HVA HCR

Performances

Characteristic values of resistance under tension loading.
Design according to „EOTA Technical Report TR 029, 09/2010“ or “CEN/TS 1992-4:2009”

Annex C1

Table C2: Characteristic resistance for threaded rod HAS-(E)... under shear load in case of static and quasi static loading

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 HAS-5.8	$V_{Rk,s}$	[kN]	8,3	13,2	19,1	36,1	56,1	80,1	-	-
Characteristic resistance HAS-8.8	$V_{Rk,s}$	[kN]	13,3	21,1	30,5	57,7	89,7	128	174	211
Characteristic resistance HAS-R	$V_{Rk,s}$	[kN]	11,6	18,5	26,7	50,5	78,5	112	108	132
Characteristic resistance HAS-HCR	$V_{Rk,s}$	[kN]	13,3	21,1	30,5	57,7	89,7	112	-	-
Steel failure with lever arm										
Characteristic resistance HAS-5.8	$M_{Rk,s}^0$	[Nm]	16	33	56	147	284	486	-	-
Characteristic resistance HAS-8.8	$M_{Rk,s}^0$	[Nm]	26	53	90	234	455	777	1223	1637
Characteristic resistance HAS-R	$M_{Rk,s}^0$	[Nm]	23	45	79	205	398	680	764	1023
Characteristic resistance HAS-HCR	$M_{Rk,s}^0$	[Nm]	26	52	90	234	455	680	-	-
Concrete pry-out failure										
Factor acc. to 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										
Effective length of anchor in shear loading	l_f	[mm]	80	90	110	125	170	210	240	270
Diameter of anchor	$d^{1)} = d_{nom}^{2)}$	[mm]	8	10	12	16	20	24	27	30

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

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

Hilti bonded anchor HVA, HVA R and HVA HCR

Performances

Characteristic values of resistance under shear loading.
Design according to „EOTA Technical Report TR 029, 09/2010“ or “CEN/TS 1992-4:2009”

Annex C2

Table C3: Displacements under tension load for threaded rod HAS-(E)... in case of static and quasi static loading

HAS-(E)...			M8	M10	M12	M16	M20	M24	M27	M30
Non-cracked concrete										
Temperature range I: 40 °C / 24 °C										
Tension load	N	[kN]	8,1	12,4	18,1	28,6	53,3	66,7	95,2	119
Displacement	δ_{N0}	[mm]	0,15	0,2	0,2	0,2	0,3	0,3	0,4	0,45
Displacement	$\delta_{N\infty}$	[mm]	0,4	0,45	0,5	0,55	0,8	0,8	1,0	1,1
Temperature range II: 80 °C / 50 °C										
Tension load	N	[kN]	8,1	11,9	18,1	23,8	35,7	54,8	66,7	81
Displacement	δ_{N0}	[mm]	0,15	0,15	0,2	0,2	0,2	0,25	0,25	0,3
Displacement	$\delta_{N\infty}$	[mm]	0,4	0,4	0,5	0,5	0,55	0,65	0,65	0,7
Temperature range III: 120 °C / 72 °C										
Tension load	N	[kN]	4,3	5,7	7,6	11,9	19,0	28,6	35,7	35,7
Displacement	δ_{N0}	[mm]	0,1	0,1	0,1	0,1	0,1	0,15	0,15	0,15
Displacement	$\delta_{N\infty}$	[mm]	0,2	0,2	0,2	0,25	0,3	0,35	0,35	0,35

Table C4: Displacements under shear load for threaded rod HAS-(E)... in case of static and quasi static loading

HAS-(E)...			M8	M10	M12	M16	M20	M24	M27	M30
Shear load	V	[kN]	4,9	7,4	10,9	20,6	32,0	45,7	99,4	120,6
Displacement	δ_{V0}	[mm]	0,4	0,6	0,7	0,9	1,1	1,3	2,8	3,4
Displacement	$\delta_{V\infty}$	[mm]	0,6	0,9	1,1	1,4	1,7	2,0	4,2	5,1

Hilti bonded anchor HVA, HVA R and HVA HCR

Performances
Displacements

Annex C3

Table C5: Characteristic resistance for internal threaded sleeve HIS-N... under tension load in case of static and quasi static loading

