

RO

**DECLARAȚIE DE PERFORMANȚĂ**

Nr. HVU\_1343-CPR-M 500-19\_07.14

**1. Cod unic de identificare a tipului de produs:**

Cartușe Hilti HVU cu elemente HAS și HIS

**2. Utilizare preconizată:**

| Produs                                    | Destinație  |
|---|---|
| Ancore metalice pentru utilizare în beton | Pentru fixarea și/sau susținerea în beton a elementelor structurale (care contribuie la stabilitatea lucrărilor) sau a unităților grele |

**3. Producător:**

Hilti Corporation, Unitatea Ancore, 9494 Schaan, Principatul Liechtenstein

**4. Sistemul (sistemele) AVCP: Sistemul 1****5. Document European de Evaluare:** ETAG 001, Partea 5 (Ediția 04-2013) utilizat ca DEE**Evaluare Tehnică Europeană:** ETA-05/0255 (19.01.2016)**Organismul de evaluare tehnică:** DIBt - Deutsches Institut für Bautechnik**Organism(e) notificat(e):** NB 1343 - MPA Darmstadt**6. Performanța declarată:****Rezistența mecanică și stabilitatea (BWR 1)**

| Caracteristică principală   | Performanță                |
|---|----------------------------|
| Rezistența caracteristică pentru sarcini statice și cvasi-stactice, Deplasări | A se vedea Anexele C1 - C6 |

**Siguranță în caz de incendiu (BWR 2)**

| Caracteristică principală | Performanță  |
|---------------------------|--|
| Reacție la foc            | Ancorele respectă cerințele de siguranță pentru clasa A1 |

Performanța produsului identificat mai sus este în conformitate cu setul de performanțe declarate. Această declarație de performanță este eliberată în conformitate cu Regulamentul (UE) nr. 305/2011, pe răspunderea exclusivă a fabricantului identificat mai sus.

Semnată pentru și în numele fabricantului de către:



Raimund Zaggl  
Director Unitate  
Unitatea Ancore



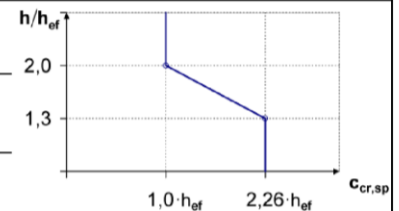
Seppo Perämäki  
Director Calitate  
Unitatea Ancore

Hilti Corporation  
Schaan, 03.04.2017



**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                  |      |      |      |     |     |     |     |
| <b>Steel failure</b>  |                                    |                      |      |      |      |     |     |     |     |
| 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 | -   | -   |
| <b>Combined pullout and concrete cone failure</b>           |                                    |                      |      |      |      |     |     |     |     |
| 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 $\tau_{Rk}$ in concrete              | $\psi_c$                           | C30/37               |      |      |      |     |     |     |     |
|   |                                    | C40/50               |      |      |      |     |     |     |     |
|   |                                    | C50/60               |      |      |      |     |     |     |     |
| <b>Splitting failure</b>                                    |                                    |                      |      |      |      |     |     |     |     |
| Edge distance<br>$c_{cr,sp}$ [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]                   | $2 \cdot c_{cr,sp}$  |      |      |      |     |     |     |     |



<sup>1)</sup> Parameter for design according to EOTA Technical Report TR 029.

<sup>2)</sup> 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  |      |
|--|-------------------------|------|------|------|------|------|------|------|------|------|
| <b>Steel failure without lever arm</b>   |                         |      |      |      |      |      |      |      |      |      |
| 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  | -    | -    |
| <b>Steel failure with lever arm</b>  |                         |      |      |      |      |      |      |      |      |      |
| 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  | -    | -    |
| <b>Concrete pry-out failure</b>  |                         |      |      |      |      |      |      |      |      |      |
| 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  |
| <b>Concrete edge failure</b>   |                         |      |      |      |      |      |      |      |      |      |
| 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   |

<sup>1)</sup> Parameter for design according to EOTA Technical Report TR 029.