HIS-(R)N		M8	M10	M12	M16	M20
Effective anchorage depth	h_{ef} [mm]	90	110	125	170	205
Installation safety factor	$\gamma_2^{2)} = \gamma_{inst}^{3)}$ [-]	1,0				
Steel failure						
Characteristic steel resistance HIS-N with screw grade 8.8	$N_{Rk,s}$ [kN]	25	46	67	125	116
Partial safety factor	$\gamma_{Ms,N}^{1)}$ [-]	1,5				
Characteristic steel resistance HIS-RN with with screw grade 70	$N_{Rk,s}$ [kN]	26	41	59	110	166
Partial safety factor	$\gamma_{Ms,N}^{1)}$ [-]	1,87				2,4
Combined pullout and concrete failure						
Characteristic resistance in non-cracked concrete C20/25						
Temperature range I: 40 °C/24 °C	$N_{Rk,p,ucr}$ [kN]	25	40	60	95	140
Temperature range II: 80 °C/50 °C	$N_{Rk,p,ucr}$ [kN]	20	35	50	75	95
Temperature range III: 120 °C/72 °C	$N_{Rk,p,ucr}$ [kN]	9	16	20	40	50
Factor acc. to section 6.2.2.3 of CEN/TS 1992-4:2009 part 5	$k_8 = k_{ucr}^{3)}$ [-]	10,1				
Increasing factors for τ_{Rk} in concrete	ψ_c	C30/37		1,12		
		C40/50		1,21		
		C50/60		1,28		
Splitting failure						
Edge distance $c_{cr,sp}$ [mm] for	$h / h_{ef} \geq 2,0$	$1,0 \cdot h_{ef}$				
	$2,0 > h / h_{ef} > 1,3$	$4,6 h_{ef} - 1,8 h$				
	$h / h_{ef} \leq 1,3$	$2,26 h_{ef}$				
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.

Hilti bonded anchor HVA, HVA R and HVA HCR

Performances

Characteristic values of resistance under tension loading.
Design according to „EOTA Technical Report TR 029, 09/2010“ or “CEN/TS 1992-4:2009”

Annex C4

Table C6: Characteristic resistance for internal threaded sleeve HIS-N... under shear load in case of static and quasi static loading

HIS-(R)N		M8	M10	M12	M16	M20	
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 HIS-N with screw grade 8.8	$V_{Rk,s}$	[kN]	13	23	34	63	58
Partial safety factor	$\gamma_{Ms,V}^{1)}$	[-]					1,25
Characteristic resistance HIS-RN with screw grade 70	$V_{Rk,s}$	[kN]	13	20	30	55	83
Partial safety factor	$\gamma_{Ms,V}^{1)}$	[-]					1,56
Steel failure with lever arm							
Characteristic resistance HIS-N / screw strength class 8.8	$M_{Rk,s}$	[Nm]	30	60	105	266	519
Partial safety factor	$\gamma_{Ms,V}^{1)}$	[-]					1,25
Characteristic resistance HIS-RN / screw strength class 70	$M_{Rk,s}$	[Nm]	26	52	92	233	454
Partial safety factor	$\gamma_{Ms,V}^{1)}$	[-]					1,56
Concrete pry-out failure							
Factor acc. to 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
Concrete edge failure							
Effective length of anchor in shear loading	l_f	[mm]	90	110	125	170	205
Diameter of anchor	$d^{2)} = d_{nom}^{3)}$	[mm]	12,5	16,5	20,5	25,4	27,6

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.

Hilti bonded anchor HVA, HVA R and HVA HCR

Performances

Characteristic values of resistance under shear loading.
Design according to „EOTA Technical Report TR 029, 09/2010“ or “CEN/TS 1992-4:2009”

Annex C5

Table C7: Displacements under tension load for internal threaded sleeve HIS-N... in case of static and quasi static loading

HIS-(R)N			M8	M10	M12	M16	M20
Non-cracked concrete							
Temperature range I: 40 °C / 24 °C							
Tension load	N	[kN]	11,9	19,0	28,6	45,2	53,0
Displacement	δ_{N0}	[mm]	0,2	0,2	0,25	0,3	0,35
Displacement	$\delta_{N\infty}$	[mm]	0,5	0,55	0,65	0,8	0,85
Temperature range II: 80 °C / 50 °C							
Tension load	N	[kN]	9,5	15,7	22,5	35,7	45,2
Displacement	δ_{N0}	[mm]	0,15	0,2	0,2	0,25	0,3
Displacement	$\delta_{N\infty}$	[mm]	0,4	0,45	0,5	0,65	0,7
Temperature range III: 120 °C / 72 °C							
Tension load	N	[kN]	4,3	7,6	9,5	19,0	23,8
Displacement	δ_{N0}	[mm]	0,1	0,1	0,1	0,15	0,15
Displacement	$\delta_{N\infty}$	[mm]	0,2	0,2	0,2	0,35	0,4

Table C8: Displacements under shear load for internal threaded sleeve HIS-N... in case of static and quasi static loading

HIS-(R)N			M8	M10	M12	M16	M20
Shear load	V	[kN]	7,2	13,2	19,3	35,8	33,3
Displacement	δ_{N0}	[mm]	0,7	1,0	1,1	2,0	2,5
Displacement	$\delta_{N\infty}$	[mm]	1,1	1,5	1,7	3,0	3,8

Hilti bonded anchor HVA, HVA R and HVA HCR

Performances
Displacements

Annex C6