<sup>2)</sup> 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  |
|--|--------------------|------|------|------|------|------|------|------|------|------|
| <b>Non-cracked concrete</b>                  |                    |      |      |      |      |      |      |      |      |      |
| <b>Temperature range I: 40 °C / 24 °C</b>    |                    |      |      |      |      |      |      |      |      |      |
| Tension load                                 | N                  | [kN] | 8,1  | 12,4 | 18,1 | 28,6 | 53,3 | 66,7 | 95,2 | 119  |
| Displacement                                 | $\delta_{N0}$      | [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  |
| <b>Temperature range II: 80 °C / 50 °C</b>   |                    |      |      |      |      |      |      |      |      |      |
| Tension load                                 | N                  | [kN] | 8,1  | 11,9 | 18,1 | 23,8 | 35,7 | 54,8 | 66,7 | 81   |
| Displacement                                 | $\delta_{N0}$      | [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  |
| <b>Temperature range III: 120 °C / 72 °C</b> |                    |      |      |      |      |      |      |      |      |      |
| Tension load                                 | N                  | [kN] | 4,3  | 5,7  | 7,6  | 11,9 | 19,0 | 28,6 | 35,7 | 35,7 |
| Displacement                                 | $\delta_{N0}$      | [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 | $\delta_{V0}$      | [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                  |     |      |     |     |
| <b>Steel failure</b>  |  |                      |     |      |     |     |
| 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 |
| <b>Combined pullout and concrete failure</b>                    |  |                      |     |      |     |     |
| 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 $\tau_{Rk}$ in concrete                  | $\psi_c$                                 | C30/37               |     | 1,12 |     |     |
|   |  | C40/50               |     | 1,21 |     |     |
|   |  | C50/60               |     | 1,28 |     |     |
| <b>Splitting failure</b>  |  |                      |     |      |     |     |
| 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]                         | $2 \cdot c_{cr,sp}$  |     |      |     |     |

<sup>1)</sup> In absence of national regulations.

<sup>2)</sup> Parameter for design according to EOTA Technical Report TR 029.

<sup>3)</sup> 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  |      |
|--|--------------------------|------|------|------|------|------|------|
| <b>Steel failure without lever arm</b>   |                          |      |      |      |      |      |      |
| 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 |
| <b>Steel failure with lever arm</b>  |                          |      |      |      |      |      |      |
| 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 |
| <b>Concrete pry-out failure</b>  |                          |      |      |      |      |      |      |
| 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  |
| <b>Concrete edge failure</b>   |                          |      |      |      |      |      |      |
| 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 |

<sup>1)</sup> In absence of national regulations.

<sup>2)</sup> Parameter for design according to EOTA Technical Report TR 029.

<sup>3)</sup> 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  |
|--|--------------------|------|------|------|------|------|------|
| <b>Non-cracked concrete</b>                  |                    |      |      |      |      |      |      |
| <b>Temperature range I: 40 °C / 24 °C</b>    |                    |      |      |      |      |      |      |
| Tension load                                 | N                  | [kN] | 11,9 | 19,0 | 28,6 | 45,2 | 53,0 |
| Displacement                                 | $\delta_{N0}$      | [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 |
| <b>Temperature range II: 80 °C / 50 °C</b>   |                    |      |      |      |      |      |      |
| Tension load                                 | N                  | [kN] | 9,5  | 15,7 | 22,5 | 35,7 | 45,2 |
| Displacement                                 | $\delta_{N0}$      | [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  |
| <b>Temperature range III: 120 °C / 72 °C</b> |                    |      |      |      |      |      |      |
| Tension load                                 | N                  | [kN] | 4,3  | 7,6  | 9,5  | 19,0 | 23,8 |
| Displacement                                 | $\delta_{N0}$      | [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 | $\delta_{N0}$      | [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